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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA

FireClean LLC, a limited liability company; David Sugg, an individual; and Edward Sugg, an individual;

Plaintiffs,

vs.

Andrew Tuohy,

Defendant.

No. 4:16-cv-00604-JAS

FIRST AMENDED COMPLAINT AND DEMAND FOR JURY TRIAL

1. **Defamation (21 Counts)**
2. **Injurious Falsehood (Trade Libel) (21 Counts)**
3. **15 U.S.C. § 1125(a)(1)(B) (Lanham Act) Violation**
4. **Intentional Interference with Business Relations**
5. **False Light Invasion of Privacy**
6. **Aiding and Abetting Tortious Conduct**

Plaintiffs David Sugg, Edward Sugg, and FireClean LLC (FireClean) bring this Complaint and Demand for Jury Trial against Defendant Andrew M. Tuohy and allege as follows, upon personal knowledge as to their acts and experiences, and, as to other matters, upon information and belief, including their attorneys' investigations.

INTRODUCTION

1. FIREClean® is a patent-pending firearm lubricant (gun oil) developed by FireClean LLC (FireClean), a company David and Edward Sugg (collectively, Sugg Brothers) founded. The patent application is attached as Exhibit A.

2. FIREClean® consists of a proprietary blend of at least three oils.

3. Defendant Andrew Tuohy has disparaged the Sugg Brothers, their company, and the product via the Internet[1].

4. Mr. Tuohy published his first disparaging statements about the Plaintiffs in September 2015.

5. Mr. Tuohy falsely alleged FIREClean® is Crisco or a common cooking oil that is sold in most grocery stores.

6. Mr. Tuohy falsely alleged the Sugg Brothers and FireClean repackage a common grocery store cooking oil and deceptively sell it at a steep markup.

7. Mr. Tuohy published statements castigating the ethics, honesty, and professionalism of the Sugg Brothers and FireClean and accused them of lying to consumers and misleading the public.

8. Mr. Tuohy recklessly disregarded evidence disproving his false allegations, and published his disparagements despite having reasons to believe they were false.

9. Mr. Tuohy's statements were widely read, commented on, and believed.

10. Mr. Tuohy's statements harmed the Plaintiffs and reduced FIREClean® sales.

[1] The "Internet" is the global system of interconnected computer networks that use the Internet protocol suite (TCP/IP) to link devices worldwide. It is a network of networks that consists of private, public, academic, business, and government networks of local to global scope, linked by a broad array of electronic, wireless, and optical networking technologies. The Internet carries an extensive range of information resources and services, such as the inter-linked hypertext documents and applications of the World Wide Web, electronic mail, telephony, and peer-to-peer networks for file sharing.

11. Mr. Tuohy continues to publish false and disparaging statements about FIREClean® to draw attention to the controversy his publications started, harm the Plaintiffs, boost his reputation, attract more attention to his blog and related social media accounts, and sell more clothing branded with his blog's name.

12. The Plaintiffs bring this action to hold Mr. Tuohy liable for his years-long smear campaign, deter others from engaging in similar harmful and deceptive conduct, and enjoin Mr. Tuohy from engaging in more deceptive, tortious conduct.

PARTIES

13. Plaintiff FireClean is a privately-held, Virginia Limited Liability Company headquartered in Virginia.

14. Plaintiffs Edward and David Sugg are private figures residing in Virginia.

15. Defendant Andrew M. Tuohy is an individual residing in Arizona.

JURISDICTION AND VENUE

16. This Court has original jurisdiction over this civil action pursuant to 28 U.S.C. § 1338(a) and (b), 28 U.S.C. § 1331, and 15 U.S.C. § 1121(a).

17. By this action, FireClean asserts claims that arise under 15 U.S.C. § 1125(a)(1)(B) (Lanham Act) and common law Arizona tort claims.

18. This Court has supplemental jurisdiction pursuant to 28 U.S.C. § 1367(a) over claims herein which are not based upon federal statute, since these claims are so related to claims in this action that are within the Court's original jurisdiction that they form part of the same case or controversy.

19. This Court also has subject matter jurisdiction under 28 U.S.C. § 1332 because there is complete diversity of citizenship between the Plaintiffs and the Defendant; and the amount in controversy exceeds the sum of $75,000.00, exclusive of interest and costs.

20. Edward and David Sugg are Virginia residents and FireClean is a Virginia company; whereas Mr. Tuohy is an Arizona resident.

21. Each Plaintiff seeks damages that exceed $75,000.00 for the harms Mr. Tuohy's tortious conduct caused.

22. FireClean lost more than $75,000.00 in profits due to Mr. Tuohy's tortious conduct after Mr. Tuohy published his first disparaging article about FireClean.

23. Edward Sugg and David Sugg suffered and will suffer reputational harm, dishonor, and inconvenience as a direct result of Mr. Tuohy's tortious actions.

24. The value of the harms Edward Sugg and David Sugg individually suffered exceeds $75,000.00.

25. The reputational harm Edward Sugg and David Sugg individually suffered is worth at least $100.00 per day beginning the first day Mr. Tuohy published the statements giving rise to this action.

26. Venue in this Court is proper under 28 U.S.C. § 1391(b)(1) because the only defendant, Mr. Tuohy, is an Oro Valley, Arizona resident.

GENERAL ALLEGATIONS

Background Information about Mr. Tuohy

27. Mr. Tuohy lives in Oro Valley, Arizona and works in Tucson, Arizona.

28. Mr. Tuohy has claimed to have "experience with weapons and 'tactical' gear, from both field use and practical design standpoints."

29. He is the controller, owner, manager, editor, and publisher of a blog website named Vuurwapen Blog.

30. He uses Vuurwapen Blog for commercial purposes, to market goods or services.

31. Members of the general public may access and read Vuurwapen Blog's publications at the following website address: www.vuurwapenblog.com.

32. Public registrant contact records for www.vuurwapenblog.com state the website's registrant's

a. Name is Andrew Tuohy;

b. Address is 12117 N. Makayla Canyon Ln.;

c. City is Oro Valley;

d. State is Arizona;

e. Postal Code is 85755;

f. Country is United States;

g. Phone is (520) 908-7100; and

h. Email is andrew.tuohy@gmail.com.

33. As the creator, owner, manager, editor, and publisher of Vuurwapen Blog, Mr. Tuohy controls which statements get published and which statements get deleted after being published.

34. Mr. Tuohy invites, encourages, helps, and authorizes its readers, users, or business relations to publish statements via his blog, but he decides whether their statements get published via his blog.

35. The public may access and read statements Mr. Tuohy chose to publish via Vuurwapen Blog.

36. Mr. Tuohy maintains various social media accounts related to Vuurwapen Blog, including accounts with Facebook, Google+, Instagram, Twitter, Tumblr, and YouTube, where he publishes content to market his products and services.

37. Mr. Tuohy publishes a podcast titled "Vuurwapen Blog Radio" to market his blog, products, and services.

38. Through Vuurwapen Blog and his social media accounts, Mr. Tuohy publishes content related to guns and weaponry, including reviews of gun-related products, accessories, and policies.

39. Social media companies such as Facebook, Google+, Instagram, Twitter, Tumblr, and YouTube require users to promise to comply with the terms of use agreements, user agreements, acceptable use policies, community standards, or other similar standards of conduct pertaining to third party beneficiaries.

40. Mr. Tuohy promised to comply with each platform's policies and agreements.

41. Mr. Tuohy also operates a clothing business in Arizona.

42. He owns, controls, or manages this clothing business.

43. Mr. Tuohy markets the clothing business via www.vuurwapenblog.com.

44. Mr. Tuohy markets the clothing his business sells to:

a. gun owners;

b. people who use gun oil;

c. people who have considered using FireClean products; and

d. people who have used FireClean products.

45. Mr. Tuohy publishes his and others' statements via www.vuurwapenblog.com to help market his clothing business.

46. Mr. Tuohy and his clothing business receive payments through online financial payment services offered by PayPal Holdings, Inc. (PayPal).

47. Mr. Tuohy instructs his clothing business's customers to pay for the clothing they buy from him by using the PayPal services available via www.paypal.com.

48. Mr. Tuohy agreed to comply with the PayPal User Agreement.

49. When Mr. Tuohy agreed to comply with the PayPal User Agreement, he promised PayPal and third party beneficiaries of his contractual agreement with PayPal that he would not do any of the following "[i]n connection with [his] use of [the PayPal] website, [his PayPal] Account, the PayPal Services, or in the course of [his] interactions with PayPal, other Users, or third parties":

a. "Violate any law, statute, ordinance, or regulation (for example, those governing financial services, consumer protections, unfair competition, anti-discrimination or false advertising);"

b. "Infringe PayPal's or any third party's copyright, patent, trademark, trade secret or other intellectual property rights, or rights of publicity or privacy;"

c. "Act in a manner that is defamatory, trade libelous, threatening or harassing;" or

d. "Provide false, inaccurate or misleading information."

50. Mr. Tuohy instructed customers to pay for their purchases by sending money to the PayPal account associated with the email address 545ar15@gmail.com.

51. The Arizona Corporation Commission allows the public to search its public records online via the website ecorp.azcc.gov to determine if a business or trade name was registered with the State of Arizona and, if it was, whether the business that registered it is in good standing.

52. Arizona Corporation Commission records that may be accessed and viewed via ecorp.azcc.gov show Mr. Tuohy did not register any of the following business or trade names in the State of Arizona:

a. Vuurwapen;

b. Vuurwapen Blog;

c. www.vuurwapenblog.com;

d. 545ar15@gmail.com; or

e. andrew.tuohy@gmail.com.

53. Mr. Tuohy uses Vuurwapen Blog and social media accounts to promote himself, his products, his services, and his clothing business.

54. A community that includes people interested in guns and weapons, gun and weapon owners, gun oil users, weapon retailers, law enforcement professionals, members of the military, and gun aficionados read Mr. Tuohy's blog.

55. Mr. Tuohy also publishes statements for commercial purposes via others' blogs or websites.

FIREClean® and Its Development

56. In May 2012, the Sugg Brothers formed FireClean in Virginia and began distributing and selling a product they developed and named FIREClean®.

57. The FIREClean® product is not marketed or sold under any other name, label, or brand.

58. FIREClean® is a patent-pending, proprietary product that improves the reliability and performance of firearms by reducing the adhesion of carbon residue that results from discharging a firearm.

59. A thin layer applied to the areas of a firearm that are subject to friction and fouling will form a thin protective layer against carbon and other fouling.

60. As its patent application states, FIREClean® may consist of a proprietary blend of at least three "natural, non-petroleum, non-synthetic oil[s] derived from a plant, vegetable or fruit or shrub or flower or tree nut, or any combination of natural, non-petroleum, non-synthetic oils derived from a plant, vegetable or fruit or shrub or flower or tree nut," where each oil has a smoke point above 200 degrees Fahrenheit, and the total volume of at least three oils is at least 25% of the total volume of the oil composition. Ex. A.

61. The patent application has been publicly available worldwide since 2013.

62. FIREClean® is not made from a single type of oil.

63. FIREClean® is not Crisco Canola Oil.

64. FIREClean® is not repackaged common canola oil.

65. FIREClean® is not Crisco Vegetable Oil, which is soybean oil.

66. FIREClean® is not repackaged common soybean oil.

Mr. Tuohy's Relationships with the Sugg Brothers, FireClean, and George Fennell

67. Mr. Tuohy met David Sugg in January or February 2011 when both attended a rifle class in Tucson, Arizona.

68. They kept in touch after their initial meeting.

69. The two met up again approximately one year later in February 2012 when David Sugg was in Tucson.

70. David Sugg told Mr. Tuohy he and his brother, Edward Sugg, were in the process of developing a new firearm lubricant.

71. During their meeting in 2012, David Sugg asked Mr. Tuohy if he would be interested in testing FIREClean®.

72. Mr. Tuohy agreed and conducted a test of FIREClean® in the summer of 2012 during Mr. Tuohy's brief employment with ammunition retailer Lucky Gunner.

73. The test results were published in January 2013.

74. Although they did not initially reference FIREClean® by name, the results were favorable, finding zero malfunctions occurred in 10,000 rounds fired with a commonly-available AR-15 rifle and ammunition. The favorable results were also well-received.

75. Between its development date in 2012 and September 2015, FIREClean® was a successful product.

76. FireClean's revenue increased steadily by twenty to fifty percent annually since sales began in 2012.

77. In the summer of 2015, George Fennell, one of FireClean's commercial competitors, started a false rumor about FIREClean® and the Sugg Brothers.

78. Mr. Fennell falsely claimed FIREClean® is repackaged Crisco Vegetable (soybean) oil.

79. This allegation falsely accused FireClean of illegally or unlawfully deceiving and defrauding its consumers.

80. Mr. Fennell encouraged Mr. Tuohy to compare FIREClean to Crisco oil in an article that would create a scandal based on Mr. Fennell's false rumor and would harm the Plaintiffs.

81. Mr. Tuohy, who had thoroughly tested FIREClean® years earlier, had reasons to seriously doubt Mr. Fennell's false claims about FIREClean® were true.

82. Mr. Tuohy had no evidence that proved Mr. Fennell's false rumors were true before Mr. Tuohy published comments that made the same false claims.

83. Mr. Tuohy knew Mr. Fennell and the Plaintiffs were competitors before he published statement making the same false claims that Mr. Fennell had made.

84. Even though he knew no evidence proved the Mr. Fennell's false claims and Mr. Tuohy had reasons to seriously doubt the claims were true, Mr. Tuohy wrote and published statements that made the same false claims about FIREClean® Mr. Fennell had made.

85. Mr. Tuohy published the false statements for commercial purposes—to promote his blog, his products, and his services—and to harm the Plaintiffs.

September 12, 2015
Mr. Tuohy publishes "Lies Errors and Omissions; Infrared Spectroscopy of FireClean and Crisco Oils."

86. After deciding to write a false story about FIREClean® for commercial purposes, Mr. Tuohy contacted Edward Sugg through a Facebook message.

87. Mr. Tuohy asked Edward Sugg whether he had a response to a competitor's claims that FIREClean® was plain cooking oil or Crisco-brand oil.

88. In the August 29, 2015, message, Mr. Tuohy asked: "Ed, Do you guys have a response to the claims that FireClean is just Crisco? Andrew." The message is attached as Exhibit B.

89. Edward Sugg replied to the message, categorically denying the allegations: "Hi Andrew-categorically deny. If you let me know where you are hearing it I would appreciate it. If it's a competitor it will generate a strong response. Thanks! Ed." *Id.*

90. Unknown to FireClean at the time, Mr. Tuohy was in contact with George Fennell, the competitor who began the false rumors FIREClean® is re-packaged Crisco-brand oil.

91. Mr. Fennell did not provide any evidence to substantiate his false rumors but later took credit for encouraging or helping Mr. Tuohy to publish stories about FIREClean®, FireClean, and the Sugg Brothers.

92. Despite having unambiguous, written denials directly from one of FIREClean®'s developers and a lack of evidence from the rumors' initiator, on September 12, 2015, Mr. Tuohy published statements through Vuurwapen Blog that claimed FIREClean® is virtually the same as common cooking oil: "FireClean is probably a modern unsaturated vegetable oil virtually the same as many oils used for cooking." *See* Exhibit C at 4.

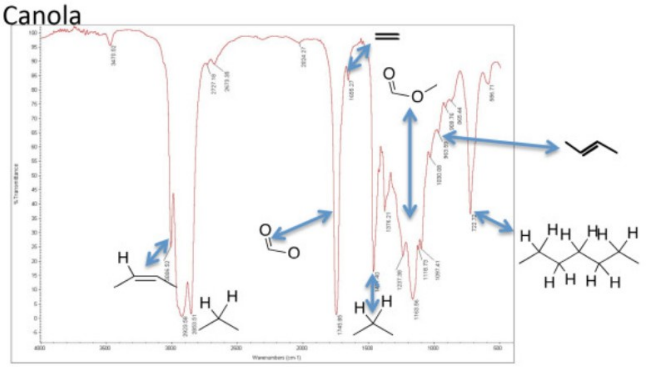
93. The statement appeared in a blog post that Mr. Tuohy published titled, "Lies Errors and Omissions; Infrared Spectroscopy of FireClean and Crisco Oils." The story, referred to as the "Spectroscopy Article," is attached as Exhibit C.

94. The story is also publicly available at http://www.vuurwapenblog.com/general-opinion/lies-errors-and-omissions/ir-spectra-fireclean-crisco/.

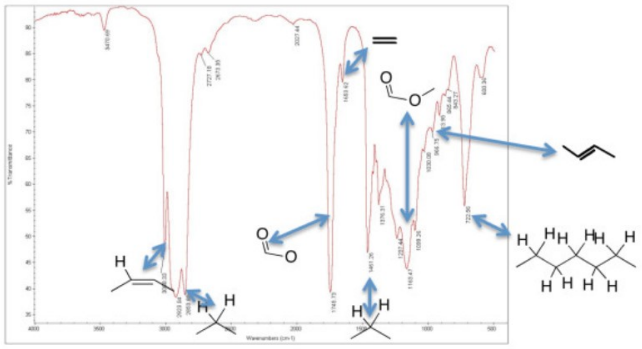
95. Mr. Tuohy also published the story through his other social media outlets including Facebook, Tumblr, Instagram, and Twitter to ensure that particular post and the statements in it reached the widest possible audience.

96. The following spectra for three different substances were published with the story:

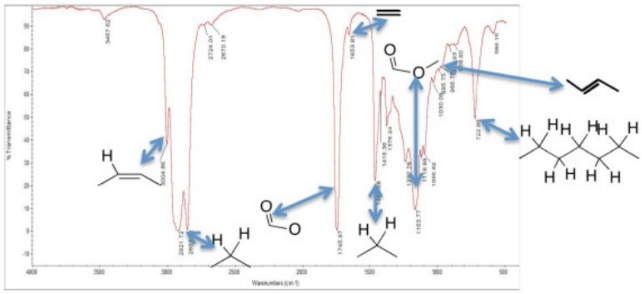
Crisco Pure Canola



Crisco Pure Vegetable oil



Fire Clean



97. In the Spectroscopy Article, Mr. Tuohy wrote that the "makers of FireClean, Ed Sugg... assured me that not a single drop of Crisco has ever been part of their formulation ..." but that "[d]espite these assurances, which I was inclined to

believe, I sought to undertake my own testing to determine whether or not these claims are true about FireClean. Trust, but verify." (Ex. C at 2).

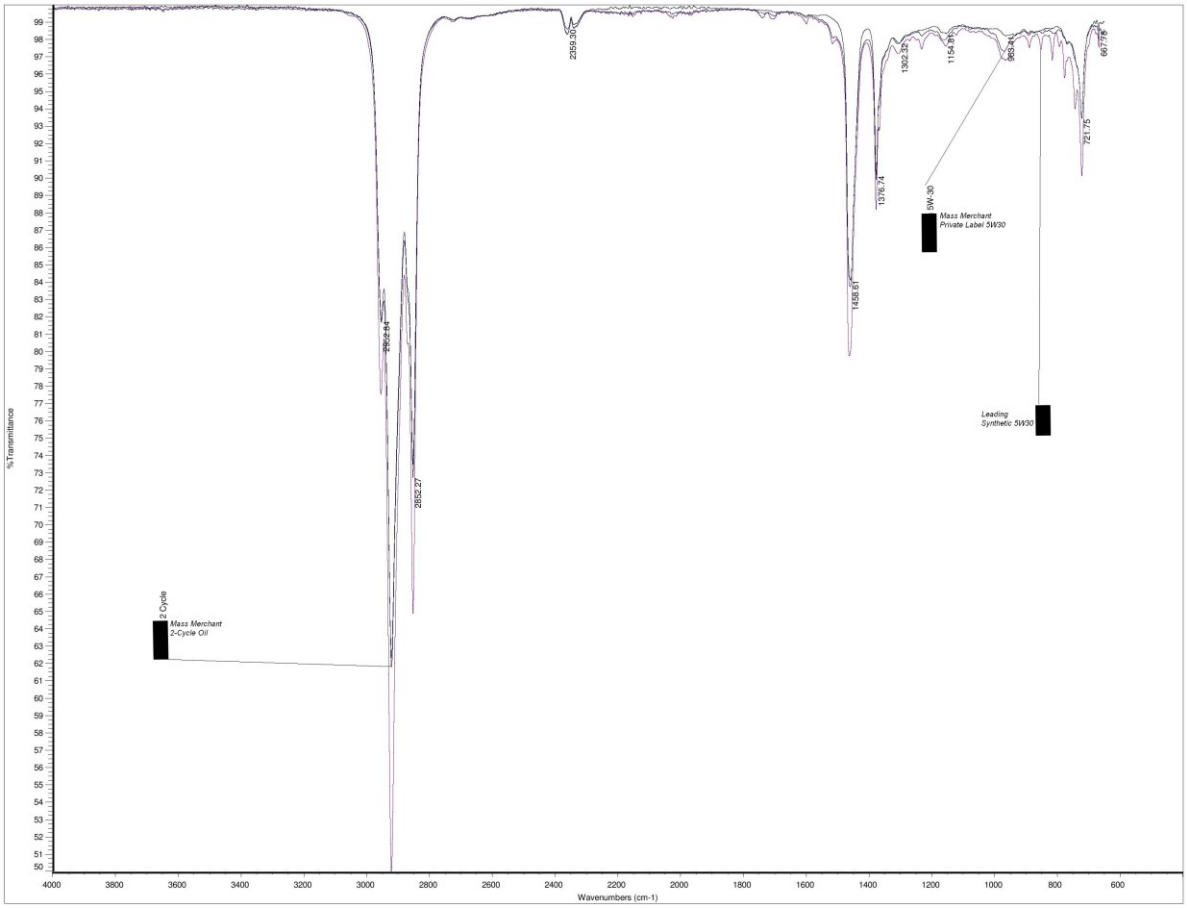
98. In the story, Mr. Tuohy claimed he obtained the assistance of an unnamed professor, a "very nice man" at the University of Arizona, who, according to Mr. Tuohy, volunteered his services and performed an infrared spectroscopy analysis of FIREClean®, Crisco Vegetable Oil, and Crisco Canola Oil.

99. Mr. Tuohy's derogatory statements alongside the side-by-side spectra, which are scaled differently, convey the false and disparaging notion FIREClean® is Crisco Vegetable Oil, Crisco Canola Oil, or a re-packaged common cooking oil.

100. Mr. Tuohy knew or recklessly disregard that Infrared spectroscopy is not a suitable method for comparing oils from the same class of compounds.

101. Nor can it compare or analyze the fat saturation levels of plant-based oils.

102. The spectra below, for example, are of three different substances.



103. The mass-merchant 2-cycle oil is oil used for mixing into fuel for power equipment such as chainsaws and grass trimmers; the two different "5W30" oils are car engine oils, with one being conventional mass-merchant oil and the other, a fully-synthetic premium brand.

104. Mr. Tuohy's published analysis was not scientifically sound, and he knew it.

105. It included no controls.

106. It analyzed no other substances, whether plant or vegetable-based.

107. The analysis failed to evaluate whether many oils or oil blends would have similar basic patterns.

108. The similar spectra for different Crisco oils should have been an obvious indicator of the unsuitability of this analysis.

109. Mr. Tuohy failed to perform any other myriad tests that would help determine whether the substances are the same.

110. None of the test results Mr. Tuohy published provide information on the unsaturation level or specific fatty acid composition or chain links of the oils.

111. Mr. Tuohy quoted the anonymous professor as saying: "I don't see any sign of other additives such as antioxidants or corrosion inhibitors. Since the unsaturation in these oils, especially linoleate residues, can lead to their oligomerization with exposure to oxygen and light, use on weapons could lead to formation of solid residues (gum) with time. The more UV and oxygen, the more the oil will degrade." (Ex. C at 4-5, emphasis omitted).

112. Based on these purported facts, Mr. Tuohy wrote that he could not recommend FIREClean® be used for military purposes or by military members "[g]iven that people in the military are often exposed to both UV and oxygen (such as when they go outdoors) and also need corrosion protection for their firearm."

113. In the comments section below the main text of the article, Mr. Tuohy stated that the "IR [infrared spectroscopy] data was sufficient" to draw the conclusion that FIREClean® is Crisco or canola oil or otherwise a repackaged common cooking oil (Ex. C at 14).

114. The Spectroscopy Article (with its title, "Lies, Errors, and Omissions") also falsely implies FireClean intentionally misrepresented its product to consumers.

115. The Spectroscopy Article includes the following actionable statements:

a. "Lies, Errors and Omissions; Infrared Spectroscopy of FireClean and Crisco Oils." (**Statement 1**).

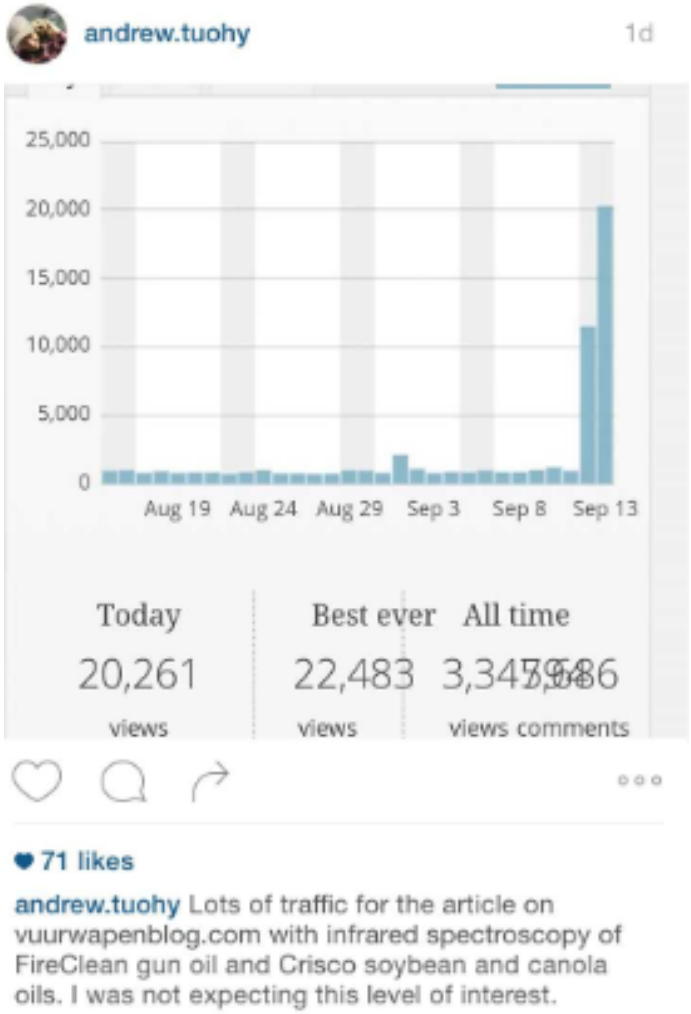
b. "FireClean is probably a modern unsaturated vegetable oil virtually the same as many oils used for cooking." (**Statement 2**).

c. "[g]iven that people in the military are often exposed to both UV and oxygen (such as when they go outdoors) and also need corrosion protection for their firearms, I would not recommend FireClean be used by members of the military." (**Statement 3**).

116. The story and the false statements in it were published to the public via the Internet, read widely, and commented on.

117. Even Mr. Tuohy, who had tried to reach as many people as possible, was surprised by how much attention he attracted to the controversy he started for commercial purposes.

118. Mr. Tuohy posted a graphic depicting traffic to his blog following his publication of the Spectroscopy Article.



119. Online reviews and comments about FIREClean®, FireClean, and the Sugg Brothers, including reviews on Amazon.com, show Mr. Tuohy's audience believed his statements, and his comments damaged the Plaintiffs' reputations.

120. Because Mr. Tuohy published his statements, FireClean's revenues and profits decreased significantly since September 2015.

121. In just the first few months after Mr. Tuohy had published his first statements about FIREClean®, FireClean's revenues fell by over $25,000.00 per month.

122. Mr. Tuohy's statements remain online and continue to benefit him commercially while harming the Plaintiffs.

123. FireClean's future profits will be lower than they would have been because Mr. Tuohy published his derogatory statements for commercial purposes.

September 14, 2015
Mr. Tuohy Posts "Where There's Smoke, There's Liar"

124. Two days after publishing the Spectroscopy Article, Mr. Tuohy posted another article on the Vuurwapen Blog: "Where There's Smoke, There's Liar."

125. After September 14, 2015, Mr. Tuohy changed the title of the article on his publication to, "Severe Problems with Vickers Tactical Video." However, the URL address for the article remains, by the date of filing this complaint, "http://www.vuurwapenblog.com/general-opinion/lies-errors-and-omissions/where-theres-smoke-theres-liar." The "Smoke/Liar Article" and its comments are attached as Exhibit D.

126. On September 14, 2015, Mr. Tuohy also posted a link to the article on Facebook and Vuurwapen Blog with the statement, "Deliberately misleading the consumer in an effort to sell a product. Is there a word for that?" This actionable statement is referred to elsewhere in the Complaint as **Statement 19** and a copy is attached as Exhibit E.

127. The article itself provides a link to a video posted to YouTube by an individual named Larry Vickers, who owns a company called Vickers Tactical, and titled by Mr. Vickers as a "FireClean Lube Test."

128. The video depicts Mr. Vickers interviewing the Sugg Brothers, who describe the development of FIREClean® and perform an evaluation to demonstrate the comparative effectiveness between FIREClean® and another oil.

129. Until recently, the video was publicly available at https://www.youtube.com/watch?v=SOOAsOCEJfQ.

130. The lubricant comparison, shown in the video, consists of discharging two firearms in three rounds. First, the firearms are discharged with no lubricant, then with a military-grade lubricant CLP, and finally with FIREClean®.

131. After the comparison, the Sugg Brothers observe and comment on the testing and Vickers concludes that there was "not much difference" between the dry gun, CLP, and FIREClean®.

132. In the Smoke/Liar Article, Mr. Tuohy claimed the Sugg Brothers, alone or in concert with Mr. Vickers, rigged the filming to falsely position FIREClean® as a more effective lubricant.

133. To explain his unfounded theory, Mr. Tuohy stated:

> I'll bet you four bottles of FireClean that was a factory +P Cor-Bon load; +P loads being hotter and having more powder than standard, bargain ammunition like Prvi Partizan. Barring that, it was a handload, with a smoky powder selected for maximum effect. . . . [I]t is indisputable that the cartridge fired for the FireClean demonstration was significantly different than the cartridges fired for the dry gun and CLP demonstrations . . . . No honest person with a basic understanding of the scientific method would use handloaded or +P ammunition in a comparison with standard pressure bargain priced ammunition if the comparison was meant to show differences between lubricants and their effect on how much smoke comes out of the chamber during firing . . . . Smoke after firing is put forth as evidence of a cleaner gun. The cleaner gun concept is central to the ethos of FireClean; it's even their URL. Different ammunition was selected for the FireClean portion of the demonstration to give the appearance of more smoke and thus a cleaner gun. . . . All the information required to judge the integrity of statements made by FireClean is contained in that Vickers Tactical video.

134. The article contained the following actionable statements:

a. http://www.vuurwapenblog.com/general-opinion/lies-errors-and-omissions/where-theres-smoke-theres-liar/. (**Statement 4**).

b. "Lies, Errors and Omissions, Severe Problems with Vickers Tactical Video." (**Statement 5**).

c. "I made a discovery which calls into question any claim or statement made by FireClean as a company and Ed and Dave Sugg as individuals." (**Statement 6**).

d. "No honest person with a basic understanding of the scientific method would use handloaded or +P ammunition in a comparison with standard pressure bargain priced ammunition if the comparison was meant to show

differences between lubricants and their effect on how much smoke comes out of the chamber during firing." (**Statement 7**).

e. "Different ammunition was selected for the FireClean portion of the demonstration to give the appearance of more smoke and thus a cleaner gun.... All the information required to judge the integrity of statements made by FireClean is contained in that Vickers Tactical video." (**Statement 8**).

135. The article falsely conveys that FireClean dishonestly and intentionally used different ammunition for the FIREClean® firing, therefore falsifying the results to portray FIREClean® as more effective than CLP or no lubricant.

136. FireClean did not rig the test or falsify its results.

137. The ammunition used for all firings depicted in the video were standard pressure, factory-loaded, including factory remanufactured, ammunition.

138. The ammunition used for the FIREClean® firing was not "handload" or "Cor - Bon +P" rounds.

139. The ammunition used for the FIREClean® firing was not materially different from the ammunition used for the CLP and no-lubricant demonstrations.

140. Mr. Tuohy's disparaging accusations in this article, taken individually and when read together, are false.

Mr. Tuohy's Spectroscopy Article Gains More Attention

141. Following Mr. Tuohy's posts, a public controversy ensued which led to widespread criticism of FireClean and the Sugg Brothers.

142. On September 13, 2015, www.thefirearmblog.com (the "Firearm Blog") reported on the Spectroscopy Article with an article entitled, "Yes, It's True: FireClean is Crisco." (The "Firearm Blog Article," attached as Exhibit F).

143. Several days later, the Firearm Blog changed the title to, "Yes, It's True:

FireClean is Vegetable Oil," however, the URL of the article remains: "http://www.thefirearmblog.com/blog/2015/09/13/yes-its-true-fireclean-is-crisco ."

144. The article displayed a full-page color picture of a bottle of FIREClean® at a distorted size next to a bottle of Crisco oil. (Ex. F).

145. The false connotation of the illustration is that the two products are equivalent and the same.

146. The image appeared on the Firearm Blog's website as follows:

147. The author, Nathaniel Finch, posted a link to the Spectroscopy Article and wrote: "So, in short, to the best of my knowledge, FireClean is canola oil." (Ex. F at 5).

148. When the Firearm Blog posted "Yes it's True: FireClean is Crisco" to its Facebook page, it was "shared" by over 17,400 Facebook followers in the first eight hours alone. The Facebook post is attached as Exhibit G.

149. The ramification of the widespread falsehoods about FireClean and its product is evident not only from the sharing of the Firearm Blog's posts and the comments on Vuurwapen Blog, but also apparent from third-party comments on various online retailers.

150. On Amazon.com, product review comments for FIREClean® turned negative. A copy of one Amazon.com product page for FIREClean® and its reviews are attached as Exhibit H.

151. Before September 12, 2015, FIREClean®'s reviews on Amazon were almost uniformly positive, with no reference to FIREClean® supposedly being equivalent to Crisco.

152. The only exception is a single review that originally appeared in October 2013, which was updated to refer to FIREClean® as canola oil on September 29, 2015.

153. Yet, on September 13, 2015, one day after Mr. Tuohy published his first statements, nine negative reviews were posted on Amazon.com. Nine Amazon users rated FIREClean® with one star, the lowest rating Amazon allows.

154. Mr. Tuohy knew or reasonably foresaw publishing his article would cause this.

155. The September 13, 2015, reviews are as follows:

a. User "Sean Collins" titled a review "Over priced Crisco vegetable oil" and stated, "This is Crisco vegetable oil." This reviewer also re-posted the spectra image from Mr. Tuohy's September 12, 2015, blog post.

b. User "James R. McCain, Jr." titled a review "A sucker born every minute" and stated, "Fire lean (sic) is nothing more thank (sic) canola oil. Crisco, Wesson Oil."

c. User "M. Potter" titled a review, "I had two 4 ounce bottles of Pure Rapeseed Oil courtesy of the great people at Fire Clean LLC." This review stated, "So we were in the middle of baking some gluten free, sustainably sourced, all organic, artisinal Banana Bread and the recipe called for Rapeseed Oil, unfortunately when we rode our dutch-style single speed bicycles to Earth Fare and Whole Foods we found out that the mouth breathing cis-gendered sithlords there had not stocked any Organic

Rapeseed Oil that day :((micro-aggressions triggered!) Luckily, I had two 4 ounce bottles of Pure Rapeseed Oil courtesy of the great people at Fire Clean LLC, and it only cost me $31.49 (and free two-day shipping!). The Banana Bread turned out great, Rapeseed Oil is good if you want to cut back on your bad cholesterol levels and still enjoy all organic, gluten free banana bread patisseries!"

d. User "Shawn Cathcart" posted a review titled, "Warning to consumers regarding FIREClean Gun Oil." The review quotes Mr. Tuohy's September 12, 2015, post and stated, "Warning to consumers: An Infrared Spectroscopy test has proven that Fireclean Gun Oil is '...a modern unsaturated vegetable oil virtually the same as many oils used for cooking.' …Users may find that this oil is a fine lubricant, but please be aware that if this analysis is true, this product is sold at an absolutely enormous markup."

e. User "John Freckleson" posted a review titled, "FRAUD." The review stated, "Recently the product has been chemically analyzed and has been revealed to be rebranded Crisco vegetable oil."

f. User "John4315" posted a review titled, "Crisco repakaged (sic) and marked up enormously" and stated, "This product has been exposed as nothing but cooking oil. You can get the same results for about 125 times less here. http://www.amazon.com/Crisco-Pure-Canola-Oil-48/dp/B00I8G79ES."

g. User "Charles W Story" posted a review titled, "The results of this poor man's spectroscopy were that FireClean and the canola oil…" This reviewer directly referenced Mr. Tuohy and posted, in relevant part, "Yesterday the inimitable Andrew Tuohy, a contributor to this blog, posted an article proving to me beyond any doubt that FIREClean is vegetable oil."

h. User "robert dorchak" posted a review titled, "Crisco is better." The review stated, "Shout out to all you fire clean fan boys that have been using Crisco to lube your guns for the past year."

i. User "Hodor" posted a review titled, "One Star" and stated, "Great oil but too expensive for daily cooking unless you're sponsored by them, which explains Larry Vickers' weight."

156. The negative, one-star reviews have continued.

157. Several negative, one-star reviews were published around the same dates Mr. Tuohy published his stories about the Plaintiffs and FIREClean®.

October 23, 2015
Mr. Tuohy Posts "Lies, Errors and Omissions; A Closer Look at FireClean and Canola Oil."

158. On October 23, 2015, Mr. Tuohy posted a third article about FIREClean® entitled, "Lies, Errors and Omissions; A Closer Look at FireClean and Canola Oil." The "Closer Look Article" is attached as Exhibit I.

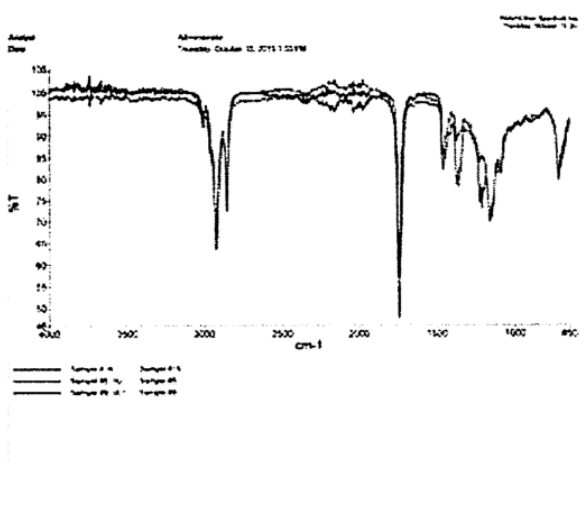
159. As of the date of the filing of this Complaint, the Closer Look Article remains available on Vuurwapen Blog at: http://www.vuurwapenblog.com/general-opinion/lies-errors-and-omissions/a-closer-look-at-fireclean-and-canola-oil.

160. Mr. Tuohy also posted the Closer Look Article to the Vuurwapen Blog Facebook page on October 23, 2015, and that post appeared as follows:

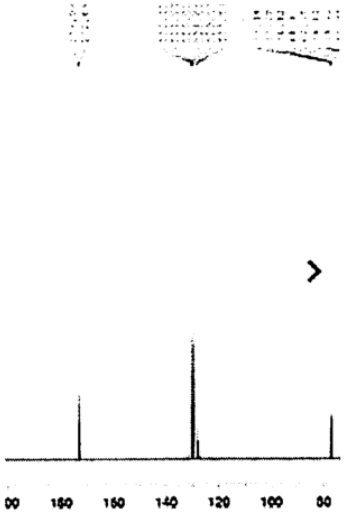
Vuurwapen Blog
October 23 ·

Four tests at two different labs using samples from multiple sources. I'll save you the click and give you the most important sentence right here - According to every PhD who looked at the NMR results, FireClean and Canola oil appear to be "effectively" or "nearly" identical.

A few weeks ago, FireClean said that putting canola oil on your firearm could have catastrophic results. Some people believed that, probably because they are stupid. I don't like it when people in political arguments call the other side stupid and I don't throw around the word stupid lightly. However, if you think that putting canola oil - an oil with a long history of use as an industrial lubricant for metal-to-metal contact -on your rifle is dangerous, but that putting FireClean on your rifle is safe, then you're stupid. There is no other way to define your level of intelligence and critical thinking.



A Closer Look at FireClean and Canola Oil



A Closer Look at FireClean ar

161. In the Closer Look article, Mr. Tuohy claimed to have obtained a second round of testing on FIREClean® through Everett Baker, an undergraduate college student.

162. Mr. Tuohy concluded that "…FireClean and Canola oil appear to be 'effectively' or 'nearly' identical." (Ex. I at 3).

163. According to Mr. Baker, Mr. Tuohy sent in samples of various substances, including FIREClean®. Mr. Baker's blog is attached as Exhibit J.

164. Mr. Baker claimed to have performed spectroscopy and NMR testing on the substances.

165. Mr. Baker's tests did not prove FIREClean® is canola oil.

166. According to Mr. Baker, one of his professors even advised him that his methods could not support his results, stating, Mr. Baker's result "isn't 100% conclusive...You do have other tests to provide additional evidence, though!" (Ex. J at 2).

167. Mr. Tuohy published Mr. Baker's disparaging conclusion and echoed the same sentiment despite the fact that FireClean had advised Mr. Baker, on or about October 29, 2015, and October 30, 2015, other tests had demonstrated that FIREClean® is not canola oil.

168. Mr. Tuohy had no reasonable grounds to believe Mr. Baker's test proved FIREClean® is canola oil.

169. Further, Mr. Tuohy disregarded the information showing FIREClean® is not canola oil, soybean oil, or any repackaged common cooking oil.

170. Mr. Tuohy posted Mr. Baker's purported NMR and spectra, and, as with the Spectroscopy Article, they show a similar basic pattern. (Ex. I at 3 & 4).

171. Unlike Mr. Tuohy, the average consumer could not tell Mr. Tuohy's statements about FIREClean® being canola oil were false.

172. Mr. Tuohy stated, in relevant part:

> FireClean is, as stated previously on this blog, a common vegetable oil, with no evidence of additives for corrosion resistance or other features. The science is solid in this regard…I have absolutely no issue with the concept of making money (I applaud those who make money hand over fist) or taking a product from one sphere and introducing it to another. I think a certain amount of "finder's fee" is absolutely reasonable…What I do take issue with are attempts to mislead consumers and distort the facts. There is a line between being an aggressive and effective salesman and not being entirely truthful about your product, the way it works, or what it contains. It is my belief that

> FireClean crossed that line long ago—and that many of their recent statements are simply egregious.

(Ex. I at 6).

173. Both in the post itself and in the comments, Mr. Tuohy made the following actionable statements:

a. "Lies, Errors and Omissions; A Closer Look at FireClean and Canola Oil" (**Statement 9**).

b. "According to every PhD who looked at the NMR results, FireClean and Canola oil appear to be 'effectively' or 'nearly' identical." (**Statement 10**).

c. "However, it would be difficult to argue that vegetable oil possesses 'extreme heat resistance' when it is known to degrade in the presence of heat and oxygen...If you are comfortable with this on your firearms' internal components, then this would be a good product to use, otherwise a more thermally stable product might be in order." (**Statement 11**).

d. "FireClean is, as stated previously on this blog, a common vegetable oil, with no evidence of additives for corrosion resistance or other features. The science is solid in this regard." (**Statement 12**).

e. "I have absolutely no issue with the concept of making money (I applaud those who make money hand over fist) or taking a product from one sphere and introducing it to another. I think a certain amount of 'finder's fee' is absolutely reasonable…" (**Statement 13**).

f. "That said, I don't think I could look someone in the eye and tell them that a bottle of vegetable oil was the most advanced gun lube on the planet, but those who can? Well, they're good salesman (sic), I guess." (**Statement 14**).

g. "What I do take issue with are attempts to mislead consumers and distort the facts. There is a line between being an aggressive and effective salesman and not being entirely truthful about your product, the way it works, or what

it contains. It is my belief that FireClean crossed that line long ago-and that many of their recent statements are simply egregious." (**Statement 15**).

h. "A few weeks ago, FireClean said that putting canola oil on your firearm could have catastrophic results. Some people believed that, probably because they are stupid. I don't like it when people in political arguments call the other side stupid and I don't throw around the word stupid lightly. However, if you think that putting canola oil - oil with a long history of use as an industrial lubricant for metal-to-metal contact -on your rifle is dangerous, but that putting FireClean on your rifle is safe, then you're stupid. There is no other way to define your level of intelligence and critical thinking." (**Statement 16**).

i. "More power to [FireClean] for having been able to sell something at a lOOx markup for three years, but they had to know the gravy train would come off the rails at some point. I admire their gusto for having done it and part of me wonders if I could look people in the eye and tell them they needed to spend $7.50 an ounce on some sort of cooking oil for their gun. I don't think I could." (**Statement 17**).

j. "But knowing that FireClean has been willing to manipulate testing to make themselves look good, why would you trust anything they say?" (**Statement 18**).

174. **Statements 9-18** falsely convey that FIREClean® is a repackaged common household product such as grocery store cooking oil or a simple, single vegetable oil.

175. **Statements 9-18** falsely convey that use of FIREClean® will lead to corrosion of a firearm.

176. The statements above falsely convey that FireClean has simply "taken a product from one sphere and introduced it to another."

177. The statements above falsely convey that FireClean has deceived or defrauded its customers.

178. The Closer Look Article (with the title, "Lies, Errors, and Omissions") falsely implies that FireClean has disseminated false information about its product.

179. Readers of Mr. Tuohy's publication have left at least 68 comments on the Closer Look Article. The comments are attached in Exhibit I.

180. The comments include statements such as:

a. "I have yet to use FireClean, and based on how they've handled things since this whole thing started, I probably never will." (Ex. I at 7).

b. "So I think the definitive test would be if someone whipped up a batch of fries cooked in FireClean and did a taste test." *Id.* at 8.

c. "This certainly is a slam dunk on the whole issue. So much science. And then more science, twice with Doctors. The world needs more of this." *Id.* at 9.

d. "Andrew [Mr. Tuohy], this is exactly the sort of thing I've come to expect from your blog and one of the reasons I've continued to read. Thanks for being a beacon of truth and accuracy." *Id.* at 10.

e. "I guess I got taken. I've used FireClean and it worked, but now with all this evidence and especially the video with LV, I no longer have any faith in this company." *Id.* at 11.

f. "Now that you have put this one in its grave how about some write ups on AKs." *Id.* at 11.

181. These comments illustrate the damage of the Closer Look Article to the Plaintiffs' reputations.

January 18, 2016
Mr. Tuohy Attacks FireClean on Facebook

182. Early in 2016, Mr. Tuohy continued his smear campaign against the Plaintiffs.

183. On January 18, 2016, he posted to Facebook an article he had written for another website, www.luckygunner.com, in 2013, with the following introduction (also attached as Exhibit K):

> "It has been just over three years since the LG brass/steel 40,000 round test was published. If you have not looked at it in a while, I would encourage you to do so again. There are lessons in there for everyone (including me). If we look at this photo from the article which I have selected, you can see one of the bolt carrier groups at the halfway point. This would be five thousand rounds with a brief scrub at 2500 rounds. It is filthy and has lots of carbon caked on. The contact points on the bolt are scraped clean by force of mechanical action. The oil used was Fireclean. Keep this photo in mind the next time you see an image of a dirty AR BCG with "10,000 rounds and no cleaning" that looks much wetter and cleaner than this one. People lie for the strangest reasons but one of the more common reasons is to separate you from your money. Question people when they make statements you find hard to believe. Don't be a fool. Be an educated consumer."

(Ex. K).

184. His post contains at least one actionable statement, "People lie for the strangest reasons but one of the more common reasons is to separate you from your money. Question people when they make statements you find hard to believe. Don't be a fool. Be an educated consumer." (**Statement 20**).

185. The January 18, 2016, post was "liked" by at least 190 people, and "shared" by at least 160.

186. Numerous people "commented" on the post, including one individual who posted a picture of Crisco on a grocery store shelf, with the comment, "Speaking of FireClean, is this a good deal?" To which Mr. Tuohy replied, "Canola oil. Go for the green cap." The comments are attached as Exhibit L.

187. Mr. Tuohy's statement, "Canola oil," as described above, is actionable and referred to as **Statement 21.**

188. The January 18, 2016, post falsely connotes that FireClean has made misrepresentations about its product to defraud its customers.

189. It also falsely connotes that FIREClean® is canola oil.

Independent Laboratory Testing Results of FIREClean®

190. FireClean commissioned testing by Petro-Lubricant Testing Laboratories (Petro Lube) in Lafayette, New Jersey, to analyze and compare FIREClean® to Crisco Vegetable Oil and Crisco Canola Oil.

191. Petro Lube performed eight separate analyses, including Fourier Transform Infrared (FT-IR) spectroscopy, on each of the three oils, with these results (Petro Lube documentation also attached as Exhibit M):

	Iodine Value	Kinematic Viscosity at 40° C	Kinematic Viscosity at 100° C	Pour Point	Flash Point	Fire Point	Specific Gravity
Crisco Canola Oil	113 cg/g	36.07 cSt	8.069 cSt	-21 ° C	324 ° C	356 ° C	.9200
Crisco Vegetable Oil	132 cg/g	30.92 cSt	7.521 cSt	-6 ° C	324 ° C	356 ° C	.9230
FIREClean®	93.8 cg/g	31.75 cSt	8.364 cSt	-15 ° C	325 ° C	357 ° C	.9163

192. An overlay of the FT-IR spectra of all three substances is also part of Exhibit M.

193. One of the conclusions is that FIREClean®'s iodine value is 93.8, a value significantly lower than both Crisco Vegetable and Canola oils.

194. That the three substances have three different iodine levels is evidence the samples are not "identical" or "nearly-identical" as Mr. Tuohy claimed.

195. While spectrographic analysis can reveal some differences among substances, these test results demonstrate that FT-IR spectra data alone are not sufficient to

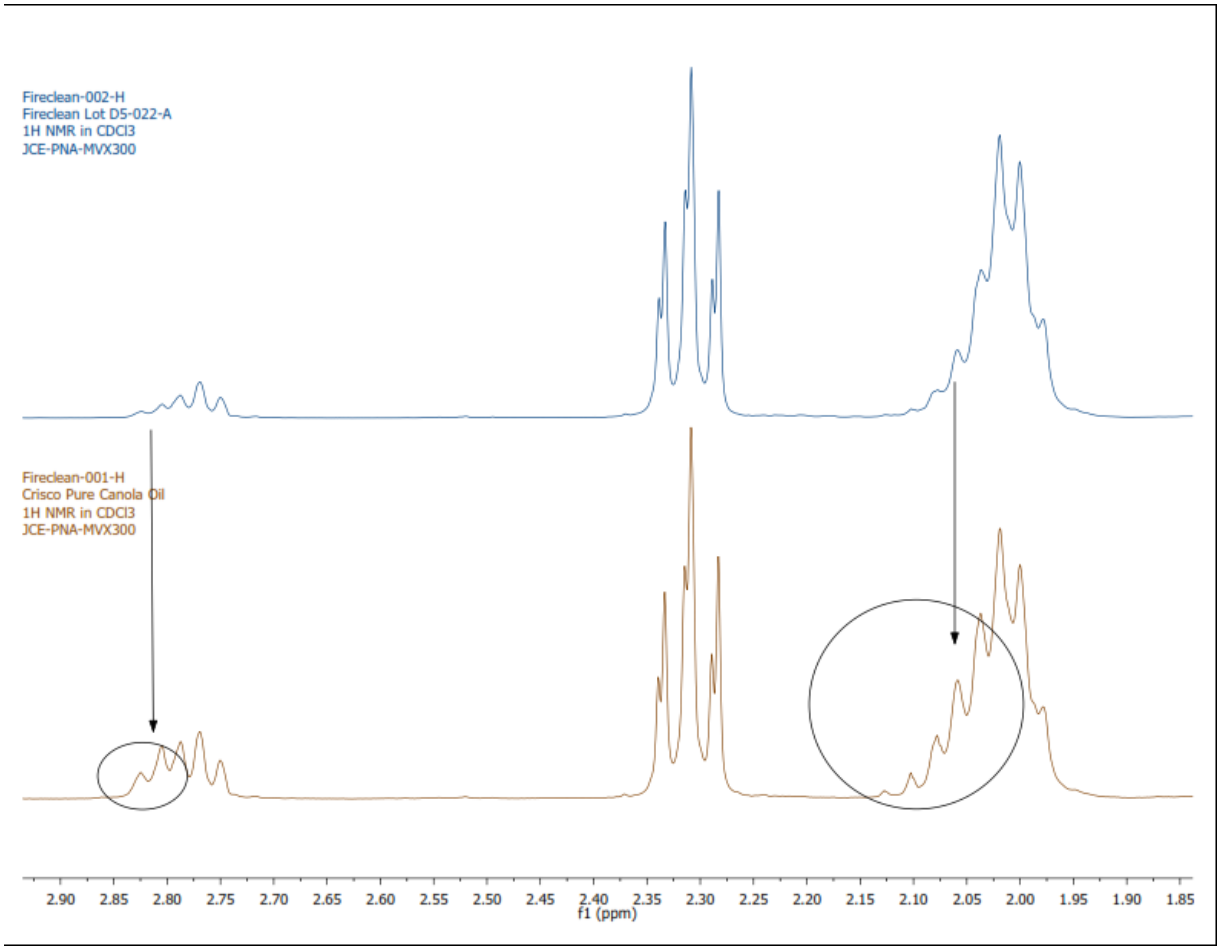
draw the conclusion, in this situation, to a reasonable degree of scientific certainty, that two or more of the oil samples are identical.

196. But additional independent scientific testing on FIREClean® samples further highlighted the differences between FIREClean® and Crisco.

197. Process NMR Associates, LLC, an independent technology and consulting company in the field of nuclear magnetic resonance spectroscopy (NMR), conducted additional tests of FIREClean®.

198. NMR spectroscopy is an analytical chemistry technique that can be used to determine the molecular structure of organic compounds.

199. Results of NMR tests Process NMR Associates conducted on samples of FIREClean® and samples of Crisco Canola Oil, excerpts of which appear below and are attached as Exhibit N, show marked differences between the two samples.



200. A third set of independent laboratory test results also show marked distinctions between FIREClean® and Crisco.

201. Medallion Labs analyzed the fatty acid profile of samples of FIREClean® and samples of Crisco Soybean Oil using gas chromatography techniques.

202. The results, attached as Exhibit O show clear differences between the fatty acid profiles of each sample.

203. Each of the three sets of independent laboratory tests show that FIREClean® is not Crisco Canola Oil or Crisco Vegetable Oil.

204. The results are conclusive evidence that FIREClean® is not Crisco.

FIRST CAUSE OF ACTION
Defamation (21 Counts)

205. The Plaintiffs re-allege all preceding paragraphs.

206. All Plaintiffs bring this cause of action against the Defendant.

207. Mr. Tuohy authored and published at least three separate articles to Vuurwapen Blog about FireClean on September 12, 2015; September 14, 2015; and October 23, 2015. Within the respective articles, Mr. Tuohy published **Statements 1-18**.

208. In posting **Statements 1-18** to his online blog, Mr. Tuohy published them to a worldwide audience via the Internet.

209. Mr. Tuohy also published false statements about FireClean on his Facebook page on September 14, 2015, and January 18, 2016.

210. The September 14, 2015, post contains the following statement, labeled as **Statement 19**: "Deliberately misleading the consumer in an effort to sell a product. Is there a word for that?" (**Statement 19**).

211. In publishing it to a public Facebook page, Mr. Tuohy published **Statement 19** to a national and global Internet audience.

212. The January 18, 2016, Facebook post contained **Statements 20-21**.

213. Mr. Tuohy published **Statements 20** and **21** to a national and global Internet audience via his publicly available Facebook page.

214. **Statements 1-21** each disparage the Plaintiffs by imputing they lied to and deceived the public about the composition and usability of FIREClean®.

215. **Statements 1-21** either directly state or imply FIREClean® 1) is common cooking oil, 2) is unsafe for military use or its listed uses, and 3) FireClean and its founders have lied or otherwise deceived consumers about the product and functionality.

216. **Statements 1, 2, 4, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17,** and **21** falsely allege or imply that FIREClean® is common cooking oil, soybean oil, or Crisco.

217. **Statements 3** and **16** falsely allege or imply that it is not safe for both military use and any of its listed purposes.

218. **Statement 11** falsely alleges or implies that FIREClean® is not effective in extreme weather conditions.

219. **Statements 3** and **12** imply FIREClean® will cause corrosion and lead to malfunctions or at the very least possesses no anti-corrosive properties.

220. The Plaintiffs did not lie to or mislead consumers about FIREClean® or its applications.

221. **Statements 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,** and **20** imply the Plaintiffs lied to or otherwise deceived consumers.

222. **Statements 6, 7,** and **8** falsely insinuate or imply the Plaintiffs are untrustworthy, unethical, and unprofessional by alleging they altered a test or its results to make it appear as though their product is more effective than it is.

223. **Statements 13, 14,** and **15** falsely insinuate or imply FIREClean® was a pre-existing product brought from one area of commerce to another and that its consumers have been misled about its worth and price.

224. **Statement 16** falsely implies FIREClean® is dangerous and may harm consumers who use it as directed.

225. **Statements 1-21** are not expressions of opinion because they are stated as facts capable of being proven false by objective criteria.

226. Mr. Tuohy used the statements to imply his version of the facts is true, namely that FIREClean® is common cooking oil or Crisco, unsafe for military or its advertised uses, and that FireClean lied about its composition and functionality.

227. He owed no one a duty to make or publish **Statements 1-21**.

228. Mr. Tuohy published **Statements 1-21** for commercial purposes, to market or promote himself and his blog or the products or services he sells.

229. In January 2016, Mr. Fennell, a FireClean competitor, claimed responsibility for turning Mr. Tuohy's attention to spectroscopy analysis, and stated on his Facebook page that:

> And I'm sure everyone remembers the firestorm [Mr. Tuohy] set off when he did what I told him to do which started this whole spectral process that he's enamored with...compared FireClean to Crisco Oil...same deal…he saw my video where I said FireClean was pretty much a Crisco oil, long before Andrew did his spectra comparison and validated me then Didn't mean to get off track here, but just sharing the history behind these....it all started right here.

230. At or before the time Mr. Tuohy published **Statements 1-21**, Mr. Tuohy had serious doubts about the veracity of his statements and a high degree of awareness that his statements were false or probably false.

231. Before publishing **Statements 1-3**, Mr. Tuohy had a clear, unequivocal denial from Edward Sugg stating that FIREClean® was not Crisco.

232. Mr. Tuohy knew from personal experience FIREClean® performed without complaint and without of evidence of corrosion even under extreme firing conditions.

233. As recently as September 1, 2015—just days before publishing the Spectroscopy Article, Mr. Tuohy stated on his Facebook page that he had used FIREClean® over "several years" and "tens of thousands of rounds," and had "zero complaints" about its performance.

234. Mr. Tuohy's September 1, 2015, Facebook post included a video demonstration of the firing of a dirty rifle that was lubricated with FIREClean® and then left uncleaned in storage for two years after firing corrosive surplus ammunition. The rifle was discharged and showed no evidence of impaired operation. There was also no mention that FIREClean® had caused corrosion to occur in any weapons.

235. The video may be found at the following URL: https://www.youtube.com/watch?v=ixruuRYyKaE&feature=youtu.be.

236. In the video, Mr. Tuohy stated, "I am shooting it now to address concerns over whether or not FIREClean® causes the action to gum up over time if you let it sit for more than six to twelve months." After shooting for approximately twenty seconds, Mr. Tuohy examines the gun and states: "Magazine is clear, weapon is clear, all rounds fired without any malfunction."

237. Mr. Tuohy purposefully published false and misleading allegations for commercial purposes, to drive controversy, attract greater attention to himself, and sell more of his products or services.

238. Mr. Tuohy wrote: "....I'm not terribly interested in determining the exact composition of the oil; the IR data is enough to satisfy the question at hand."

239. The same commenter replied: "Not really. We know nothing about the length of the carbon chains or their structure. All we know is that the functional groups are similar to Crisco, which any oil-like, plant based product would have."

240. Proving his reckless disregard for the truth, Mr. Tuohy responded: "Well, you are most welcome to foot the bill for your own testing."

241. Mr. Tuohy's actions demonstrate malice and a blatant disregard for the Plaintiffs' legal rights and the truth.

242. Mr. Tuohy's false statements and conduct severely and permanently harmed the Plaintiffs, and he knew his statements would befoe he pubished them.

243. Readers of Mr. Tuohy's first article, which contained **Statements 1-3**, have left at least 140 comments on the article (Ex. C).

244. They include statements such as, "Guess I have to oil al [sic] my shit with a proper gun oil now. Snake oil won't do." *Id.* at 10.

245. The comments demonstrate

a. readers believed Mr. Tuohy's false assertions about the Plaintiffs and

b. the Plaintiffs' reputations were materially damaged because of Mr. Tuohy's statements.

246. Readers of Mr. Tuohy's Smoke/Liar Article, the article that contained **Statements 4-8**, have left at least 84 comments on the article (Ex. D) indicating their belief in and reliance on Mr. Tuohy's statements.

247. The comments include the following statements.

a. "The problem is they used different ammo for the FireClean gun, making the test completely irrelevant and the makers of the video liars." (Ex. D at 7).

b. "Andrew's point wasn't about the quantity of smoke, it was that the test appears to be rigged." *Id.*

c. "Man, I would love to be able to reference your info in a video to shut up some of the people still supporting this product." *Id.* at 23.

248. These statements show readers believed the assertions made in the Smoke/Liar to be fact, and that FireClean's reputation was damaged as a result of Mr. Tuohy's statements.

249. Despite conclusive tests demonstrating FIREClean® is not repackaged cooking oil, Mr. Tuohy's attack on the Plaintiffs also has permeated the gun community's social media.

250. A simple Google search for "FireClean" reveals numerous websites, blog posts, and other online commentary that has seized upon and discusses the FireClean/Crisco comparison, and mocks FireClean.

251. The same is true for a Google search of "FireClean Crisco" or "FireClean Canola Oil."

252. Only 1 one-star review had been posted via Amazon in the three-years before Mr. Tuohy published **Statement 1**.

253. After Mr. Tuohy published **Statement 1**, 38 one-star reviews were posted via Amazon within one year.

254. On October 22, 2016, for example, an Amazon user "asmith007" posted a review titled, "Do Not Buy! Vegetable Oil That Gunks Your Weapon" and stated, "would give this product 0 stars if I could. Used on 2 pistols and 5 rifles that went into the safe for 3 months. Brought them out for quarterly inspection and cleaning. To my horror everywhere FIREclean was applied was STICKY as if you had been frying chicken wings then left the oil to foul. Sticky, stinky, and very difficult to clean. It took me hours to completely breakdown my weapons, remove this vile 'lube', then do it again just to make sure this crap was gone. Open bottle smelled like fouled vegetable oil. If you own, throw away

immediately. Bottom line. Spend $35 on 2 bottles of this Canola oil and then cook ya a gourmet meal. Do Not Buy!"

255. Mr. Tuohy's statements severely and permanently damaged the Plaintiffs' reputations, their goodwill, and their business.

256. Before Mr. Tuohy published the statements giving rise to this action, none of the Plaintiffs had achieved general fame or notoriety in the United States and none had a pervasive involvement in the affairs of the United States.

257. Before Mr. Tuohy published the statements giving rise to this action, the Plaintiffs did nothing to thrust themselves into any public controversy concerning whether FIREClean® is what the Plaintiffs claimed and claim it is.

258. The Plaintiffs did nothing to prompt or encourage Mr. Tuohy to create a controversy among people interested in whether FIREClean® is what the Plaintiffs claimed and claim it is.

259. Mr. Tuohy's actions drew the Plaintiffs into a controversy Mr. Tuohy created.

260. The Plaintiffs only got involved with the controversy Mr. Tuohy created to defend themselves, defend their reputations, and attempt to mitigate the harm the controversy Mr. Tuohy's actions caused.

261. FireClean lost approximately $150,000.00 in just a few months following Mr. Tuohy's first post.

262. The company's future losses will be in the millions.

263. **Statements 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,** and **20** disparage the Plaintiffs' reputations and business by accusing them of misleading consumers in ways that could cause financial harm and bodily injury.

264. Because **Statements 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,** and **20** are on their face inherently defamatory, the substantial injury to the Plaintiffs is apparent.

265. The Plaintiffs are entitled to presumed damages for counts of defamation based on **Statements 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,** and **20**.

SECOND CAUSE OF ACTION
Injurious Falsehood (Trade Libel) (21 counts)

266. The Plaintiffs re-allege all preceding paragraphs.

267. All Plaintiffs bring this cause of action against the Defendant.

268. In publishing **Statements 1-21** about the Plaintiffs and their product, Mr. Tuohy intentionally made his disparaging statements to a vast, third-party audience.

269. His statements, **Statements 1-21**, disparaged the Plaintiffs.

270. The statements disparaged the Plaintiffs by falsely alleging they are unethical and untrustworthy.

271. The statements disparaged FIREClean® by falsely alleging FIREClean is made of a single common cooking oil; it is a potentially harmful product at worst, no better than cooking oil at best; and that it is not worth its sale price.

272. **Statements 1, 2, 4, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17,** and **21** falsely allege or imply that FIREClean® is a common cooking oil.

273. **Statements 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,** and **20** falsely allege or imply the Plaintiffs lied or otherwise deceived consumers.

274. **Statements 6, 7,** and **8** falsely imply the Plaintiffs are untrustworthy, unethical, and unprofessional by falsely alleging they improperly altered a test or its results to make it appear as though their product is more effective than it is.

275. **Statements 13, 14,** and **15** falsely insinuate or imply FIREClean® was a pre-existing product brought from one area of commerce to another and that its consumers have been misled about its worth and price.

276. **Statements 3** and **16** falsely imply or allege that FIREClean® is unfit for its advertised purposes and may be dangerous to or may harm consumers who use it as directed.

277. Mr. Tuohy, when he published each statement, knew or recklessly disregarded whether his disparaging statements were false and misleading.

278. As alleged in this Complaint, Mr. Tuohy had received a categorical denial that FIREClean® is a common cooking oil before he published **Statement 1**.

279. He published **Statements 1-21** after receiving the denial from the people most likely to know FIREClean®'s exact contents.

280. Mr. Tuohy was motivated to publish **Statements 1-21** out of his self-interest and his desire to dissuade consumers from doing business with the Plaintiffs.

281. In **Statement 3**, Mr. Tuohy attempted to dissuade any military professionals or individuals with military weapons from using FIREClean® by implying it would not hold up under standard or extreme conditions.

282. In **Statement 15**, Mr. Tuohy blatantly accused the Plaintiffs of attempting to "mislead consumers and distort the facts" by not "being entirely truthful about your product, the way it works, or what it contains." This statement and similar sentiments expressed in **Statements 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 19,** and **20** paint the Plaintiffs as dishonest and disreputable.

283. In **Statement 16**, Mr. Tuohy, to discourage people from buying FIREClean®, told each of his readers "you're stupid" to think FIREClean® is safe.

284. **Statements 1-21** caused the Plaintiffs pecuniary losses.

285. As previously alleged in this Complaint, numerous consumers saw and believed the statements Mr. Tuohy published.

286. Mr. Tuohy's readers understood his publications as statements casting doubt on the Plaintiffs' trustworthiness and the quality of FIREClean®.

287. Mr. Tuohy published **Statements 1-21** with malice or evil motives towards the Plaintiffs.

288. **Statements 1-21** were intended to injure the Plaintiffs, and did injure them.

289. The Plaintiffs lost no less than $150,000.00 in the first few months after Mr. Tuohy published **Statement 1**, and future losses will be in the millions.

THIRD CAUSE OF ACTION
False Advertising in Violation of 15 U.S.C. § 1125(a)(1)(B) (Lanham Act)

290. The Plaintiffs re-allege all preceding paragraphs.

291. Plaintiff FireClean brings this cause of action against the Defendant.

292. Mr. Tuohy, through his clothing business's dealings, and FireClean, through its business dealings, struggle against one another to gain commercial advantages in interstate commerce.

293. FireClean markets FIREClean® to gun owners and people who use gun oil.

294. FireClean spent money marketing its brand and its FIREClean® product so that each would be portrayed in a true and positive light in the marketplace.

295. Mr. Tuohy, through Vuurwapen Blog, markets his clothing business's products to gun owners and people who use gun oil.

296. Mr. Tuohy published false and derogatory statements about FireClean and FIREClean® via Vuurwapen Blog so that each would be portrayed in a false and negative light in the marketplace.

297. Mr. Tuohy marketed and sold his clothing business's offerings to people who lived outside Arizona.

298. Mr. Tuohy published false and derogatory statements about FireClean and FIREClean® via Vuurwapen Blog to help him market his clothing business.

299. Mr. Tuohy also published false statements that misrepresented his ability to accurately analyze or determine FIREClean®'s contents.

300. Mr. Tuohy published false and derogatory stories about FireClean and FIRECLean® to help him market his clothing business to people inside and outside Arizona.

301. Mr. Tuohy, by publishing false and derogatory stories about FireClean and FIRECLean® to help him market his clothing business,

a. decreased the value of the goodwill FireClean had accumulated before September 12, 2015; and

b. decreased the return on investment FireClean made or will make on money it spent marketing its brand and its FIRECLean® product.

302. The statements Mr. Tuohy authored and published about FireClean and FIRECLean® deceived or had the tendency to deceive his audience. Mr. Tuohy's deception caused FireClean to lose no less than $150,000.00, and future losses that will be in the millions.

FOURTH CAUSE OF ACTION
Intentional Interference with Business Relations

303. The Plaintiffs re-allege all preceding paragraphs.

304. All Plaintiffs bring this cause of action against the Defendant.

305. Before September 2015, the Plaintiffs were actively engaged in sales of FIRECLean®.

306. They had prospective and actual contracts and business relationships with individual consumers, small retail operations, government agencies, and larger retailers such as Amazon.com.

307. Mr. Tuohy was aware of the contracts and business relationships.

308. Edward Sugg had informed Mr. Tuohy of the importance of Amazon.com to FireClean's business and sales.

309. Mr. Tuohy also knew of FireClean's business relationship with Larry Vickers of Vickers Tactical with whom FireClean's managers had made a demonstration video published on YouTube.

310. Mr. Tuohy intentionally interfered with FireClean's contractual and business relationships when he improperly published his false and disparaging statements, **Statements 1-21**.

311. He actively sought to dissuade current, former, and prospective customers from purchasing FIREClean®.

312. Comments to Mr. Tuohy's published articles indicate current, former, and prospective customers read Mr. Tuohy's disparagements and decided not to purchase FIREClean®.

313. Mr. Tuohy knew or recklessly disregarded whether **Statements 1-21** were false before he published them.

314. He made the statements to help one of FireClean's competitors, George Fennell, harm the Plaintiffs.

315. Numerous consumers and retailers read **Statements 1-21** and reasonably noted their cautions against FireClean and its product.

316. Before Mr. Tuohy published **Statement 1**, reviews of FIREClean® on places such as Amazon.com had been overwhelmingly positive.

317. Since the publication of **Statements 1-21**, FIREClean® has received nearly 40 single-star reviews, the lowest review status Amazon allows.

318. Mr. Tuohy broke his promises to comply with the PayPal User Agreement when he engaged in tortious conduct that gave rise to this civil action.

319. Mr. Tuohy engaged in improper conduct when he broke his promises to comply with the PayPal User Agreement.

320. Mr. Tuohy broke his promises to comply with the terms of use agreements, user agreements, acceptable use policies, community standards, or other similar standards of conduct for Facebook, Google+, Instagram, Twitter, and Tumblr users when he engaged in tortious conduct that gave rise to this civil action.

321. Mr. Tuohy engaged in improper conduct when he broke his promises to comply with the terms of use agreements, user agreements, acceptable use policies, community standards, or other similar standards of conduct for Facebook, Google+, Instagram, Twitter, and Tumblr users.

322. As previously described, Mr. Tuohy's actions caused the Plaintiffs economic and noneconomic damages.

FIFTH CAUSE OF ACTION
False Light Invasion of Privacy (21 counts)

323. The Plaintiffs re-allege all preceding paragraphs.

324. Plaintiffs David Sugg and Edward Sugg bring this cause of action against the Defendant.

325. Mr. Tuohy intentionally published or caused to be published **Statements 1-21**.

326. **Statements 1-21** placed David Sugg and Edward Sugg in a false light in the public by accusing them of lying, being unethical and deceptive, and misrepresenting FIREClean®.

327. Each of the **Statements 1-21**, when considered in its proper context, paints David Sugg and Edward Sugg in a false light.

328. **Statement 6** creates the false impression that David Sugg and Edward Sugg are not credible sources of information and are untrustworthy.

329. **Statement 8**, through its innuendo, implies David Sugg and Edward Sugg deliberately altered test results to make their product seem more effective.

330. **Statements 14, 15, 16, 17, 18, 19,** and **20** paint the false picture of David Sugg and Edward Sugg, as unethical salesmen who intentionally misled consumers.

331. Mr. Tuohy knew or recklessly disregarded whether his statements and the republications of his statements would increase the damage his false light statements would cause David Sugg and Edward Sugg.

332. Mr. Tuohy statements portrayed David Sugg and Edward Sugg in a false light in the minds of the audience to which Mr. Tuohy directed his publications.

333. The false statements and innuendo were published to members of the diverse, but fairly close-knit gun and weapons communities intending to cause David Sugg and Edward Sugg dignitary harm, dishonor, and inconvenience.

334. Mr. Tuohy intended for a wide audience to read and believe his statements.

335. Mr. Tuohy's readers read and believed his statements.

336. As a direct result of Mr. Tuohy's invasions of David Sugg's and Edward Sugg's privacy, David Sugg and Edward Sugg suffered loss of quality of life, damage to their personal and professional reputations, loss of goodwill, and loss of competitive business advantages.

SIXTH CAUSE OF ACTION
Aiding and Abetting George Fennell's Tortious Conduct

337. The Plaintiffs re-allege all preceding paragraphs.

338. All Plaintiffs bring this cause of action against the Defendant.

339. FireClean competitor George Fennell set out to harm the Plaintiffs and steal market share by spreading false rumors that FIREClean® is Crisco-brand cooking oil, implying the Plaintiffs had engaged in deceptive trade practices.

340. Mr. Fennell's improper conduct is the subject of a lawsuit in the United States District Court for the Eastern District of Virginia, Case Number 1:16-cv-00293.

341. There, FireClean alleged Mr. Fennell and his company violated the Lanham Act through a campaign of false advertisements and that Mr. Fennell has repeatedly defamed and published injurious falsehoods about FireClean.

342. Mr. Fennell and Mr. Tuohy agreed to help each other publish false and disparaging statements about the Plaintiffs.

343. Mr. Fennell encouraged Mr. Tuohy to write false statements about the Plaintiffs and their product to help spread the false rumors about FIREClean®.

344. Mr. Tuohy chose to help Mr. Fennell harm the Plaintiffs to create a controversy.

345. Mr. Tuohy hoped he would gain attention for himself, gain attention for his blog, and encourage more people to buy clothing from his clothing business.

346. Mr. Tuohy and Mr. Fennell intended to profit and profited from their joint conduct.

347. The Plaintiffs suffered financial and reputational losses as a direct result of Mr. Tuohy's and Mr. Fennell's intentional and joint efforts to harm the Plaintiffs by publishing disparaging falsehoods via the Internet.

WHEREFORE, Plaintiffs pray for the following relief:

A. a preliminary and permanent injunction that will enjoin Mr. Tuohy from publishing any publications about the Plaintiffs that are similar to or the same as any publication this Court finds to be unlawful;

B. a permanent injunction that will compel Mr. Tuohy to delete permanently every publication this Court finds invaded or invades David Sugg's and Edward Sugg's privacy to the extent Mr. Tuohy can delete the privacy-invading publication from the Internet without obtaining permission from any third party;

C. a permanent injunction that will authorize Internet search engine companies to deindex from their search results any webpages containing any statements about the Plaintiffs this Court finds to be unlawful;

D. a judgment declaring each statement of the twenty-one named in this complaint this Court finds to be unlawful is unprotected speech;

E. a judgment declaring that deindexing from search engine results every webpage this Court finds unlawful will not infringe Mr. Tuohy's First Amendment rights and will serve the interests of justice;

F. a judgment ordering Mr. Tuohy to pay the Plaintiffs

a. actual, compensatory, special, general, consequential, incidental, exemplary, punitive, and treble damages under the Lanham Act in an amount to be determined at trial; and

b. their costs, attorney fees, and all other statutory damages provided under the Lanham Act;

G. a judgment ordering Mr. Tuohy to pay the Plaintiffs

a. special and general damages to be shown by the evidence presented at trial in this case or during a damages hearing if this Court enters a pre-trial judgment;

b. punitive damages in an amount sufficient to punish Mr. Tuohy and deter others;

c. their reasonable costs incurred during this civil action;

d. their reasonable attorney fees incurred during this civil action;

e. prejudgment interest at the highest rate allowed by law;

f. postjudgment interest at the highest rate allowed by law; and

H. a judgment ordering any other relief this Court may deem appropriate.

DATED: February 8, 2017.

HOPKINSWAY PLLC

/s/ Edward C. Hopkins, Jr.
/s/ Alexandra Tracy-Ramirez
Edward C. Hopkins Jr.
Alexandra Tracy-Ramirez
Attorneys for Plaintiff

CERTIFICATE OF SERVICE

ORIGINAL of the preceding e-filed via CM/ECF
on February 8, 2017

COPY of the preceding mailed to:

HONORABLE JAMES A. SOTO
United States District Court
Evo A. DeConcini U.S. Courthouse
405 West Congress Street, Suite 6160
Tucson, AZ 85701

Alexandra Tracy-Ramirez

EXHIBIT
A

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(71) Applicant: ADVEX INTERNATIONAL INC. [US/US]; P.O. Box 192, Ashburn, VA 20146 (US).

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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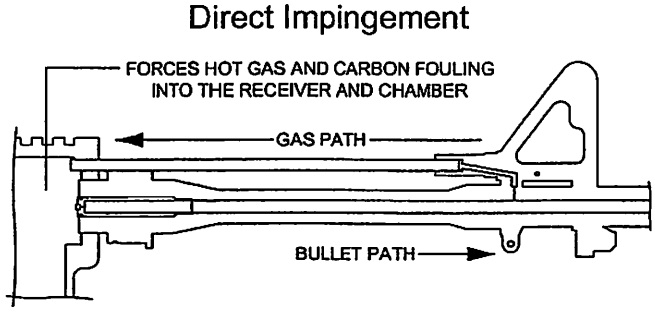

Fig.1

(57) Abstract: An oil composition including at least three vegetable oils, each vegetable oil being distinct from the other and each having a smoke point above 200F,wherein the combined volume of the at least three vegetable oils is at least about 25% of the total volume of the oil composition. A method of removing or preventing carbon fouling on a mechanical component of a device, comprising depositing a vegetable oil composition on the mechanical component of the device, wherein the vegetable oil composition comprises at least one vegetable oil having a smoke point above 200F, wherein the at least one vegetable oil is present in an amount of at least about 25% by volume of the total volume of the oil composition and wherein operation of the device deposits carbon on the mechanical component.

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EXHIBIT A
tabbies

VEGETABLE OILS, VEGETABLE OIL BLENDS, AND METHODS OF USE THEREOF

[0001] This application claims priority to U.S. Provisional Application No. 61/612,685, titled "VEGETABLE OILS, VEGETABLE OIL BLENDS, AND METHODS OF USE THEREOF," filed on March 19, 2012, the entirety of which is hereby incorporated by reference herein.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] Aspects of the present invention relate to vegetable oils, vegetable oil blends, and various uses thereof. More particularly, aspects of the present invention relate to vegetable oils and their uses with mechanical components, for example, firearms.

Background

[0003] It is known in the related art to use cleaners or, less preferably, cleaner/lubricant/protectant (CLP) oils to remove carbon fouling from mechanical parts. In particular, in the area of firearm operation, such as AR-15 or M-16 firearms, when a round is fired, the combustion process deposits carbon within the firearm, as shown in Figure 1. The depositing of carbon leading to fouling is a well known problem in the art, an example of which is shown in the photostat Figure 2. Carbon fouling requires a time-consuming cleaning process that take up to three days for sufficient removal of carbon to allow proper operation of the firearm. When the carbon fouling becomes too great, the firearm will malfunction or cease operation

entirely, which is a critical problem in battle or defensive situations, for example, and a significant nuisance to civilian shooters.

[0004] Currently, various lubricant compositions are known for use on firearms to remove carbon fouling from the firearm. However, known compositions do not satisfactorily remove carbon, especially at temperatures above 160°F. Ambient temperatures in current combat zones can often reach 120°F. The sun can heat black metal objects another 40°F or more before the weapon is even fired. Tests have shown that critical moving parts of the weapon can reach 70°F above ambient temperature in even modest firing cadences, which are further magnified in battle conditions. Furthermore, some known compositions are synthetic and harmful when exposed to the human body. For example, several known lubricant compositions include: Mobil 1® 10W-30 sold by Mobil, SLIP2000™ Carbon Killer sold by SPS Marketing, FrogLube® sold by AUDEMOUS INC, Gunzilla® sold by TopDuck Products, LLC, Hoppe's Elite® Gun Cleaner sold by Bushnell Outdoor Products, and Break Free® sold by SAFARILAND. Each of these commercial compositions has significant flaws. For example, Mobil 1® 10W-30 synthetic is hydrocarbon based, creates a sludge when contacted with carbon fouling, and is not polar. SLIP2000™ Carbon Killer does not lubricate, strips metal of oils, and damages anodized aluminum and blued steel. Stripping oils from metals in a firearm can cause the firearm to seize. FrogLube® is only functional in a very narrow temperature range. It solidifies at 48°F, and smokes at 150°F. After smoking, it leaves behind a sticky gummy residue. Gunzilla® is harmful or fatal if swallowed, and is a very poor performing cleaner. Hoppe's Elite® does not act as a lubricant and removes oils and contains hazardous diethylene glycol monobutyl ether. Break Free® contains petroleum distillates. Petroleum distillate products contain harmful,

carcinogenic components and are treated as hazardous materials both in shipment and disposal.

[0005] U.S. Patent No. 6,534,454 is directed to a biodegradable vegetable oil composition comprising a triglyceride oil, an antioxidant, and other oils. The other oils may be synthetic ester base oil, polyalphaolefin, or unrefined, refined, or rerefined oils. The triglyceride oils are vegetable oils.

[0006] U.S. Patent No. 6,383,992 is directed to biodegradable vegetable oil compositions having at least one triglyceride oil, a pour point depressant, an antioxidant, and other oils. The triglyceride oils are vegetable oils.

[0007] U.S. Patent No. 6,919,302 is directed to the use of an oil composition for temporary treatment of metal surfaces.

[0008] There remains a need in the art for natural, safe, oil compositions and methods of using the compositions for avoiding and removing carbon fouling in mechanical components, and providing highly heat-resistant lubrication and a fouling resistant environment.

SUMMARY OF THE INVENTION

[0009] Aspects of the present invention provide, among other things, vegetable oil compositions and methods of use thereof to avoid and reduce carbon fouling on mechanical components, lubricate mechanical components, and provide long-term carbon fouling protection.

[0010] In one example variation, a pure vegetable oil or blend of vegetable oils may be applied to a mechanical component of a device that is used in an environment where carbon fouling should be avoided or removed to improve performance, such as on various parts of firearms, bicycles, chain saws, and

engines. The oil compositions may also be used as a lubricant, such as in fishing equipment.

[0011] In another variation, a blend of vegetable oils includes at least three two distinct vegetable oils, each having a smoke point above 200°F.

[0012] In another variation the method of removing or preventing carbon or other contaminant fouling on a mechanical component of a device, comprises depositing a vegetable oil composition on the mechanical component of the device, wherein the vegetable oil composition comprises at least one vegetable oil having a smoke point above 200°F, wherein the at least one vegetable oil is present in an amount of at least about 25% by volume of the total volume of the oil composition ; and wherein operation of the device deposits carbon on the mechanical component.

[0013] In another variation, the vegetable oils may be applied to a mechanical component using various methods, such as depositing, heat treating, pressure treating, and immersing, or applying onto operating surfaces of the device and its subsequent operation.

[0014] In another variation, the oil composition, comprises at least three vegetable oils, each vegetable oil being distinct from the other and each having a smoke point above 200°F,wherein the combined volume of the at least three vegetable oils is at least about 25% of the total volume of the oil composition.

[0015] Additional advantages and novel features of various aspects of the present invention will be set forth in part in the description that follows, and in part will become more apparent to those skilled in the art upon examination of the following or upon learning by practice thereof.

BRIEF DESCRIPTION OF THE FIGURES

[0016] In the drawings:

[0017] FIG. 1 shows a prior art firearm schematic showing where carbon deposits occur;

[0018] FIG. 2 shows a prior art firearm fouled with carbon;

[0019] FIG. 3 shows pictures of a fouled bowl before testing; and

[0020] FIGS. 4-12 show pictures of experimental results from foul removal testing, including in conjunction with use of products and methods in accordance with aspects of the present invention.

DETAILED DESCRIPTION

[0021] Aspects of the present invention include a method of removing or preventing carbon fouling on a mechanical component of a device by depositing a vegetable oil composition on the mechanical component. Aspects of the present invention also include components and makeup of various vegetable oil compositions. As used herein, the term "about" means ± 10%, more preferably ± 5%, still more preferably ± 1% of the given value.

[0022] Vegetable oils, as used herein, means any single natural, non-petroleum, non-synthetic oil derived from a plant, vegetable or fruit or shrub or flower or tree nut, or any combination of natural, non-petroleum, non-synthetic oils derived from a plant, vegetable or fruit or shrub or tree nut. In an aspect of the present invention it has been surprisingly found that pure vegetable oils and various vegetable oil blends are superior to commercially available products in removing or avoiding carbon fouling on mechanical components. In addition, the vegetable oils act as a lubricant. Example methods include the application to a mechanical

component that is part of device where operation of the device results in carbon being deposited on the mechanical component, including devices that are used in an environment where carbon fouling should be avoided or removed to improve performance. For example, the vegetable oils and blends may be applied to portions of firearms, bicycles (for example mountain bikes), and engines. The vegetable oils may also be used as a lubricant, for example in fishing equipment.

[0023] In an aspect of the present invention, the vegetable oils may be used to form a carbon resistant film by applying the oils to mechanical components, and allowing the oil to oxidize, such as by exposing the oil to heat, air, or UV light, which forms a hard dry film. This resulting dry film or wet oil layer is resistant to carbon and other fouling. In addition, in some variations, the film or wet oil layer may enhance lubrication and/or other properties. The mechanical component is preferably a component of a device that, when the device is operated, carbon is deposited on the mechanical component. This method is discussed in more detail below. Once applied to a mechanical component, the oil composition has proven to be highly resistant to water and resistant to soap sand other cleaning agents, as compared to known petroleum based or synthetic oils tend to wash off when exposed to water spray or rain.

[0024] The oil compositions may be applied to carbon steel parts, including bare steel, phosphate coated steel, chrome coated steel, ceramic coated steel, and the like, stainless steel parts, titanium parts, aluminum parts, including anodized or other coated aluminum, and nickel alloys. When used in a firearm, the parts of the firearm that may be coated include the parts that are subject to fouling as the result of gunpowder combustion, or having reciprocating or frictional contact surfaces. For example, such parts may include fire control group parts, including

triggers, hammers, disconnectors, and trigger pins, firing pins, chambers, bolts, bolt faces, bolt carriers, breach faces, camming pins, pistons, operating/piston rods, gas tubes, barrels, slides and retention rails on pistols, upper and lower receivers, charging handles, feed trays, and magazine followers. When used on a bicycle, the oil compositions may be applied to bicycle chains and gears, such as derailleur gears, for example, and on control mechanisms such as shift and brake cables. . When used in an engine, the oil compositions may be applied to any of the moving parts of the engine including valves, pistons, and ball bearings, for example. When used in fishing equipment, the oil compositions may be applied to reels and gears, for example.

[0025] A single vegetable oil or vegetable oil blend that is suitable for the above uses includes any single oil or blend that sufficiently reduces carbon or other contaminant fouling or avoids carbon or other contaminant build up. In an aspect of the present invention, the composition that may be used in the above manner may include at least about 25% vegetable oil, more preferably at least about 50% vegetable oil, still more preferably at least about 75%, and most preferably about 100% or 100% vegetable oil, by volume. Preferably, for some applications, the vegetable oil should have a smoke point higher than 200 °F, more preferably above 300°F, and yet more preferably more 400°F, in order to maintain the oil integrity even at very high operating temperatures, which often occurs in firearms. Additionally, oils that have a high smoke point are desirable due to their inherent heat resistance. Highly refined vegetable oils are also useful for some applications. It has been found that the mixture of constituent oils disclosed herein provides a synergistic effect in which the combination of oils (the oil composition) has and higher smoke point than any of the individual oils by themselves.

[0026] Higher refined vegetable oils are purer as compared to unrefined vegetable oils. In another aspect of the present invention, at least one of or all of the vegetable oils may be high oleic. High oleic oils have a high degree of oleic acid, for example approximately 80% by weight oleic acid or greater, preferably 86% or greater, more preferably 90% or great, and even more preferably 95% or greater. By using high oleic acid oils that have a high monounsaturated to polyunsaturated fat ratio, oxidation can be reduced. It has been found that the oxidation of the vegetable oils in accordance with aspects of the instant invention yields a hard, lubricious or slick surface that is resistant to carbon fouling, which is discussed below. Generally, the desired ratio of monounsaturated to polyunsaturated fats in accordance with aspects of the present invention is at least about 3:1, and for some applications, preferably greater than 3:1. At least one or all of the oils in the oil composition may be high oleic. Reducing the polyunsaturated fats also enhances the temperature range (pour point to smoke point range) as well as the storage stability.

[0027] In accordance with aspects of the present invention, some variations of vegetable oil also reduce waxes and other contaminants, which ensures improved characteristics at low temperatures and also reduces gumming of oil in the firearm or other mechanical devices. Improved characteristics include improved oxidative stability and lower pour point. Accordingly, for some variations of the present invention, the oil composition may remain in liquid form at temperatures as low as about -35°F and as high as about 500°F. The oil compositions may have a pour point of about -40°F to about 25°F, a cloud point of about 5°F to about 70°F, and flash point of at least 450°F, more preferably at least 500°F, still more preferably

at least 550°F. In an aspect of the present invention, the vegetable oil compositions may include one or more of the above properties.

[0028] Also, vegetable oils have a polar nature, which is not a characteristic found in petroleum-based products. The polarity ensures that the oil attracts strongly and penetrates deeply into the host metal and adheres better than non-polar oils, a feature that is highly desirable in a mechanical device that is blasted by gases, carbon, high heat, and extreme gravitational forces. The reciprocating bolt carrier on an M-16, for example, accelerates from 0 to over 40 miles per hour in only 20 milliseconds, in a distance of approximately one inch. This feature of oils in accordance with aspects of the present invention keeps the gun running long after a conventional lubricant has burned off and allowed carbon overload to occur. Because known petroleum-based products do not have this quality, the products do not have the attraction and penetration of the oil compositions.

[0029] It has been surprisingly found that any single oil or a combination of oils selected from the following group are suitable for the above uses: almond (smoke point 430°F), avocado (smoke point 520°F), canola (smoke point 450°F or higher), corn (smoke point 450°F), cottonseed (smoke point 420°F), flax seed (smoke point 250°F), hazelnut (smoke point 430°F), hemp seed (smoke point 330°F), grapeseed (smoke point 485°F), jojoba (smoke point 570 F), macadamia nut (smoke point 389°F), olive (smoke point 460°F), peanut (smoke point 450°F), rapeseed (smoke point 438°F), rice bran (smoke point 490°F), safflower (smoke point 490-510°F), sesame (smoke point 350°F), soybean (smoke point 495°F or higher), sunflower (smoke point 450°F or higher), and walnut (smoke point 400°F). Any one of these oils or combination thereof has been found to improve carbon fouling and carbon and other contaminant resistance without the problematic side

effects discussed above, as compared to existing products on the market. As discussed above, high oleic versions of these oils are preferable, for some applications. To demonstrate the unexpected benefit of using the above oils to reduce or prevent carbon fouling, various oils and market products have been tested according to the following procedures. A 6" porcelain bowl is fouled with an oxy-acetalyne torch, with a rich flame to maximize carbon deposits. The flame is applied for 35 seconds (+/- 5 seconds) at a distance of 4 inches (+/- 2 inches) from the bowl to apply sufficient heat without overheating the bowl. This process heats the bowl to approximately 150-250 °F without cracking the bowl. The bowl is allowed to sit at room temperature 70°F (+/- 5 °F). Then, 5 ml (+/- .5ml) of a sample is applied to the fouled bowl. The fouled bowl containing the sample sits for 5 minutes. Next, the fouled bowl containing the sample is scrubbed by hand, using both sides of a 100% cotton round patch (2.20" circular, .200" thick- +/- 10%) until the patch is fully soiled and unable to absorb any more carbon fouling. Remaining residue in the bowl is further scrubbed with a 100% cotton flannel patch (3.10" square, .020" thick- +/-10%) until fully soiled and unable to absorb any more carbon fouling. The bowl is rated on scale of 1 to 5, where 1 represents the most fouled, least effective and 5 represents the least fouled, most effective. Figure 3 is a photostat of an example bowl that has been fouled prior to application of an example composition to simulate the U.S. Army's firing residue removal test. The above tests measure the ability of the oil composition to remove carbon. Carbon overload is a central reason that firearms run sluggishly (improperly) or cease operating entirely (lock up). Figures 4-6 are photos of the resulting bowls after application of vegetable oils is accordance with the present invention, illustrating the degree of fouling. Figures 7-12 are photos of

the resulting bowls after application of various existing market compositions, illustrating the degree of fouling.

[0030] The results of the testing is organized in the following table:

TABLE 1 – Fouling Test

Oil Comp (by volume)	Rating 1-5 (1= least effective, 5= most effective)	Corresponding Figure
Example 1 – 100% Soybean	2.75 (average of two samples)	Figure 4
Example 2- 100% Canola	1.5	Figure 5
Example 3 – 80% Canola, 20% Soybean	3.5	Figure 6
Comparative Example 4 – Mobil 1 10W-30	3.0	Figures 7
Comparative Example 5 – FrogLube	1.5	Figure 8
Comparative Example 6 – SLIP2000 Carbon Killer	4.5	Figure 9
Comparative Example 7 – Hoppe's Elite	4.0	Figure 10
Comparative Example 8 – Gunzilla	1.0	Figure 11
Comparative Example 9 – Break Free	2.0	Figure 12
Example 10 –	2.5	No Figure

100% Rice Bran		
Example 11 – 100% Walnut	3.5	No Figure
Example 12 – 100% Sesame	3.0	No Figure
Example 13 – 50% Rice Bran, 50% Soybean	4.0	No Figure
Example 14 – 33.3% Rice Bran, 33.3% Walnut, 33.3%	Between 4.0 and 4.5	No Figure

[0031] Table 1 demonstrates that pure vegetable oil compositions and blended vegetable oil compositions satisfactorily remove carbon fouling, without exhibiting the problems of the market lubricants. Notably, the natural vegetable oils in accordance with aspects of the invention were found to remove fouling without stripping oils from metal and can be used at a wide range of temperatures. Furthermore, it was found that a blend of vegetable oil (soybean and canola) was superior to a single oil. It should be noted that while pure vegetable oils are primarily discussed herein, it is within the scope of the invention that other components may be present (such as synthetic oils or additives) in amounts that do not substantially interfere with the above described properties. Thus, in an aspect of the present invention, the oil composition consists essentially of vegetable oils. In another aspect of the invention, the oil composition consists of vegetable oils.

[0032] Aspects of the present invention further include vegetable-based oil compositions. The vegetable oil composition may include a first vegetable oil having a smoke point above 200°F, a second vegetable oil, distinct from the first vegetable oil, having a smoke point above 200°F, and a third vegetable oil, distinct from the first and second vegetable oils, having a smoke point above 200°F. For example, each of the first, second, and third vegetable oils may have a smoke point of about 300°F, or yet more preferably for some applications, each may have a smoke point of about 400°F. In an aspect of the invention, each oil in the blend may include one or more of the properties discussed above. Each of the first, second, and third vegetable oils may be selected from the group consisting of: sesame oil, canola oil, sunflower oil, soybean oil, peanut oil, olive oil, corn oil, grapeseed oil, jojoba oil, cotton seed oil, almond oil, safflower oil, walnut oil, avocado oil, rice bran oil, and flaxseed oil. The composition may include, by volume, about 1% to about 80% of each of the first, second, and third vegetable oils, more preferably for some applications about 5% to about 60% of each vegetable oil, and most preferably for some applications about 7% to about 30% of each vegetable oil. The composition may further include any number of additional vegetable oils distinct from the first, second, and third vegetable oils, each being selected from the above list and being present in the above ranges. For example, the composition may include fourth, fifth, sixth, etc., vegetable oils.

[0033] As used herein, the term "distinct" means not the same as another vegetable oil and/or derived from a different plant, vegetable, fruit, shrub, flower, or tree nut. For example, canola oil is distinct from soybean oil.

[0034] In aspect of the present invention, the combined volume of the vegetable oils is at least about 25% of the total volume of the oil composition, more

preferably at least about 50% of the total volume of the oil composition, still more preferably at least about 75% of the total volume of the oil composition, and most preferably about 100% or 100% the total volume of the oil composition.

[0035] In an aspect of the present invention, the composition may include, by volume, about 1% to about 80%, and more preferably for some applications about 5% to about 60% of each vegetable oil, and most preferably for some applications about 7% to about 30% of each of these vegetable oils. The composition may consist only of these oils. As noted above, the composition may include other components such as synthetic oils and other additives that don't substantially interfere with the above-described properties of the overall composition. As indicated by Table 1, it has been unexpectedly found that that certain combinations of vegetable oils are superior to both individual oils and commercial products in avoiding and removing carbon fouling from mechanical components without the problems associated with market compositions.

[0036] As shown in Table 1, it was surprisingly found that blends of vegetable oils are superior at removing carbon fouling than a single vegetable oil. See example 3, as compared to examples 1 and 2. Additionally, it was surprisingly found that a blend of vegetable oils sufficiently removes carbon fouling, without having the problems of the commercial products. See example 3, as compared to examples 4-9.

[0037] Any of the above-described oils may be applied to a mechanical component using the following methods. The composition may be deposited onto a surface. This deposition may be performed via brushing, dropping, spraying, or any other suitable delivery method such as applying with a paper towel or single pack moistened towelette, and spreading the applied oil evenly on the surface. The

deposited composition may be allowed to air dry. Alternatively, the deposited composition may be heated to about 100 to about 400°F to dry. The drying may be performed via convection oven, furnace, or any other suitable drying method such as for a period of time between 10 minutes and 12 hours, depending on the heat and material being treated. The treatment duration and temperature may depend on the size and material being treated. Certain metals may only withstand certain temperatures and exposure time, and, therefore, the precise time and temperature will vary. For example, a small aluminum piece, such as a charging handle that weighs 1.6 ounces, cannot withstand the same temperature intensity as a 16-ounce piece of ordnance-grade steel. The composition on the surface in the aluminum piece, for example, may be exposed to UV light (natural sunlight or lamp) to promote oxidation of the applied composition. In another aspect of the present invention, the mechanical component may be immersed in a tank containing the vegetable oil composition at a temperature of 100 to 400°F for a period of time between 10 minutes and 24, hours depending on the material and/or the composition. In yet another aspect of the present invention, a pressure of about 1-5 ATM may be applied to the to the vegetable oil composition on the mechanical component via a pressure cooker, for example. The time of pressure application may vary from 10 minutes to 24 hours, depending on the material and composition. Furthermore, the application method may include any combination of the above steps.

[0038] The above step of depositing the composition on the surface of a mechanical component may include placing the composition in a container having a coating delivery system. For example, the container may have a pump spray, a trigger spray, or a dropper dispenser, each of which would assist a user in depositing the composition onto a mechanical component. The container may also be

pressurized to allow for aerosol spraying of the composition inside. In another aspect of the present invention, the oil composition may be applied to a mechanical via a wipe, wherein the wipe contains the oil composition. For example, the wipe may be provided in a sealed package that may be opened when a user is ready to apply the oil composition to the mechanical component. Once removed from the sealed package, the user can then rub the wipe against the mechanical competent, thereby applying the oil composition onto the mechanical component. Alternatively, a sealed container may include a plurality of wipes, wherein each wipe contains the oil composition. The composition may be contained in a sealed, one-time use liquid only packet.

[0039] Example aspects have been described in accordance with the above advantages. It will be appreciated that these examples are merely illustrative of aspects of the invention. Many variations and modifications will be apparent to those skilled in the art.

Claims:

1. An oil composition, comprising:

at least three vegetable oils, each vegetable oil being distinct from the other and each having a smoke point above 200°F,

wherein the combined volume of the at least three vegetable oils is at least about 25% of the total volume of the oil composition.

2. The oil composition of claim 1, wherein the combined volume of the at least three vegetable oils is at least about 50% of the total volume of the oil composition.

3. The oil composition of claim 1, wherein the combined volume of the at least three vegetable oils is at least about 75% of the total volume of the oil composition.

4. The oil composition of claim 1, wherein the combined volume of the at least three vegetable oils is about 100% of the total volume of the oil composition.

5. The oil composition of claim 1, wherein at least one of the at least three vegetable oils has 80% by weight or greater oleic acid.

6. The oil composition of claim 1, wherein each of the at least three vegetable oils are selected from the group consisting of: almond oil, avocado oil, canola oil, corn oil, cottonseed oil, flax seed oil, hazelnut oil, hemp seed oil, grapeseed oil, jojoba oil, macadamia nut oil, olive oil, peanut oil, rapeseed oil, rice bran oil, safflower oil, sesame oil, soybean oil, sunflower oil, and walnut oil.

7. The oil composition of claim 1, wherein each of the at least three vegetable oils are selected from the group consisting of: sesame oil, canola oil, sunflower oil, soybean oil, peanut oil, olive oil, corn oil, grapeseed oil, jojoba oil, cotton seed oil, almond oil, safflower oil, walnut oil, avocado oil, rice bran oil, and flaxseed oil.

8. The oil composition of claim 1, wherein each of the at least three vegetable oils are present in an amount from about 5% to about 60% by volume.

9. The oil composition of claim 1, wherein each of the at least three vegetable oils are present in an amount from about 10% to about 50% by volume.

10. The oil composition of claim 1, wherein the oil composition is a liquid at about -35°F to about 500°F, has a pour point of about 5°F to about 70°F, and a flash point of about 480°F to about 580°F.

11. A method of removing or preventing carbon fouling on a mechanical component of a device, comprising:

depositing a vegetable oil composition on the mechanical component of the device,

wherein the vegetable oil composition comprises at least one vegetable oil having a smoke point above 200°F,

wherein the at least one vegetable oil is present in an amount of at least about

25% by volume of the total volume of the oil composition; and

wherein operation of the device deposits carbon on the mechanical component.

12. The method of claim 11, wherein the at least one vegetable oil is present in an amount of at least about 50% by volume of the total volume of the oil composition.

13. The method of claim 11, wherein the at least one vegetable oil is present in an amount of at least about 75% by volume of the total volume of the oil composition.

14. The method of claim 11, wherein the at least one vegetable oil is present in an amount of about 100% by volume of the total volume of the oil composition.

15. The method of claim 11, where the depositing step comprises one of spraying, immersing, or brushing the oil composition on the mechanical component of the device.

16. The method of claim 11, further comprising drying the deposited oil composition by heating at a temperature of about 100°F to about 400°F.

17. The method of claim 11, further comprising exposing the deposited composition to ultraviolet light.

18. The method of claim 15, wherein the mechanical component is immersed at a temperature of about 100°F to about 400°F for a period between about 10 minutes to

about 24 hours.

19. The method of claim 11, wherein the depositing step comprises applying a pressure of about 1 to about 5 ATM.

20. The method of claim 11, wherein the mechanical component is a component of a firearm.

21. The method of claim 18, wherein the mechanical component of the firearm is selected from the group consisting of: a trigger, a hammer, a disconnector, a trigger pin, a firing pin, a chamber, a bolt, a bolt face, a bolt carrier, a breach face, a camming pin, a piston, an operating rod, a gas tube, a barrel, a slide, a retention rail, an upper receiver, a lower receiver, a magazine follower, a suppressor mount, a compensator, a flash hider, charging handle, feed tray, and a baffle.

22. A pressurized container comprising the composition of claim 1.

23. A sealed package comprising an absorbent wipe having the oil composition of claim 1 absorbed therein.

24. A container comprising the composition of claim 1, the container including a pump for releasing the oil composition from the container.

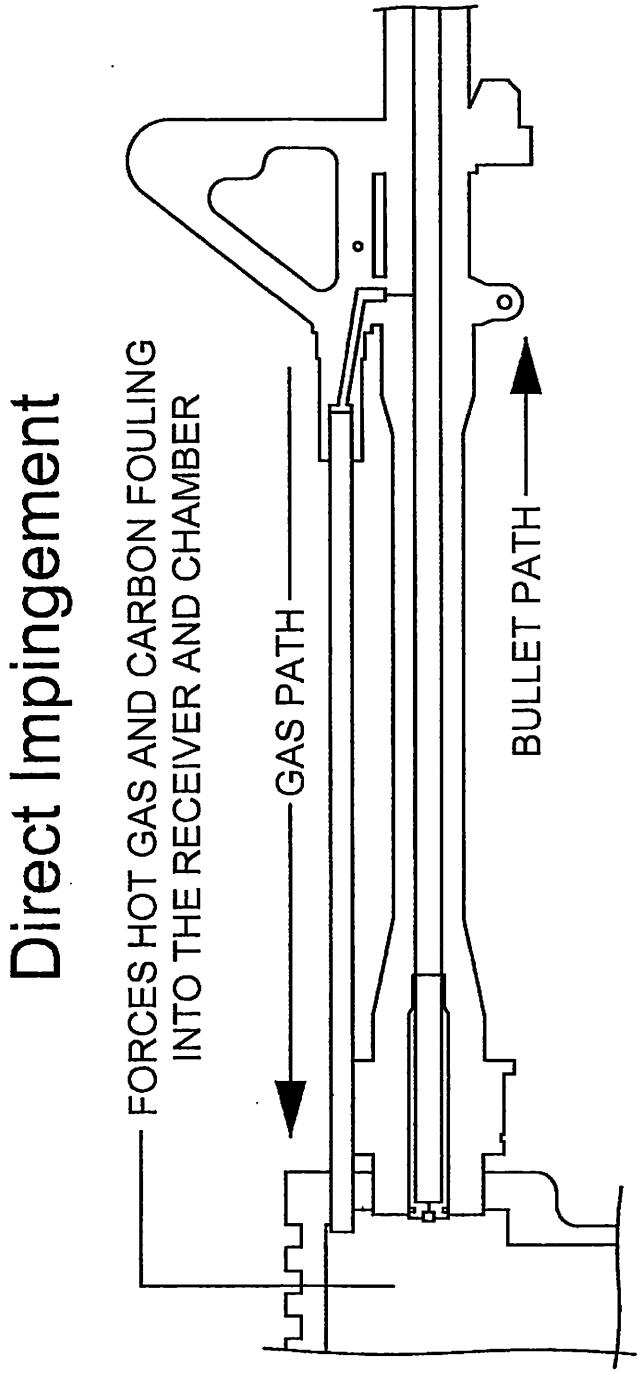

Direct Impingement
FORCES HOT GAS AND CARBON FOULING
INTO THE RECEIVER AND CHAMBER
GAS PATH
BULLET PATH

Fig.1

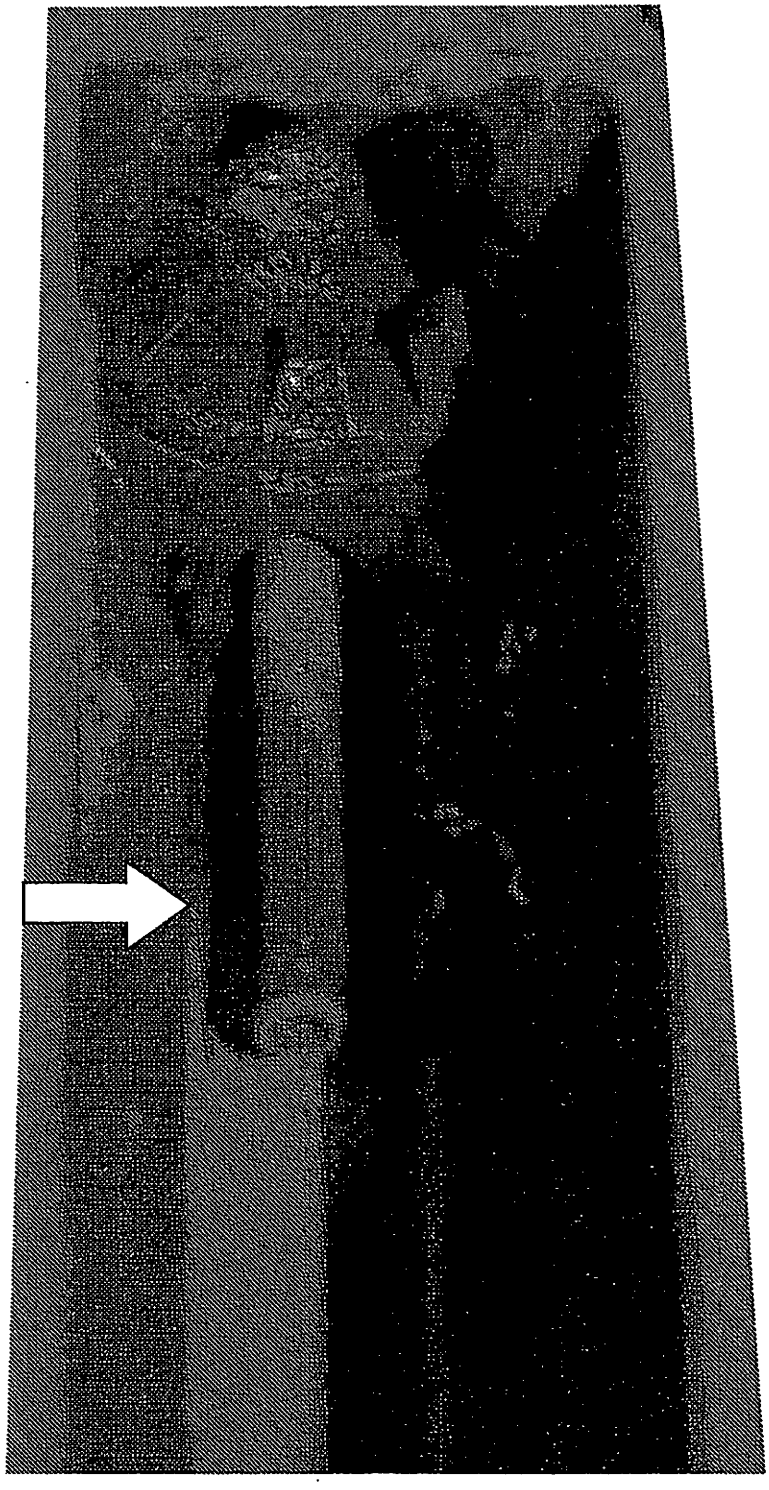

GAS BLOWN BACK THROUGH GAS TUBE INTO RECEIVER. SEE PROTRUDING GAS TUBE AND FOULING
HEAVY FOULING BUILDUP IN UPPER RECEIVER, WHICH LEADS TO MALFUNCTIONS AND STOPPAGES

Fig.2

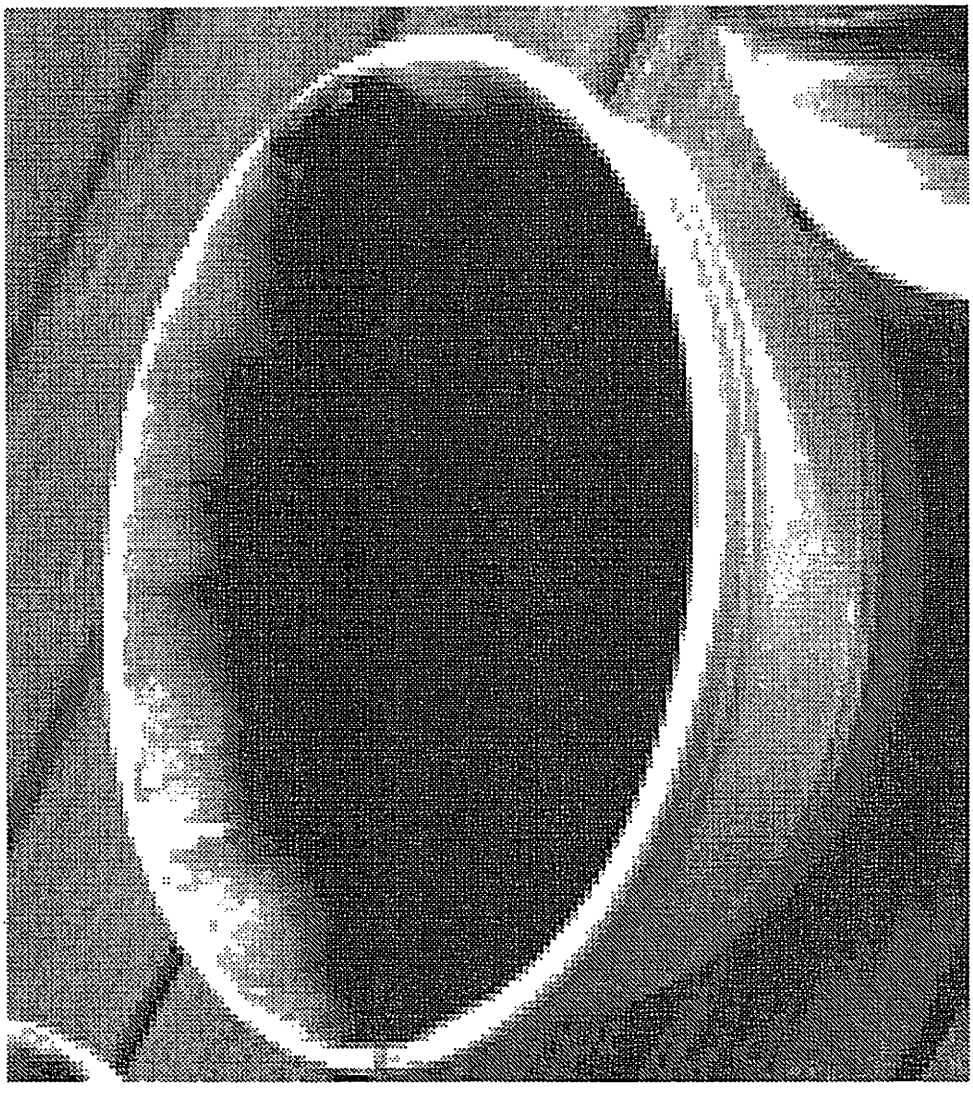


Fig.3

Fig.4

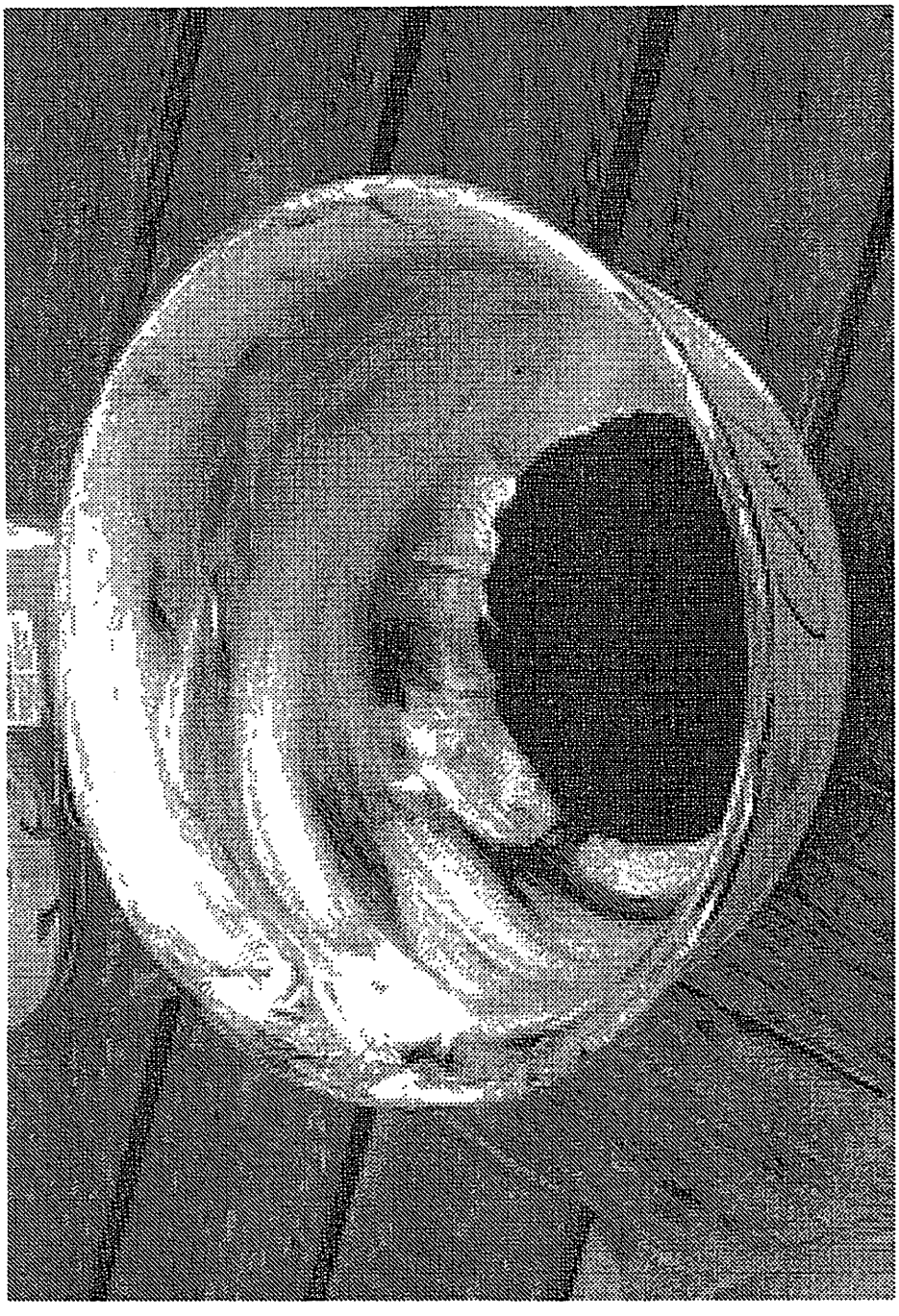


Fig.5

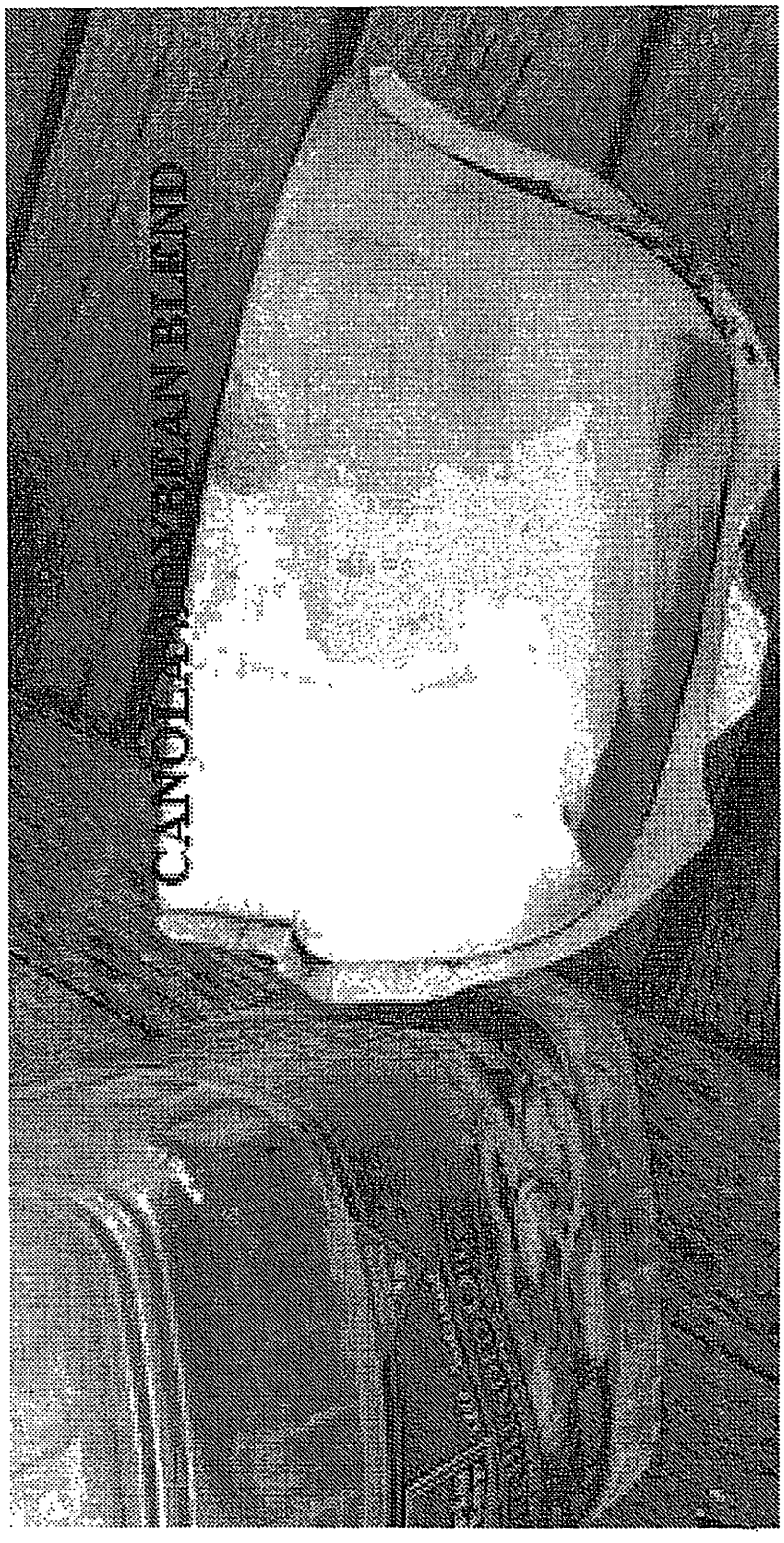


Fig.6

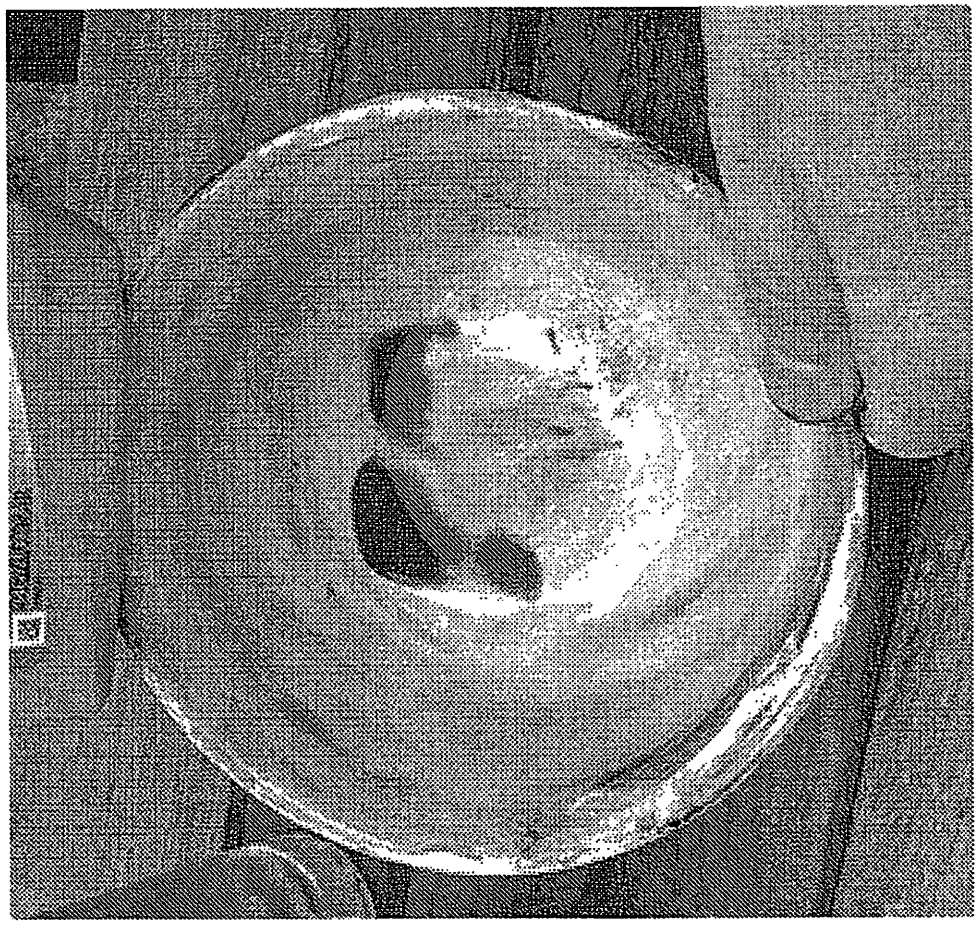


Fig.7

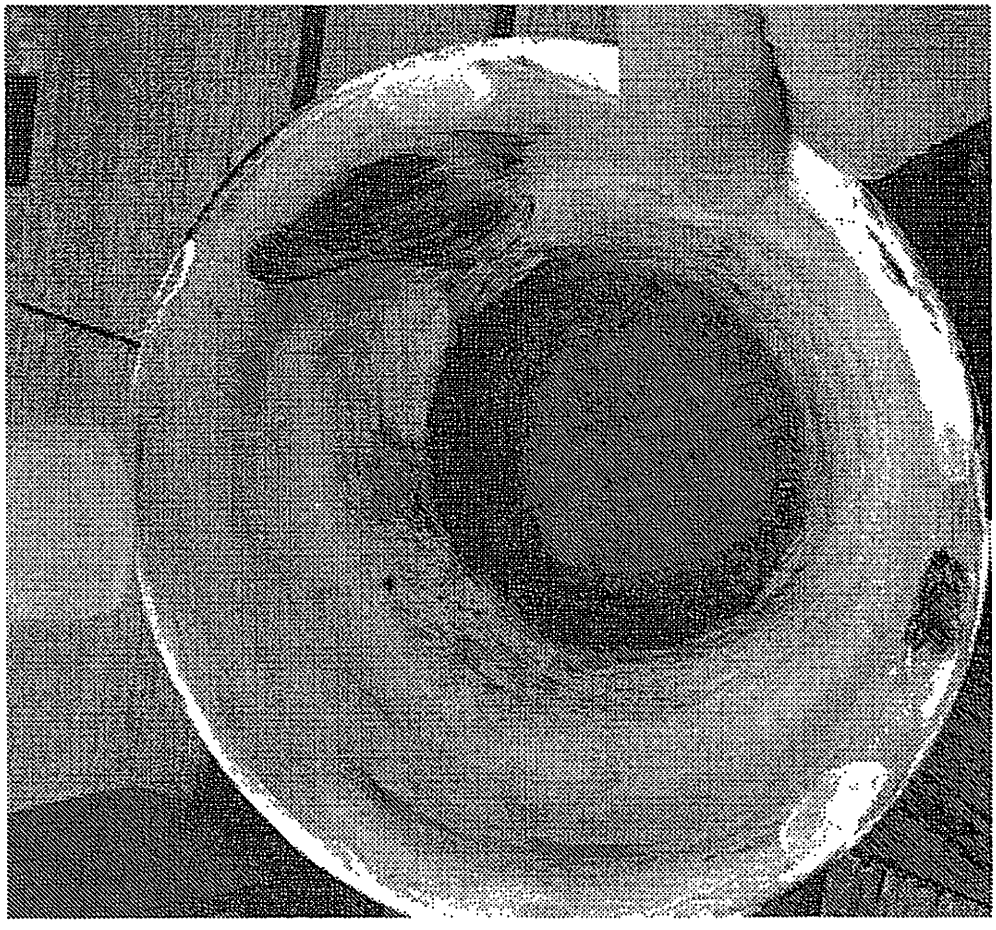


Fig.8

Fig.9

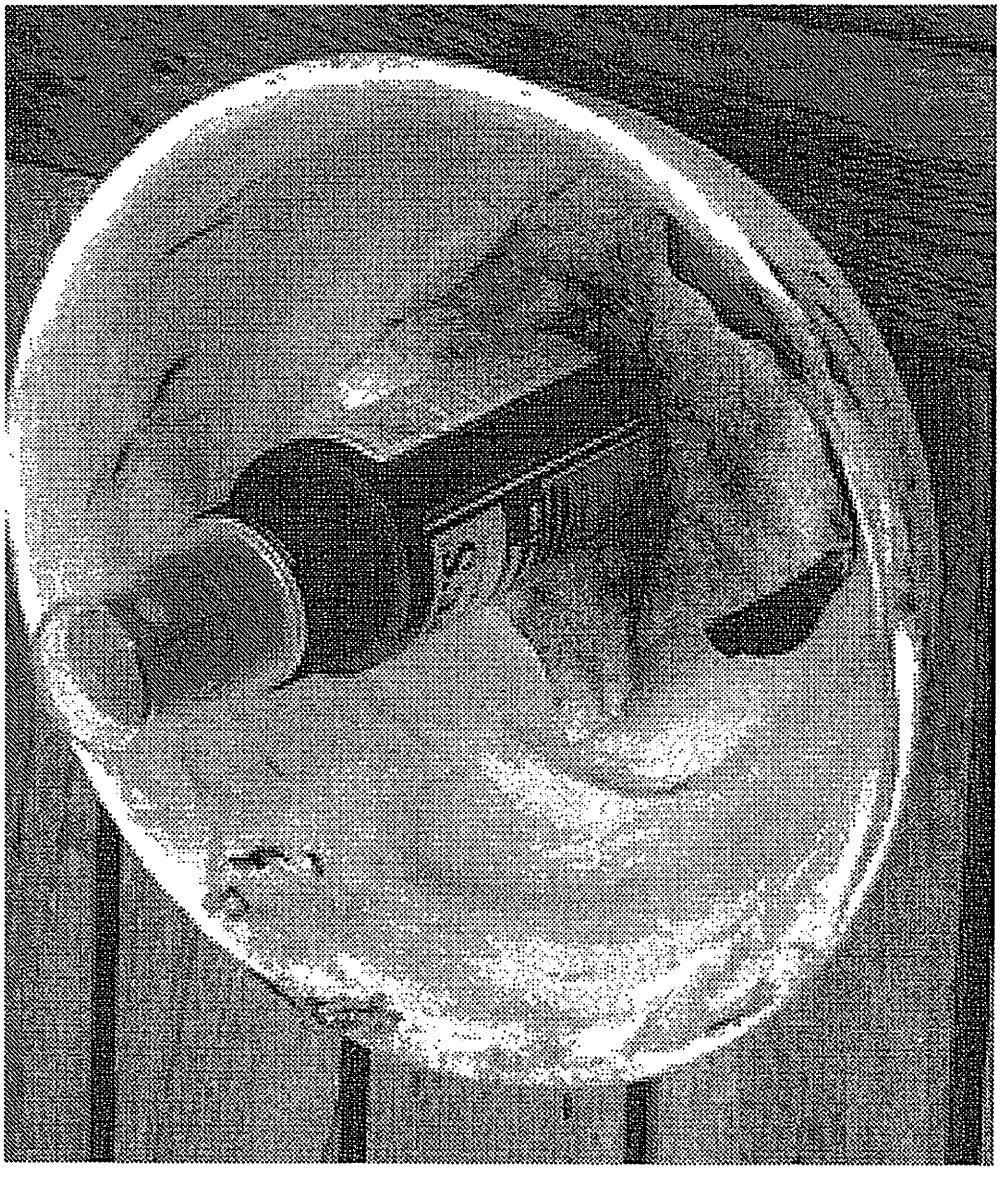


Fig.10

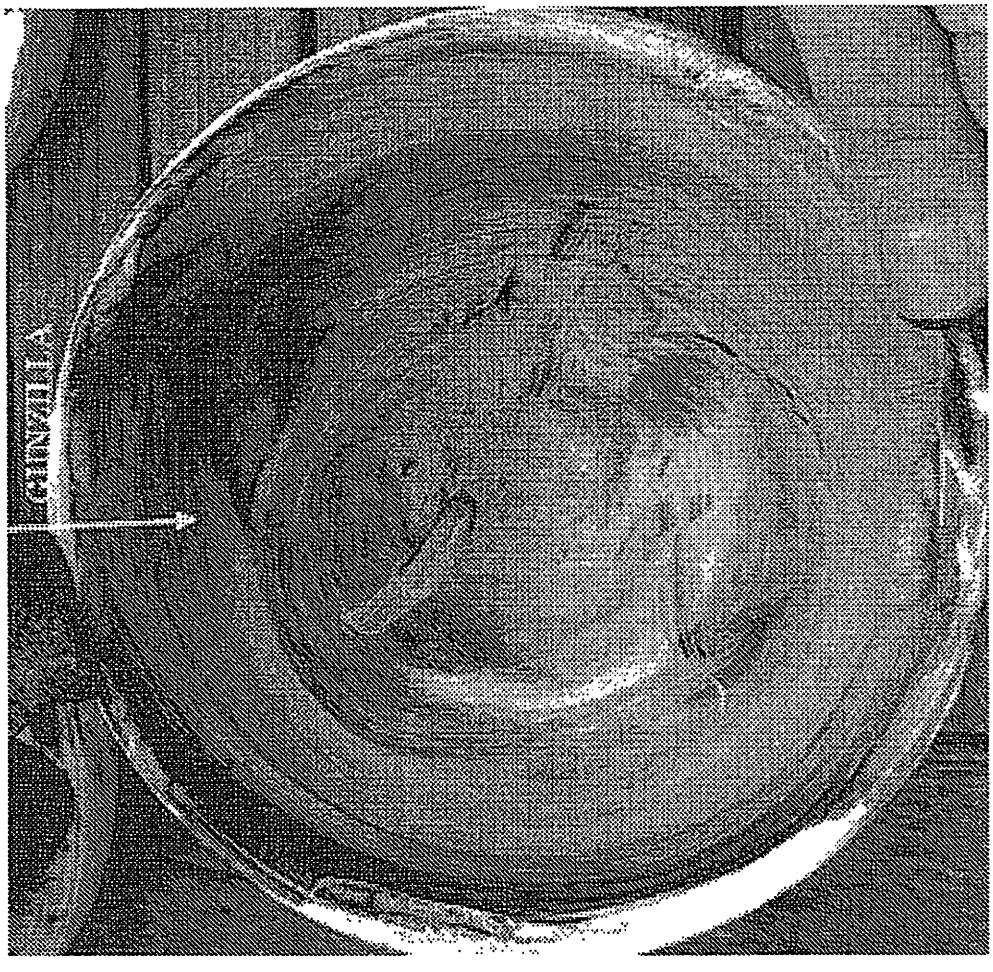


Fig.11

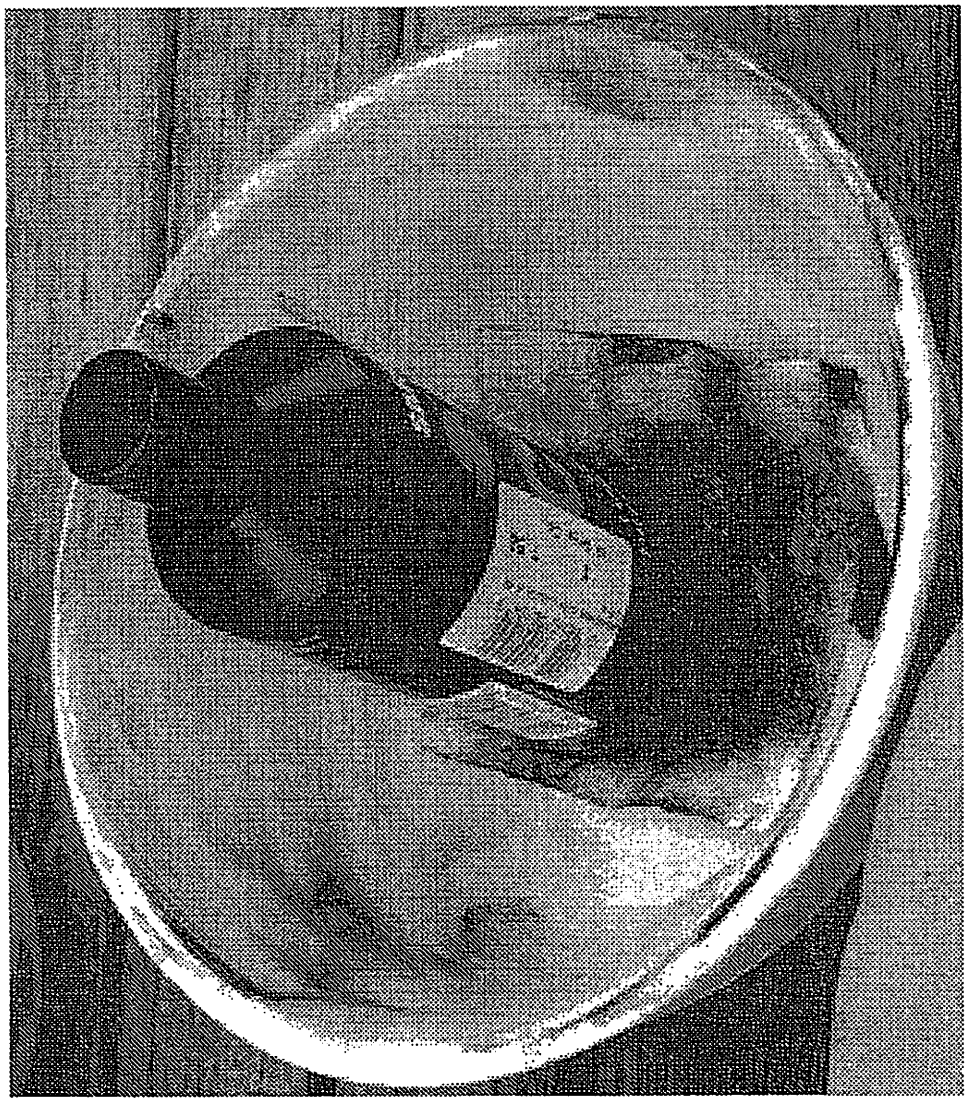


Fig.12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/032351

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - C09K 8/52 (2013.01)
USPC - 134/39
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - B08B 7/00, C01M 101/04, 105/04, 111/02, 129/10, 161/00, 169/00 (2013.01) - see extra sheet for additional classes searched
USPC - 134/34, 39, 41, 94.1, 198; 508/308, 433, 436, 437, 473, 486, 491, 591; 510/190, 245, 254, 463.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC - B08B 7/00, C01M 101/04, 105/04, 111/02, 129/10, 161/00, 169/00; C01N 30/02, 30/08; C09K 8/52, 8/528; C10M 163/00; C11D 3/382; C23F 11/08 (2013.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Patbase, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/0059562 A1 (GARMIER) 17 March 2005 (17.03.2005) entire document	1-9, 11-24
Y	US 2,998,319 A (BABAYAN) 29 August 1961 (29.08.1961) entire document	1-9, 11-24
Y	US 4,627,192 A (FICK) 09 December 1986 (09.12.1986) entire document	5
Y	US 6,153,571 A (KOMOCKI et al) 28 November 2000 (28.11.2000) entire document	11-21
Y	EP 1 464 913 A2 (RODIGHIERO) 06 October 2004 (06.10.2004) entire document	15, 18, 21
Y	US 2006/0289087 A1 (LACHANCE) 28 December 2006 (28.12.2006) entire document	16
Y	US 2004/0166340 A1 (CAIRNS et al) 26 August 2004 (26.08.2004) entire document	17
Y	US 4,408,960 A (ALLEN) 11 October 1983 (11.10.1983) entire document	19
Y	US 3,211,346 A (MESHBERG) 12 October 1965 (12.10.1965) entire document	22, 24
Y	US 2011/0190176 A1 (PERDUK et al) 04 August 2011 (04.08.2011) entire document	23

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 May 2013	10 JUN 2013
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/032351

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - C01N 30/02, 30/08; C09K 8/52, 8/528; C10M 163/00; C11D 3/382; C23F 11/08 (2013.01)

EXHIBIT B

Vuurwapen Blog

Ed

Do you guys have a response to the claims that FireClean is just Crisco?

Andrew

Hi Andrew- categorically deny. If you let me know where you are hearing it I would appreciate it. If it's a competitor it will generate a strong response. Thanks! Ed

Ed

This video -

EXHIBIT B

EXHIBIT C

Vuurwapen Blog

LIES, ERRORS, AND OMISSIONS

INFRARED SPECTROSCOPY OF FIRECLEAN AND CRISCO OILS

SEPTEMBER 12, 2015 | ANDREW TUOHY | 160 COMMENTS

If you have been on the internet and have visited a sampling of firearm related blogs or social media sites in the last few weeks, you have most likely come across reports or claims that FireClean is nothing more than Crisco vegetable oil. I had heard it from two people in the industry whom I respect around the same time it started being mentioned all over the place (I had previously been aware that it was a food grade oil, but did not know anything more than that).

The first real attention-grabber was this video, which has since been removed. It showed FireClean and Crisco vegetable oil smoking and burning off at the same time on a stovetop (my friend Brett replicated this test and saw the same results). Still, this wasn't the sort of conclusive proof that would sway me one way or the other. It's possible that two oils could have the same smoke point and not share other properties.

I did not – and still do not – believe that FireClean is Crisco, but not for the reason you might think. Although such statements make for shocking arguments, it wouldn't really make sense to buy a name brand product at a high price if the goal was to resell and make money.

Still, the claim that FireClean is nothing more than Crisco is not one to be taken lightly by anyone – not by consumers and certainly not by the company. I spoke at length with one of the makers of FireClean, Ed Sugg, and he assured me that not a single drop of Crisco has ever been part of their formulation, even during initial testing with various mixtures. Interestingly enough, he specifically mentioned that soybean oil had not been part of their testing.

Despite these assurances, which I was inclined to believe, I sought to undertake my own testing to determine whether or not these claims are true about FireClean. Trust, but verify.

I also contacted the man who seems to have originated the "FireClean is Crisco" claim. George Fennell of WeaponShield posted on his personal Facebook page that FireClean was Crisco several weeks back (I am told that this has been removed, but I cannot view his Facebook page any more).

It was claimed by various people, including the guy who first posted that now-removed stovetop video, that he had scientific proof of this claim. I asked Mr. Fennell if he would provide a copy of the analysis, which he refused to do. He told me all I needed to do was look at FireClean's patent application to see that it was Crisco and/or other vegetable oils. When I asked again, rather politely in my opinion, he sent a very long and agitated message again refusing to supply the test before blocking me on Facebook.

Mr. Fennell was the developer of FP-10, a gun oil which, I should mention, I have recommended in the past and said I would purchase over FireClean for reasons of cost. He has since left the company which produces FP-10 and started at WeaponShield. Since then, he has criticized FP-10 as well as FireClean and other oils. I will reiterate that FP-10 provides excellent lubrication characteristics at a competitive price, if you're looking to buy a gun oil.

But the question of the day is about FireClean and Crisco. There was clearly only one way to settle this, and that was to engage in some science.

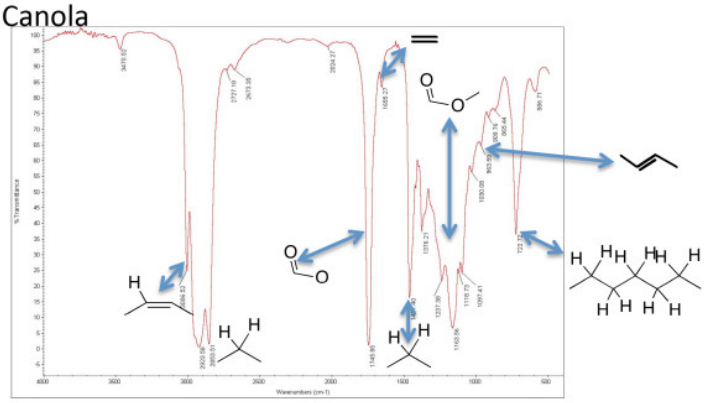
I contacted a professor at the University of Arizona – a very nice man with a Ph.D. in organic chemistry – and he agreed to help with an infrared spectroscopy test of FireClean and two types of Crisco.

Two types, you ask? Not generally using anything other than olive oil in my cooking, I was somewhat surprised to find a wall of various types of cooking oils at my local grocery store. There were two types of Crisco oils prominently featured in the display – Pure Vegetable, and Pure Canola. I stood there in the aisle for quite some time, trying to figure out which one to buy. Sensing my puzzlement, a helpful lady asked me if I needed assistance deciding which oil was right for whatever it was I wanted to cook. Suddenly, I understood what it must be like for girls who visit gun stores.

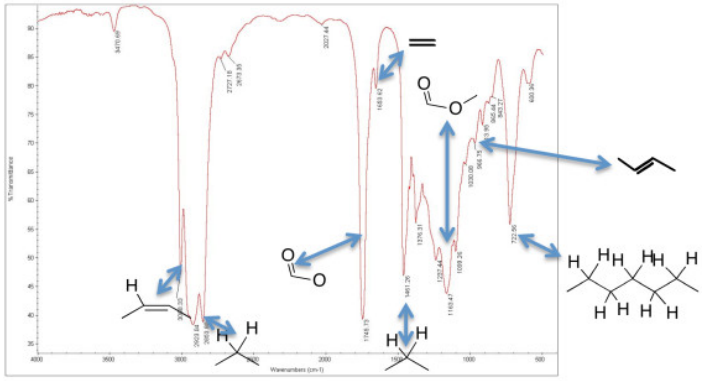
Remembering the earlier comment about soybean oil, I determined with the help of the label that Crisco Pure Vegetable oil is made from soybean oil. Crisco Pure Canola is made from, you guessed it, canola. There were also probably half a dozen other brands of canola oil on the shelf. I decided to take both types of Crisco for testing.

The test took a week, and here are the results.

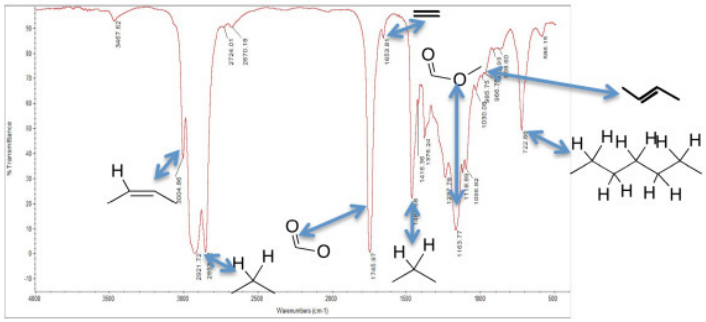
Crisco Pure Canola



Crisco Pure Vegetable oil



Fire Clean



What did the tests show?

FireClean is probably a modern unsaturated vegetable oil virtually the same as many oils used for cooking.

The professor had something to say about the formulation and its relevance as a gun oil. *"I don't see any sign of other additives such as antioxidants or corrosion inhibitors. Since the unsaturation in these oils, especially linoleate residues, can lead to their oligomerization with exposure to oxygen and light, use on weapons could lead to formation of solid residues (gum) with time. The more UV and oxygen, the more the oil will degrade."*

In my 2013 article about gun oils, I mentioned that FireClean wasn't advertised as protecting against corrosion. Given the results of this test, I suppose that makes sense.

When I fired this AR which had been sitting for years with FireClean on the internals, it hadn't been exposed to UV, although it certainly saw some oxygen. Since that test, several friends told me privately that their 1911s did not function properly after sitting for six months with FireClean on the internals. It would seem that these results are highly dependent on the weapon.

Given that people in the military are often exposed to both UV and oxygen (such as when they go outdoors) and also need corrosion protection for their firearms, I would not recommend FireClean be used by members of the military.

I offered FireClean a chance to respond to the findings of this test, and, among other things, they asked to review the draft of this article for a few days before it was published. That is not how this blog works. I assume they will be publishing a response through other channels.

160 THOUGHTS ON "INFRARED SPECTROSCOPY OF FIRECLEAN AND CRISCO OILS"

Dan B.
SEPTEMBER 12, 2015 AT 12:45
I'm going to take a wild guess and say it's probably generic, non food grade rapeseed oil.

Dave
SEPTEMBER 12, 2015 AT 15:26
Close. It's a subspecies: wallet-rapeseed oil.

Jerry
APRIL 1, 2016 AT 02:23
Lol. Found out about this little brush fire in an article on Guns, Holsters and Gear. I have to agree with the reviewer, who never said fire clean is Crisco. But he did PROVE that fire clean is Crisco, so their pathetic lawsuit will only drive the stake deeper into their larcenous hearts.

Those lying bastards thought they had a sure moneymaker, repurposing vegetable oil as gun oil.

Snake oil is more accurate.

Tanker

APRIL 6, 2016 AT 11:33

So does that mean it can only be used on Colt Revolvers?

Chris

SEPTEMBER 12, 2015 AT 22:28

Wasn't rapeseed oil used to lubricate warships and other machinery during WWII, before they decided to start feeding it to people?

Medicfrost

SEPTEMBER 13, 2015 AT 10:42

I know it's popular with Bill Cosby for lubrication.

Bill

SEPTEMBER 14, 2015 AT 13:17

Well played worthy adversary, well played indeed.

Mattias

SEPTEMBER 13, 2015 AT 22:30

Rapeseed oil tastes awful, and is usually not used in cooking. Canola is a Canadian GMO of Rapeseed that produces oil that doesn't taste bad.

Tom

SEPTEMBER 14, 2015 AT 02:53

Canola's wasn't a GMO originally, according to Wikipedia.

ScottS

SEPTEMBER 17, 2015 AT 00:18

one of the few times wikipedia is correct

ScottS

SEPTEMBER 17, 2015 AT 00:17

Sorry but WRONG. it was known as canola long before the development of GMO's. You are comparing raw rapeseed oil that is a health food supplement to filtered and refined rapeseed oil that is known as canola

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Robert Bradley

SEPTEMBER 14, 2015 AT 06:37

Wouldn't surprise me but if I were to use a vegetable oil for a base for a weapons grade lubricant I would use JoJoba oil.

Why you ask? Because many excellent (no longer available gun lubricants) originally were made using Sperm Whale oil gunsmiths and watchmakers prized it as a lightweight lubricant that did not gum or solidify and was excellent in extreme temperature situations.

From Wikipedia: https://en.wikipedia.org/wiki/Sperm_oil

"Sperm oil was a popular lubricant. It worked well for fine, light machinery such as sewing machines and watches because it is thin, doesn't congeal or dry out and doesn't corrode metals. It was also used in heavy machinery such as locomotives and steam-powered looms because it can withstand high temperatures.[31] In the late 20th century, Jojoba oil was discovered to be a better substitute for high-friction applications because it is even more stable at high temperatures. This caused sperm oil's price to collapse to a tenth of its previous value.[32] Because of its very low freezing point, sperm oil saw widespread use in the aerospace industry.[33]

Sperm oil was used to protect metals from rust. A coat of sperm oil provided a temporary protection for the metal components in firearms, because it did not dry out or gum up.[34][35] It was the basis of the original (but not current) Rust-Oleum."

Jojoba oil is the closest thing to Sperm Whale Oil…in fact superior in some aspects…https://en.wikipedia.org/wiki/Jojoba_oil

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The Old Coach

SEPTEMBER 14, 2015 AT 18:45

Castor oil ("bean oil") is still widely recognized as a superior oil for two-stroke engines that run gas/oil mix. It's only drawback is that the mix must be fresh. Leave it stand for a day or two and the oil breaks down. Been there, done that, to my sorrow. The old-timers ran castor oil in their four-stroke race engines. Clean your entire oiling system completely before converting from petroleum, or you get cottage cheese in the tank. Been there, too. Yeah, I'm that old.

Dan Schmidt

SEPTEMBER 14, 2015 AT 22:41

No Coach, that is not it's only drawback. It's true that it has a higher "shear strength" than most oils, and thus provides more protection under extreme pressures. But it also has a high pour point, making it impractical to use in some motorsports like snowmobiling, and it also doesn't burn clean, causing a lot of carbon deposits on power valves (variable exhaust port height) which nearly all modern two-strokes have.

Jerry

APRIL 1, 2016 AT 02:28

We used castrol in our kids race-winning 2-strokes. Excellent product.

ArmsVault

SEPTEMBER 12, 2015 AT 12:47

Great article! I'm certainly looking forward to their response!

Tacticaltshirts.com

SEPTEMBER 12, 2015 AT 12:56

Very interesting article. While I don't claim to know everything about all these new "green" gun-lubes, we have stayed away for one reason.

An acquaintance who was running FireClean on a rifle in a very cold environment has his weapon freeze shut. Completely.

We figured if it's eatable, it's plant based. And if it froze, it's got lots of water in it.

Good post, Andrew.

Marky
http://www.john1911.com

Ryan

SEPTEMBER 12, 2015 AT 23:05

Fats are hydrophobic.

★ Andrew Tuohy

SEPTEMBER 12, 2015 AT 23:58

Is that why chubby guys float better than skinny guys?

Vitor

SEPTEMBER 13, 2015 AT 06:50

They float better because fat is less dense than water.

★ Andrew Tuohy

SEPTEMBER 13, 2015 AT 07:32

It was a joke.

MikeW

SEPTEMBER 29, 2015 AT 06:08

I'm guessing you can't float at all… amiright?

Jerry

APRIL 1, 2016 AT 02:29

And they are hydrophobic 🙂

Jerry

APRIL 1, 2016 AT 02:31

…and they are hydrophobic 🙂

A. Fatguy

SEPTEMBER 13, 2015 AT 07:58

Yer damn right it is! !!!!!

Chris

SEPTEMBER 13, 2015 AT 10:20

How about other green cleaners like froglube, rand CLP and others alike.
Is this only against fire clean?

Dirk W

SEPTEMBER 14, 2015 AT 18:32

Froglube freezes. I suppose that is fine if you live in some place where it never gets cold.

Lars

OCTOBER 10, 2015 AT 15:10

I love Rand. I used to use all the other ones mentioned. The fact that it is odorless and lets me do my cleaning while watching tv is a big plus. Rand cleans better than Froglube and is just as good as a lubricant. http://thefiringline.com/forums/showthread.php?t=546316

I also like the fact they've done their own tests and there's more than just oil in it. In fact, I pulled up one page and it looks like there's rainbow trout oil and bug juice (flea) in it (see bottom of page 3 and top of page 4)? It's definitely not just 1 kind of vegetable oil in it. https://cdn.shopify.com/s/files/1/0196/0282/files/randbrands_MSDS_CLP_1.pdf

Lars

OCTOBER 10, 2015 AT 16:29

Never mind, it was tested for oxidation using those standard tests, those are not ingredients. I wish the ingredients were listed, but I get the trade secret aspect as well.

Dr. Wylie

SEPTEMBER 13, 2015 AT 14:06

All lipids are hydrophobic by definition and could not have water as part of the lubricant or the parts would completely separate like oil and vinegar salad dressing.

ScottS

SEPTEMBER 17, 2015 AT 00:25

what everyone is missing is water is not the only thing that solidifies in cold. Waxes for example, go through liquid to solid ranges just as water does, and most non petroleum lubricants are in fact, waxes, and not fats.

MikeW

SEPTEMBER 29, 2015 AT 06:12

True dat, Doc. As far as you took it, that is.
Addition of an emulsifier allows 'oil and water' to stay mixed. In the case of edible materials, egg yolk or mustard can play that role.

Dr. Wylie
SEPTEMBER 29, 2015 AT 07:40
"Jim, I'm a doctor not a miracle-worker" or cook……

Jerry
APRIL 1, 2016 AT 02:37
I read on the interweb that you can store an AR with an emulsified egg yolk in the chamber then it will protect the chamber from damage caused by firing corrosive ammo. The hard part is not breaking that yolk. Trust me on that.

Robert
APRIL 2, 2016 AT 13:28
Well, if it's on the intertubes, it must be true. Although… Jerry, I will store my AR with an emulsified egg yolk in the chamber when post a video demonstrating emulsifying said yolk. 🙂 OT, why yes, we do currently have blizzard-like conditions outside and have commenced to imbibing gin-and-tonics. Why do you ask?

Avi
SEPTEMBER 12, 2015 AT 12:56
Guess I have to oil al my shit with a proper gun oil now. Snake oil won't do.

Thomas M
SEPTEMBER 12, 2015 AT 18:16
Ironically enough there is actual a gun lubricant with the commercial name, Snake Oil, that is sold by Dillion Precision.

bulldog76
SEPTEMBER 12, 2015 AT 13:03
now iw ant to see what froglube is made of

Oliver

SEPTEMBER 12, 2015 AT 22:59

I stopped using Frog Lube several months ago because I noticed that the actions on my firearms that had say fr a while became very “gummy.” I wouldn’t be surprised if Frog Lube turned out to have the same results.

McThag

SEPTEMBER 13, 2015 AT 10:15

I’ve had the same experience with Froglube if I left any visible amount on the gun.

If I wiped off all I could see it’d still feel slippy.

The problem for me is oil has to get into places where it can’t be wiped on some guns. So I’ve reverted to good ol’ LSA (because I have gallons of it).

Cymond

SEPTEMBER 13, 2015 AT 17:59

I used FrogLube on some rimfires before storage (a 10/22 and a CMMG 22lr upper). When I got them out again, they had gummed up so badly that the bolts wouldn’t fully close under their own spring power. I had to clean the FrogLube out before shooting.

Lars

OCTOBER 10, 2015 AT 15:18

I have an HK P30 and their armorers in the forums have flat out said not to use products like Frog Lube. I thought that was interesting. It was based on people sending in their weapons and finding that the malfunctioning was no longer an issue after simply de-greasing the firearm.

In my handbook it also says, “Do not use lubricants that boast of their ability to penetrate metal as these substances may deaden primers.”

Mac

SEPTEMBER 13, 2015 AT 07:12

Exactly what I was thinking. I’d be willing to bet its also a food grade oil too. They’ve always advertised that its safe for humans to eat. It works great on my guns though.

Joe

SEPTEMBER 13, 2015 AT 16:46

I watched a frog lube rep drink some of it, I assume he survived.

Mike Butler

SEPTEMBER 24, 2015 AT 22:08

That reminds me of a Master Jack drain cleaner talking about how safe it was (Oil of Vitrol or sulphuric acid) he poured some in his hand to show safe it was. I ask him to go pour a little water in his hand, I don't think that he ever used that as part of his sales pitch anymore. I burnt the crap out of his hand.

Chris

SEPTEMBER 12, 2015 AT 13:13

IR is a qualitative measure. All I am seeing is that we have 3 oil like substances there. It would also be helpful to have an overlay instead of the 3 spectra separately.

When can we expect the GC-MS data?

★ Andrew Tuohy

SEPTEMBER 12, 2015 AT 13:21

Feel free to download the image and adjust transparency/overlay on your own.

I'm not terribly interested in determining the exact composition of the oil; the IR data is enough to satisfy the question at hand.

Chris

SEPTEMBER 12, 2015 AT 15:09

Not really. We know nothing about the length of the carbon chains or their structure. All we know is that the functional groups are similar to crisco, which any oil-like, plant based product would have.

★ Andrew Tuohy

SEPTEMBER 12, 2015 AT 18:03

Well, you are most welcome to foot the bill for your own testing.

Jerry

SEPTEMBER 12, 2015 AT 22:06

You've begun an investigation which could have fruitful results stating what each of these oils even are, but stopping at IR data isn't sufficient. Many of us who read your articles also work in the chemical industry or at least perform analytical chemistry in laboratory settings for a living. While it is not my specific field of expertise, it seems agreeable that more testing is needed to make any conclusion. As of right now your viewership is likely to take this sole IR data as comprehensive evidence that Fireclean is indeed vegetable oil.

★ Andrew Tuohy

SEPTEMBER 13, 2015 AT 09:42

I don't have a degree in chemistry and it would take me about four years to get one. About ten to earn the PhD of the man who helped with this, and from whom the significant conclusions were drawn. We discussed doing GC/MS at the outset, but the IR data was sufficient for him to draw the conclusions in the article.

The Best Chris

SEPTEMBER 13, 2015 AT 07:38

Or you could, you know, actually perform a test that produces valid results? Your results are incomplete and misleading. You are not very good at "engaging in science" as much as you like to express that.

This is almost as bad as your comparison between steel and brass jacketed ammunition.

★ Andrew Tuohy

SEPTEMBER 13, 2015 AT 09:36

Sounds like you had your mind made up before you started reading.

Jerry

APRIL 1, 2016 AT 02:46

I agree. They look like near-exact images of one another, maybe 98 percent identical from end to end, with deviations so minute they could potentially be attributed to atmospheric conditions at the time the samples were collected. Its laughable that fireclear wants to sue over this. Arrogance, greed and caught ripping off fellow fighters. They can call their next product "Doucheclear".

Ymmot

MAY 27, 2016 AT 09:26

A Gas Chromatograph Mass Spectrometer analysis is NOT going to show you much more than you have here! It will only give greater resolution, like using a cheap rifle scope over an expensive one!
You see the same thing, just better!

Chris

MAY 28, 2016 AT 08:14

GC MS data is completely different than IR data. The analysis is very affordable. Saying that resolution is the only difference shows you don't have an analytical background.

Dan

AUGUST 2, 2016 AT 19:13

Gas chromatagraph expensive!?!. I did them in some of my college classes and there was no restriction on how many did or warning that it was too expensive to continue tests.
Yes buying the machine is expensive (well depending on manf. and mod. a simple search found them starting at
$1,495), but running a test on it is not.
And running a test cost pennies.

James P

SEPTEMBER 12, 2015 AT 13:15

Andrew I like how you don't take anyone's shit.

Joshua

SEPTEMBER 12, 2015 AT 13:16

This is why I run a 75/25 mix of motor oil to atf.

It just works and its non toxic.

M. Sage

SEPTEMBER 13, 2015 AT 21:11

Motor oil and ATF are toxic… Not horribly, but toxic.

Synchronizor

SEPTEMBER 21, 2015 AT 20:55

Technically, everything can be toxic. Water and oxygen are toxic in the right quantities.

Mike Butler

SEPTEMBER 24, 2015 AT 22:12

So is lead, but that doesn't seem to bother you.

NeoGeo630

SEPTEMBER 12, 2015 AT 13:21

Great article. Knowing that it may be costly, but would love to see the same type of tests on other lubrication/cleaning products e.g. Frog Lube.

★ Andrew Tuohy

SEPTEMBER 13, 2015 AT 09:44

I was quoted a price of $350 per sample by a commercial testing lab for GC/MS data.

Benjamin

SEPTEMBER 14, 2015 AT 22:04

I'll do the GC MS analysis for free, maybe some NMR. If you're interested in me sending the data, let me know. If not, I won't bother doing a writeup.

Jonathan

SEPTEMBER 12, 2015 AT 13:50

What was ever wrong with some good Mobile 1 or MilComm Tw25? Hey, at least we could still bake cookies in a pinch.

Mark A.

SEPTEMBER 12, 2015 AT 13:51

I am testing Lucas Oil products right now. They understand high heat, high abrasion and am seeing great results from their weapons line of oils.

ScottS

SEPTEMBER 17, 2015 AT 00:32

Dont waste your time testing the Lucas firearms oils Just use them. they are in fact some of the highest rated lubricants made and those are the START of their specialized firearms lubricants…

Steve

JANUARY 8, 2016 AT 17:38

Lucas makes a Gun Oil. I got a small bottle of it at Autozone. I haven't tried it yet.

Michael

SEPTEMBER 12, 2015 AT 14:02

I really enjoy your videos and your posts. Straightforward, insightful, and to the point.

Bill McReynolds

SEPTEMBER 12, 2015 AT 14:53

I have long used a mixture of common canola oil mixed with cheap ATF. While not a tribologist, I am assuming that the ATF adds corrosion resistance and anti-oxidation properties to the canola, which makes a decent lubricant on its own.

I use this for range use only, and not for serious purposes. I am satisfied with its performance, (mostly because of its low price), and I intend to keep on using it.

I am not selling it, however. And I would not without full disclosure of what it is. (which is why it wouldn't sell, even if it works).

J.w.wilson

SEPTEMBER 12, 2015 AT 15:16

There is no such thing as canola. Canola oil is rapeseed oil made from rapes that have been bred for low uluric acid content. Canola ia actually an acronym for CANada Oil Low Acid. I would not use vegetable oil on my guns or knives. All vegetable oils are acidic.

ScottS

SEPTEMBER 17, 2015 AT 00:36

made from RAPES? get a life and get real! And as for canola being an acronym that bs started long after canola was being used and known as canola, over 1oo years to be exact. Especially since it came from the french speaking provinces of Canada where they would not even USE an american language Acronmn!

Joe

SEPTEMBER 12, 2015 AT 15:57

I only use it to protect against carbon build-up these days (on non-rubbing parts like inside a suppressor–where heat would melt it if it did gum up).
Rand CLP seems to be better at cleaning and lubricating the inside, and Frog Lube seems best at corrosion protection on the outside (it's done well in lubricity studies, but also is rumored to get a bit gummy if not applied perfectly, etc.).

Green Ops

SEPTEMBER 12, 2015 AT 16:00

As you point out, "trust, but verify", and that should include results from ANY test. Results should always be subject to challenge from experiment and I'm somewhat disappointed that there weren't more of a hands on challenge here. I like the charts, but would love to see some experimentation showing video.

I've been using FireClean for years without any issues to include overseas in most parts of Afghanistan. I'll keep using FireClean until I find something better. Scientific results means nothing when actual experiences show something different. According to science, hummingbirds, bees and helicopters can't fly 😉

★ Andrew Tuohy

SEPTEMBER 12, 2015 AT 17:00

Feel free to look at my past experiences with FireClean. I'm not saying it doesn't work as a lubricant for the AR platform – it does.

Ian

SEPTEMBER 13, 2015 AT 15:49

According to science, hummingbirds, bees and helicopters can fly.

http://www.nature.com/news/hummingbird-flight-has-a-clever-twist-1.9639

http://www.explainthatstuff.com/helicopter.html

http://www.livescience.com/528-scientists-finally-figure-bees-fly.html

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js

SEPTEMBER 14, 2015 AT 08:06

Hogwash. At some point in the past, some scientist admitted that he didn't understand how bees fly. Turns out bee muscles are a lot stronger and more efficient than the mammalian muscles he was familiar with.

"Science" as such (the generalized group opinion of experts in whatever field) has NEVER thought such gibberish.

Mike Butler

SEPTEMBER 24, 2015 AT 22:17

Helicopters can't fly they just flail the air into submission.

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bb

JULY 31, 2016 AT 12:25

"they just flail the air into submission" Like Chuck Norris!

Matt

SEPTEMBER 12, 2015 AT 16:29

Thanks for the interesting info – how do you regard Slip2000EWL, any opinion on it?

Mike Yeager

SEPTEMBER 14, 2015 AT 08:43

I have not found a better lubricant than Slip2000EWL. It has never gummed up and keeps all my guns running. If anyone wants to test this product against others, please keep me posted on the results.

Frank

SEPTEMBER 12, 2015 AT 16:30

if you're concerned about UV, do you actually think that UV rays penetrate the exterior of a gun and impact the oil inside of it? Maybe a concern if you're open carrying a High Point. I doubt many lubricant manufacturers care about UV- it's not going to penetrate an engine block, either.

Seems like Fireclean did just fine in the Brass vs. Steel Cased Ammo – An Epic Torture Test you published a while back, and that was in the Arizona desert.

★ Andrew Tuohy

SEPTEMBER 12, 2015 AT 17:01

Yes it did. That test took place over three to four weeks.

Jerry

APRIL 1, 2016 AT 02:54

Do the test w Crisco next time:-)

ScottS

SEPTEMBER 17, 2015 AT 00:43

ummm UV can get in MANY places that are not expected, being that it IS in a different wavelength than you can see it is reflected in sorter angles than visible light meaning it can get into the locking lugs on an ar if the dust cover is open, the container it is in can come in contact with UV and the final kill stage can be the oxygen in the air when its applied… too many probable cases to deny the possibilities

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Michael Borske

SEPTEMBER 12, 2015 AT 17:10

I've been using Fireclean for two years now. It has made my AR's MUCH easier to clean. Generally just a swipe with a solvent soaked rag and the end of the bolt wipes clean. The outside of the BCG comes as clean with just a rub of the cloth. BUT, I've also found it has minimal rust inhibiting characteristics. For long term storage I still use Valvoline 0-30 synthetic motor oil. FYI synthetic motor oils do NOT .thicken till about -50

JimS

SEPTEMBER 12, 2015 AT 18:06

Thanks for taking a close look at Fire Clean.

Anecdotal, but, Pat Rogers has reported great reliability using lubricants ranging from crankcase oil to KY jelly in the AR-15s used in his classes. IIRC, his take was the rifle needs something, and only "cares" that there is enough of it.

My best bud could tell us all about the wonders high oleic canola oil, he built a successful company around frying potato chips in the stuff circa 1999.

ScottS

SEPTEMBER 17, 2015 AT 00:46

I'm sitting here laughing my tail off, what everyone is missing here is this appears to be a lube that has a minimum operating temperature, and they need to not use it below that temp.

Pingback: Infrared Spectroscopy of FireClean and Crisco Oils | Vuurwapen Blog - Guns Over Texas RadioGuns Over Texas Radio

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Pingback: Vuurwapen Blog Compares FireClean to Common Vegetable Oil |

Pingback: FIREClean-Bad News-Good News - MP-Pistol Forum

Antoine Hythier

SEPTEMBER 12, 2015 AT 22:22

To those adding ATF to their "oil mix", I assume that means you understand the effects the friction modifiers have on how the firearm operates.

ScottS

SEPTEMBER 17, 2015 AT 00:51

I assume you realize that ATF LACKS friction modifiers? In the OLD days GM's trannies required it, but no longer do. This is why certain full time 4wd transfer cases that have internal clutches require the addition of friction modifiers to the ATF that they use for lubrication

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Logan

SEPTEMBER 12, 2015 AT 22:35

Please Please Please do a test on FrogLube

POD™

SEPTEMBER 13, 2015 AT 04:00

Wow, this is awesome!

Is there a comparable analysis for Froglube? Or is Froglube so 2013 and we all jumped the Fireclean bandwagon? Because I still use Froglube (at least for my AR and Glock, my IMI Jericho needs to run wet with PTFE gun grease or it will produce FTE every 20 or so rounds) and still like it…

Ben Wong

SEPTEMBER 13, 2015 AT 04:35

CLP FTW !! nuff said.. if its good enough for the Corps then its good enough for me

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John

SEPTEMBER 13, 2015 AT 04:36

Well everyone has an opinion on this one…and alot of stuff works…some maybe a little better than others. I have heard several times frog lube is nothing more than roller coaster lube that has a mint smell added to it…..

Michael

SEPTEMBER 13, 2015 AT 04:39

I don't care if it's crushed up kitty's or unicorn tears… I just did a valor ridge class with a pre clean of fire clean. 1200-1500 rounds of the cheapest cramp ammo I could find over two days. Not a single malfunction and we had them red hot. Today, I went to clean it and I was surprised. The damn thing cleaned up in no time, easily and to be honest, I would run it another 2000 -3000 rounds based on how clean it was. This was my first experience with the stuff. I'm sold.

★ Andrew Tuohy

SEPTEMBER 13, 2015 AT 09:38

Yes, FireClean works very well as a lubricant for the AR platform. That is not in dispute, at least not by me.

Chris

SEPTEMBER 13, 2015 AT 06:30

This controversy came to our attention just today thanks to one of our LE friends who is a lead firearms instructor with an agency here in Florida. We are in development of a technology that is similar in function but very different in process to the infrared approach used by the labs at Univ of Ariz. We also have PhD chemists as well as PhD physicists on our team. To put it in simple terms, we are in the same technology development space as the company that engineered and manufactures the actual spectroscopy equipment used in this test so I know something of what I am talking about from the technical side. We have a college engineering intern term (some are ex MIL) who are excited to investigate the claims in this story primarily as a learning exercise, but also as an opportunity to prove out some assumptions of our intellectual property. We are standing by and at the ready to do this and would like to enlist anyone else's participation that is curious as we are. We are not seeking controversy or to take sides with any company or individual. This purely about science and the work we are doing as a startup technology company.

Thank you for your time

Shoot straight, watch your six.

We are on FB so anyone can check my claims.

Mike Schmitt

SEPTEMBER 13, 2015 AT 06:41

This document may be their U.S. Publication of their Patent Application. It details vegetable oil on carbon deposits.

https://patentimages.storage.googleapis.com/pdfs/US20150017346.pdf

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Hank

SEPTEMBER 13, 2015 AT 08:06

I never understood all this business with expensive high tech gun oils. I've always used a sparing amount of a petroleum based oil like Hoppes and never felt the need for anything else. It's just a gun fer cripesakes, not a Swiss watch.

Dr. Wylie

SEPTEMBER 13, 2015 AT 14:51

Amen. There is a lot of BS and snobbery in the AR world.

The Old Coach

SEPTEMBER 17, 2015 AT 03:46

That should be in 98 point type, bold, underlined.

The Old Coach

SEPTEMBER 14, 2015 AT 18:59

Another Amen.

My fisherman son-in-law says that most all fishing lures are designed to catch fishermen, not fish. I think that's applicable here.

Me, I've used Ed's Red for at least a decade. Gun lube, bore cleaner, (cast bullets), penetrating oil….never a problem, except that the acetone evaporates unless it's stored in metal cans with tight seals. I feel no anxiety that I might be missing out one something, because I haven't read a supermarket gun tabloid in years.

Mike

SEPTEMBER 13, 2015 AT 09:44

I second the desire to see gas spectrometry results interpreted by someone in the know. I can't imagine it costs that much we used one a ton in undergrad organic chemistry, any university will have one and any chem student or at the very least TA/grad student should be able to run it for you in 2 minutes. Just ask if you can go in when some undergrads are doing a lab and they are already running various samples through one and have them run and print your sample as well.

Mike

Jason

SEPTEMBER 13, 2015 AT 10:03

Why all the weird combinations of motor oil and ATF. I was in the Marines from 1987 to 1993. We used CLP. I use it to this day. It cleans, it lubricates & it preserves.

The Old Coach

SEPTEMBER 14, 2015 AT 19:00

Several authorities have pointed out that mil-spec CLP and the civilian product are not the same thing.

ScottS

SEPTEMBER 17, 2015 AT 00:57

and the first thing you need to do is check those “authorities” credentials… a company will produce one product and two labels to maximize profit even if the product costs more, they will pass the extra cost to the government contract. thats how it has always been done and will be done, its basic business 101

The Old Coach

SEPTEMBER 17, 2015 AT 03:51

Yes indeed companies will and DO produce variations of a basic product tailored to specific markets. They sell the name, but with cheaper ingredients. Levis is an excellent example.

Pingback: Fireclean is Vegetable Oil?

Michael P.

SEPTEMBER 13, 2015 AT 11:19

The ultimate test would be to make a batch of fried chicken in FireClean and see how it tastes….

★ Andrew Tuohy

SEPTEMBER 13, 2015 AT 11:56

I did fry some eggs in FireClean and they were delicious.

photograpgher762

SEPTEMBER 13, 2015 AT 12:26

Lubriplate and STFU…no veggie oil in my weapons…thats for my french fries…

ScottS

SEPTEMBER 17, 2015 AT 01:01

Ive been using Lubriplate since 77, never had an issue, stainless, nickle plated, anodized, boron, blued you name it, it works and none of this “run it wet” nonsense either, just common sense lubrication

Joshua

SEPTEMBER 13, 2015 AT 12:57

Looks like Fireclean posted a rebuttel on their Facebook with hints of pressing charges for Libel against those who speak out against their product. Watch your six.

★ Andrew Tuohy

SEPTEMBER 13, 2015 AT 14:13

Yes, they made similar vaguely worded statements to me prior to the publication of this article.

Bu T. Fcker

SEPTEMBER 13, 2015 AT 14:14

KY hot and cool is the only lube for me.

derek

SEPTEMBER 13, 2015 AT 16:00

Suing over this or any other report, unless (a) done for a financial gain by a competitor, and (b) with at least reckless disregard in publishing something demonstrably false, isn't going to work out well for Fireclean. First, they would likely lose. Second, I strongly suspect that they would face the wrath of gun owners, website and store owners and forum posters in the form of negative publicity, limited boycotts and loss of shelf space.

Dr. Wylie

SEPTEMBER 13, 2015 AT 17:57

Agreed. Also, if it turns out that Fireclean is Canola oil or similar substance/mix, not only do they have zero grounds to sue anyone, but they will have lost all credibility with gun owners worldwide.

john

SEPTEMBER 13, 2015 AT 16:51

Suddenly, I understood what it must be like for girls who visit gun stores.

Why did you need to add the sexist and uneducated comment? It did nothing to add to your article.

HAROLD

SEPTEMBER 13, 2015 AT 17:19

John, your attitude is what is wrong with the world. Please leave.

Davan

SEPTEMBER 13, 2015 AT 19:11

Is there Anything else that has offended you today?

Thatguy

SEPTEMBER 13, 2015 AT 23:36

Wow. Get your little b***ch ass out of here. How do you even get through the day without breaking down in tears?

You want to see sexism? Travel off CONUS and you will see a lot of sexism.

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tritam

SEPTEMBER 14, 2015 AT 10:31

Thanks john…. i felt the same way. And if one more MFer tries to show or sell me a pink gun i think ill explode.

ScottS

SEPTEMBER 17, 2015 AT 01:02

what are you a tranny John? you seem to have your panties in a bunch!

Pingback: The AK Forum

Brian

SEPTEMBER 13, 2015 AT 19:09

I love lamp.

Lifeisdeath

SEPTEMBER 13, 2015 AT 19:51

Well, if they did try to sue anyone for libel; the discovery phase would be interesting.

Yuri Pavlenkov

SEPTEMBER 13, 2015 AT 20:07

I use cosmoline on Mosin for make great glory for mother Russia. It works like charm to make boat paddle/tent pole/gun continue to function without needing of anything more than large rock and bottle of vodka to close bolt!

Govy Nagantipov

MARCH 15, 2016 AT 22:07

Yes Commrad, and dif you dunt hev a boulder my wife Helga can use her formidabul throat muscles on glorious mosin bolt.

Dbcooper.

SEPTEMBER 14, 2015 AT 00:42

Please Someone
Test EWL SLIP 2000 it is what I have been using the last few years and love the results.
wondering if I should just use organic olive oil instead…
seriously test SLIP

Edward Jones

SEPTEMBER 14, 2015 AT 07:09

At $2/quart modern Automatic Transmission fluid (of any type in general use) meets or exceeds the requirements for a weapons oil/lubricant/cleaner.

A modern vehicle transmission is composed of iron, aluminum, steel, and polymer parts all operating in close proximity at high speed under high temperatures.

Just like many firearms…

Warmachinist

SEPTEMBER 14, 2015 AT 14:00

I switched to ATF from gear oil after a winter in the frozen north. ATF does basically anything I could want a gun oil to do, AND I happen to make good use of it as well for Ed's Red as cheaper-and-better CLP.

Pingback: FireClean | The Weapon Blog

Vermits

SEPTEMBER 14, 2015 AT 09:58

How about an spectrum analysis of another labeled gun oil? Since all oils are hydrocarbons and contain very similar molecules it would be interesting to see how different different can be.

ScottS

SEPTEMBER 17, 2015 AT 01:07

no not all oils are hydrocarbons. this entire thread is based on a vegetable oil, Animal oils are not hydro carbons many waxes are oily and are not hydrocarbons

Fintan

SEPTEMBER 21, 2015 AT 21:04

ScotS, lipids are indeed hydrocarbons. Biological oils are, yes, hydrocarbons.

They're composed of long chains of carbon and hydrogen… you know, hydro-carbon.

You struggled in high-school didn't you? Here's a basic biology link:
http://biology.clc.uc.edu/courses/bio104/lipids.htm

From the above: "The 'tail' of a fatty acid is a long **hydrocarbon** chain…"
Also:
" The terms saturated, mono-unsaturated, and poly-unsaturated refer to the number of hydrogens attached to the **hydrocarbon** tails of the fatty acids…"

Pingback: All You Need To Know FireClean, And Nothing You Don't - Classified Listings for Guns and Hunting Equipment

St8kout

SEPTEMBER 14, 2015 AT 16:14

Secretly we are all just jealous that we didn't discover it and make a fortune with this 'secret formula.'

Usually in this info age, normal people share valuable tips with the public. This guy discovered that canola oil works great and capitalized on it. Of course, he couldn't just say, "Hey guys, you can save money and just use canola oil on your guns instead of all those expensive gun oils."

Dr. Wylie

SEPTEMBER 14, 2015 AT 16:25

In fact many honest people would have done just that, instead of deceive MANY customers you are supposed to serve.

Pingback: A Conspiração da Canola estava correta! (a outra)

Pingback: Anonymous

Pingback: FireClean gun oil=rip off - Page 2 - Hipoint Firearms Forums

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Pingback: Snake-Oil Salesman? | Guffaw in AZ

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mikeyanxu

SEPTEMBER 15, 2015 AT 09:09

Please do the followingn test:
froglube vs vegitable oil.
Froglube vs tracklube
I can provide froglube samples. I highly suspect that froglube is nothing more than tracklube with mint additive. Tracklube is highly likely to be vegitable oil based material.

Pingback: Results of gun care product evaluation - Page 7 - Shooters Forum

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ken

SEPTEMBER 15, 2015 AT 18:28

I know I dislike gunzilla and bore butter as a preservative oil. Their rust inhibiting claims are BS! I lost the condition of a beatifully crafted un issued polish rifle using these products. My bore rusted and pitted!

A caution to those using synthetic oils, the oil is synthesized from etsters of alcohol and an in organic acid.. In certain conditions the oil can break down and cause a corrosive situation much the same as organic oils do.

Pingback: Weekend Knowledge Dump- September 18, 2015 | Active Response Training

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Pingback: pdb : This Is All Your Fault

Pingback: Gun oil Vs. vegetable oil |

Pingback: Gun oil Vs. vegetable oil |

Pingback: FridayTour d'Horizon: 2015 Week 38 | WeaponsMan

Pingback: FIREClean Sues Andrew Tuohy And Everett Baker at A Geek With Guns

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Pingback: FireCLEAN Files Lawsuit against Bloggers – GunsAmerica Digest

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Jim Holmes

APRIL 8, 2016 AT 01:14

It would help a bit if you had charts\spectrographs of known gun oils like well-known products I can't say for certain that ALL Gun oils aren't similar from the evidence given.

Al Price

APRIL 14, 2016 AT 17:15

After reading the vuurwapenblog and looking at the FC patent, I bought some cheap mexican canola/sunflower oil and started my own test. I have found that it cleans carbon out of my rifles better than any petroleum based cleaners and also used it as a lubricant on a Saiga 12 that gets fouled quite quickly. The gas regulator, gas puck and the gas piston literally wipe clean after shooting better than other expensive products I have used. I can't tell if the molecular binding of the cooking oil helps remove copper fouling yet. Also, I haven't found any glazing or burning after

limited rapid fire but I will keep testing the “cooking oil solution” until I see more results. Very pleased that this site has given me great advice about this “new paradigm” for weapons cleaning and lubrication. THX you guys.

Ymmot

MAY 27, 2016 AT 09:42

What is Wrong with good old WD-40.
I have used WD-40 with great results for nearly 30 years and never had problem! Hot, cold, wet or dry! Especially on my AR when it starts fouling up after a couple hundred rounds using cheap ammo!
WD-40 is Fish Oil BTW!
I also exclusively use LSA when I am doing a take down cleaning and NOTHING else!
PS I have listened to ALL the crackpot suggestions over the years on what is the best overall gun oil and I find most of it to be junk science! Use what is KNOWN to work and forget all the manufacturers HYPE and HOOEY!

Dan

AUGUST 2, 2016 AT 19:20

One more thought. Where is the control lugbricant, such as LSA or CLP, for all we know right now they could IR the same.

EXHIBIT D

Vuurwapen Blog

LIES, ERRORS, AND OMISSIONS

SEVERE PROBLEMS WITH VICKERS TACTICAL FIRECLEAN VIDEO

SEPTEMBER 14, 2015 | ANDREW TUOHY | 84 COMMENTS

Over the weekend, I posted an article which showed the results of some infrared spectroscopy tests comparing FireClean and two types of Crisco cooking oils. I was not expecting the firestorm of controversy that has erupted.

However, none of that controversy matters.

It doesn't matter if FireClean is pure canola oil or a mixture of astroglide and peanut butter.

I made a discovery which calls into question any claim or statement made by FireClean as a company and Ed and Dave Sugg as individuals. As for Larry Vickers… did he have knowledge of this? Which is worse, him knowing, or him not knowing?

Some people – a lot of people – are probably rolling their eyes right now. Well, check this out.

On December 26, 2014, Vickers Tactical uploaded a video to YouTube called "FireClean Lube Test." I watched this video in its entirety for the first time today. In the video, the Sugg brothers are interviewed by Larry Vickers about their product. Larry then proceeds to shoot a Beretta M9 and a BCM carbine with three different configurations:

– Dry (no lube)
– CLP
– FireClean

The weapons were reportedly cleaned between each firing.

The video purports to show minimal amounts of smoke coming from the firearms when dry and lubricated with CLP, but excessive amounts of smoke when lubricated with FireClean. The smoke, we

are told, is carbon being pushed away from the weapon by the super effective FireClean formulation, which is composed of (redacted).

Now, Vickers Tactical has some awesome cameras and production equipment of which I am quite jealous. Don't get me wrong, I have nice stuff. But I don't have something that shoots high speed frame rates in 1080p, like Vickers Tactical. That's the sort of equipment I enjoy seeing in use, especially when firearms are the subject, and I am likely to rewind and watch several times in order to see things I missed.

Things like this.

Beretta M9, dry, brass colored primer, PPU headstamp

This is a screenshot of the Beretta M9 being fired, dry, at approximately 5 minutes and 30 seconds into the video. It shows minimal smoke and a 9mm case with a PPU headstamp and a brass colored primer being ejected from the firearm.

PPU 9MM LUGER

After some discussion, the Beretta is fired again with CLP applied. This can be found at about 7 minutes into the video.

Beretta M9, CLP, PPU headstamp, brass colored primer, what appears to be a shiny projectile, likely FMJ

Again we see a PPU case with a brass primer ejecting. There is a little more smoke and we are told it is because of the CLP. We can see the projectile of the subsequent round and it appears to be shiny, as we would expect a factory FMJ projectile to be.

Finally, at approximately 8 minutes and 30 seconds, Larry fires the M9 again, this time having been cleaned and lubricated with FireClean. Immediately upon ejection, the spent case emits quite a lot of smoke – much more than the previous two rounds. And then the case spins around and the headstamp comes into view…

Beretta M9, FireClean, Cor-Bon case, nickel colored primer

That is a different colored primer. More than that, it's a Cor-Bon 9mm Luger +P headstamp.

COR-BON 9MM LUGER +P

And when the projectile of the subsequent round comes into view, we can see that it has a more matte finish, as we would expect, say, a copper *plated* bullet to have (if you're not a handloader, the projectile differences may not be as apparent to you). Alternately it could be a DPX bullet which is used by Cor-Bon in its +P line.

Cor-Bon case. Nickel primer, with a little more space between the primer and the case than the PPU. Super smoky powder. Possibly a plated bullet.

I'll bet you four bottles of FireClean that was a factory +P Cor-Bon load; +P loads being hotter and having more powder than standard, bargain ammunition like Prvi Partizan. Barring that, it was a handload, with a smoky powder selected for maximum effect.

I have major concerns with the rifle ammunition used in the BCM carbine as well, but due to the design of the AR, the depth of field of the camera, and the length of the 5.56 case, my suppositions would be much harder to prove. Still, the pistol evidence is so overwhelming as to make the rifle almost irrelevant.

Whether it was a handload or a factory Cor-Bon round, it is indisputable that the cartridge fired for the FireClean demonstration was significantly different than the cartridges fired for the dry gun and CLP demonstrations.

Indisputable differences.

No factory Prvi Partizan (made in Serbia) ammunition would ship with a random Cor-Bon (not made in Serbia) case and a different primer.

No honest person with a basic understanding of the scientific method would use handloaded or +P ammunition in a comparison with standard pressure bargain priced ammunition if the comparison was meant to show differences between lubricants and their effect on how much smoke comes out of the chamber during firing.

Smoke after firing is put forth as evidence of a cleaner gun. The cleaner gun concept is central to the ethos of FireClean; it's even their URL. Different ammunition was selected for the FireClean portion of the demonstration to give the appearance of more smoke and thus a cleaner gun.

As I said at the beginning, the "FireClean Is or Is Not a Common Vegetable Oil Used for Cooking" controversy matters not. All the information required to judge the integrity of statements made by FireClean is contained in that Vickers Tactical video.

84 THOUGHTS ON "SEVERE PROBLEMS WITH VICKERS TACTICAL FIRECLEAN VIDEO"

Tierlieb

SEPTEMBER 14, 2015 AT 05:08

Awesome, man. I remember laughing out loud when a hacker named Starbug used a camera to clone a politicians fingerprints.

But this is much more entertaining to me. Good use of HD video^^

Thanks for your dilligence!

MatKep

SEPTEMBER 14, 2015 AT 05:13

Glad you are back researching, writing and posting. Keep up the good work. Best wishes.

DGR

SEPTEMBER 14, 2015 AT 05:24

How is that supposed to work? Smoke means carbon is leaving the gun? Um….. huh? Because my first thought is smoke = bad because it means something is burning. So is there a super scientific and hard to understand explanation for why smoke would be a good thing and why it means carbon is being pushed away from the gun? I just always thought more smoke meant more carbon because more things are burning and carbon is burnt remnants of things….

WedelJ

SEPTEMBER 14, 2015 AT 06:28

The idea is this: If you shoot the same rounds out of a gun, they both produce the same amount of carbon fouling. If the lube you use makes more fouling leave (in the form of smoke) that means less carbon is left that can build up inside. The video shows the FireClean-ed gun with more smoke leaving. The problem is they used different ammo for the FireClean gun, making the test completely irrelevant and the makers of the video liars.

Daniel

SEPTEMBER 14, 2015 AT 09:45

The problem with claiming more smoke = less carbon deposits is that the smoke is likely from the lubricant burning off. It's possible to have more smoke *and* more carbon deposits, even if the test was scientific.

Eli

SEPTEMBER 14, 2015 AT 13:49

More smoke (carbon) leaving the gun less carbon staying on parts. Or so they say.

Mike V.

SEPTEMBER 14, 2015 AT 16:58

When I went through the police academy (admittedly in the late 70s), we fired .38 caliber reloads that were VERY SMOKY. If the theory that gunsmoke = a cleaner gun were true, we wouldn't have spend hours cleaning our pistols. I've always understood smoke to indicate a slower, burning powder which will leave more carbon and gunk to clean. Most modern ammo has fast burning (cleaner) powder. My knee jerk reaction it that the Cor Bon case was reloaded.

NDS

SEPTEMBER 15, 2015 AT 07:53

I have some old Cor-Bon "Pow'r Ball" 9mm +P that is super dirty, and anything shorter than a G19 shoots burning chunks of propellant from the muzzle. Doesn't necessarily mean this is a factory load in the video, but I would believe it.

Blake

SEPTEMBER 21, 2015 AT 20:37

Read my mind

MatKep

SEPTEMBER 14, 2015 AT 05:38

So… Either LV cannot tell the difference between +P and Std. P, or he is not familiar with the scientific method (or truth in advertising).

Mark

SEPTEMBER 14, 2015 AT 05:47

"Oh sh@$!!"

– Sugg bros. & probably LAV

Ben

SEPTEMBER 14, 2015 AT 12:30

I assume LAVs response will be his standard “Remember who you’re talking to” .

DAN V

SEPTEMBER 15, 2015 AT 01:23

“Jou wanna go to war?!” – Tony Montana

11b

SEPTEMBER 15, 2015 AT 06:22

“You’ve been warned.”

zackmars

NOVEMBER 4, 2015 AT 12:58

“ *stay in your lane*“

txJM

SEPTEMBER 14, 2015 AT 06:43

Ho lee shit.

Dr. Wylie

SEPTEMBER 14, 2015 AT 06:53

At face value, the criticism regarding the “science” used in the referenced video, seems to be quite valid. You cannot call something science, and claim a cause & effect relationship between two identified variables, when you have failed to isolate even the most basic of relevant variables. I certainly welcome more scientific information from either side.

Aaron

SEPTEMBER 14, 2015 AT 07:31

FireClean has responded, but they refute nothing from this post or the other. They basically just say:

"blah blah blah, support our troops, freedom, America." and if you didn't believe them when they said "freedom. America" they followed it up with proof.. Veiled threats of lawsuits. The American way!

Prickist

SEPTEMBER 16, 2015 AT 17:46

you scared brah?
I'm shocked at the snakeoilerie

The Observer

SEPTEMBER 14, 2015 AT 08:01

All of you are printer repairmen and followers of SpongeBob Squarepants.

http://www.ar15.com/forums/t_2_382/195644_.html&page=1

The LAV has spoken. So shall it written, so shall it be done.

The Observer

SEPTEMBER 14, 2015 AT 08:06

The above comments had portions deleted due to HTML problems.

The intention was a sarcastic swipe at the "LAV", not the author or respondents.

Sorry for any confusion this may have caused.

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towerclimber37

SEPTEMBER 14, 2015 AT 08:19

I don't have a dog in this fight but I posted that it was ok to use crisco, just be honest about it, on their FB page. they deleted the comment. apparently, the only thing allowed on their page is 100% support for their product and you should give them all your money now.
I wouldn't use that stuff if you paid me to.

Karl K

SEPTEMBER 14, 2015 AT 08:52

This is superb work, bravo!

TrojanMan

SEPTEMBER 14, 2015 AT 08:59

The rifle "test" is very easy to explain. They applied the oil to the bolt and carrier, and then fired a single round. Disassembly introduced oxygen, and the application of FireClean introduced oil.

The bolt and carrier are a piston and cylinder, respectively, and when hot gasses are introduced (through the gas port-tube-key), into a closed environment containing oxygen and oil, the process and products of combustion can be seen.

The additional products of combustion seen venting from the carrier's exhaust ports are exactly what you think they are: FireClean burning off following exposure to a high temperature and pressure environment. Given that canola oil smokes at around 400*F, the video makes perfect sense.

Subsequent shots, where the carrier is already filled with mostly inert gasses and much of the lubricant has had a chance to cook off, should show a lower volume of products of combustion.

Though all that is largely irrelevant. Lubricant used in any machine needs to resist the operating temperatures involved. If the lubricant is burning off, then it won't be there to do its job.

Raymundo

SEPTEMBER 14, 2015 AT 09:00

LAV's response will be that he had nothing to do with administering the firearms used in the video, and that he didn't notice the +P round when firing the pistol, because of all the production related distractions.

Even though this statement tarnishes his image as a firearms expert/operator/trainer he has to say it to avoid being labeled a fraud.

Then, to try and sure up his firearms expert/operator/trainer status, he'll tell his doubters (as he always does) to "check his resume". Unfortunately for him, his involvement in this video is part of that resume.

Cody H.

SEPTEMBER 14, 2015 AT 09:09

Who really cares how much damn smoke comes out of the firearm after a round is fired. Biggest thing about cleaning a weapon is how easy is it to clean after it's fired. Does Fireclean make it easier

to clean than CLP? Does Fireclean offer better lubrication during firing than CLP? Those are the things that we should be worried about rather than debating on how much smoke comes out of anything after firing. We're not talking black powder here. The whole less smoke thing is a marketing gimmick and nothing more.

Dr. Wylie

SEPTEMBER 14, 2015 AT 09:22

I agree, but I think you missed the point; they are claiming that Fireclean is a superior product because it produces more smoke AND that the smoke is not the oil burning but rather the carbon being magically flung away from the gun.

Raymundo

SEPTEMBER 14, 2015 AT 10:00

Yeah, as unbelievable as it may seem, they are actually trying to say that more smoke is better. LOL

However, Andrew's point wasn't about the quantity of smoke, it was that the test appears to be rigged.

JaredN

SEPTEMBER 14, 2015 AT 09:30

More smoke with Fireclean doesn't mean that less carbon is being deposited on the gun. It just means that their low temperature lubricant is burning off.

Asher

SEPTEMBER 14, 2015 AT 09:32

Invite the fireclean guys on your podcast! Their lawyers would never allow it, but it would be good.

Guy Schlachter

SEPTEMBER 14, 2015 AT 09:57

I think the gun community needs more investigative journalism. For to long, forum hearsay has become the de facto standard on product quality when it's often only based in inferred and biased reasoning (because they spent their money on it and must defend it). It's really sad what this has all come to. People paying a mark up on vegetable oil and gumming up their guns with it.

Dr. Wylie

SEPTEMBER 14, 2015 AT 10:23

I agree, but this situation is symptomatic of the screwy AR-15 culture that dictates if you don't have the newest trendy thing or the most expensive thing you suck. How did a gun culture, full of ex-military and gun enthusiasts of both genders get to be more similar to women's fashion or high school drama than any other sport?? Sad…

Raymundo

SEPTEMBER 14, 2015 AT 10:40

I agree 100%, Guy.

I think the most untested yet often repeated conventional wisdom of the firearms industry is that cold hammer forged barrels are superior to button rifled barrels. Everyone says this is true, yet I've never seen anyone site quantifiable proof.

To me, anything that can't be measured has no value. It's just marketing hype at that point.

Warmachinist

SEPTEMBER 14, 2015 AT 13:47

WRT cold hammer forged barrels:

Hammer forging for rifling barrels really "took off" in wartime europe, because it could make use of existing heavy industry (especially the kind that fed the early-war German war machine) to produce good enough barrels very fast. And it does that very well, it lets you make "good enough" barrels, cheaply and extremely consistently. This is a great thing for MG barrels (where good enough is good enough, and in wartime production you probably want a lot of barrels), or for modern pistol barrels (where the stresses in the barrels are largely irrelevant, due to short length and that pistols are seldom shot very far anyway).

Unfortunately, "cold hammer forged" barrels will never shoot as well as a cut rifled or button rifled barrel. The process produces stresses in the barrel through work hardening, and does so much moreso than any other manufacturing process. Barrels may be extremely straight and concentric when cold, but upon heating they will deflect more than barrels rifled through other methods will. The claim that the stresses "are uniform" is pure BS. My own personal hypothesis regarding at least part of the G36's claimed accuracy problems (POI shift when hot, wandering zero when hot) is that this is the case, especially on such a thin barrel.

Most of the reason these barrels are talked up for rifles is because as a result of the wartime production and the resulting massive shift in weapon manufacturing culture in post-war Europe, other rifling methods fell into disuse as being “small time” so to speak. In the face of superior heavy industry, obviously the shop-level process that is cut rifling has to be less effective, right? And so hammer forged barrels are marketed as superior, with no regard for the fact that the barrels are /inferior/ to cut or button rifled barrels produced by equally quality firms. This is borne out by the scarcity of CHF barrels in the benchrest and varmint worlds.

Guy Schlachter

SEPTEMBER 18, 2015 AT 08:10

Not all CHF barrels are made equal. I have no proof, but I’d gather that an Austrian CHF barrel far exceeds the quality of the CHF barrels made here in the US. Some things are still considered trade secrets.

WedelJ

SEPTEMBER 18, 2015 AT 10:07

Australian CHF barrels still have to abide by the laws of physics.

Warmachinist

SEPTEMBER 21, 2015 AT 22:47

They don’t really. That’s marketing. There are processes that produce better barrels, but those are processes that aren’t CHF.

Echoing WedelJ, it’s a metallurgy thing. There’s some things you simply can’t change (this is one of them), and there’s very little untrod territory in the realm of processes used for the forming of metals, and if they really were better, you’d see benchresters and gunsmiths for benchrest and varmint guns shooting them and building them. There’s big money in it, and unfortunately big marketing and big snake oil too.

Rog Uinta

SEPTEMBER 14, 2015 AT 13:36

“Investigative journalism”? Like the “journalism” provided by all of the dead-tree media about how awesomely reliable the Remington R51 was?

Guy Schlachter

SEPTEMBER 18, 2015 AT 08:04

The Remington R51 was an old gun re-released as “new” and it couldn’t hang with the modern designs of today. That’s it. I have no idea what issues they actually had with them other than the YT’rs who claimed it was never reliable. I think it was more a “design” issue than the fault of the QC and that was simply a mistake in cost-benefit analysis on behalf of Remington. They tried to bring something old and brand it as “new” to the market, got an immediate negative backlash because it wasn’t good and then pulled it. Nothing there was “investigative”, it was just a bunch of whining forum goers circle-jerking how awful the gun was when 99% of them never shot one.

Scott Wylie

SEPTEMBER 18, 2015 AT 08:22

Hmmm, that sounds an awful lot like what goes on every day in AR forums about every possible add-on, but most annoyingly with optics. EOtech sucks, you need a Triji…blah, blah, blah

WedelJ

SEPTEMBER 18, 2015 AT 10:02

The original 51 was a fine pistol. A friend of mine (and I mean in real life, not on a forum) actually owns an original and shoots it. Never had any problems like the R51 had. The R51 fired out of battery (look up MAC on YouTube for video). Maybe if one guy had that happen it would be a fluke or lemon, but everyone who shot one had the same experience. I don’t believe in coincidences that large.

Cody H.

SEPTEMBER 14, 2015 AT 10:12

What company doesn’t rig their tests? They want the business and your money. I really do find the whole more smoke thing funny. The only time more smoke should be advertised as a good thing would be for smoking meats in my opinion.

paul

SEPTEMBER 14, 2015 AT 10:19

If I recall the basics of fire science, smoke is the result of incomplete combustion, the more smoke the lesser amount of fuel is being consumed efficiently. The more complete combustion of fuel will result in lesser amounts of smoke. Advertising gimmicks don’t alter the basic scientific principles do they?

Pingback: Did FireClean And Larry Vickers Rig A Product Testing Video? | The Right News Network

Steve Sanders

SEPTEMBER 14, 2015 AT 11:00

If you really want your spectroscopic experiment to prove anything, you need to repeat it with many other brands as controls to show that other brands, CLP, FP-10, Hoppes, Froglube, etc…are any different than the Fireclean. All oils are just that and share many of the same components and properties. All a spectroscopy shows is the chemical makeup of a substance. So all you've done is show that, like vegetable oil, Fireclean is an oil. Woohoo! Now prove that other gun oils are different. Then you will have done some real science.

Warmachinist

SEPTEMBER 14, 2015 AT 13:58

As TFB's article's link showed (see below), the spectroscopy data for FireClean and Vegetable oils are a lot closer to eachother than to other common lubricants and fluids, in my opinion sufficiently different from then, and sufficiently similar to eachother, to indicate that there's likely little to no adulterants in FireClean separating it from vegetable oil.

http://www.jascoinc.com/docs/application-notes/IR_03_03.pdf

P.S. – I may post a youtube video in the near future of myself frying pancakes and frybread in FireClean, if I can scrape enough wasteable cash to buy overpriced vegetable oil.

VDMAShooter

SEPTEMBER 14, 2015 AT 11:02

You'll probably want to hire a good lawyer who is an expert in defending clients against charges of libel. Good luck and let us know how it all turns out.

ArmsVault

SEPTEMBER 14, 2015 AT 12:29

Quite a fiasco you've found yourself in the middle of! Keep up the good work!!

Rusty

SEPTEMBER 14, 2015 AT 13:10

Up to the point The LAV got canned from their employment, VT did not own a high-speed camera, they use Daniel Defenses.

James P

SEPTEMBER 14, 2015 AT 13:12

ENHANCE

David G

SEPTEMBER 14, 2015 AT 15:14

LAV claims this was reloaded ammo.

Oops

★ Andrew Tuohy

SEPTEMBER 14, 2015 AT 15:36

Which is what I said in the article.

Guy Schlachter

SEPTEMBER 18, 2015 AT 08:12

Reloaded yet the primers are different….

Tracy

SEPTEMBER 14, 2015 AT 15:18

Whether a +P round or not, I know for a fact that Fireclean does produce more smoke during shooting. At least with a suppressor. Though I do not personally believe it is the fouling that is going out the barrel, but most likely the oil smoking, or something like that. I have used Fireclean on an AAC Ti-rant. I pulled the entire thing apart, and lubed it up. On the first shot, it smoked like crazy. Had I done a test with one round like was done in the video spoken of above, it would show that it may indeed spit out a bunch of the carbon and other junk that fouls up a gun during shooting. However, we shot a whole magazine through it. The first shot had the most smoke, then it dwindled quite a bit after that. After maybe 5 shots, the smoke level was on par with a regular shooting.
I have noticed that with putting oil in a suppressor, the first few shots are more smokey than all the others. Fireclean is more smokey right off the bat than other gun oils that I have used. But after a few shots, it's just like the others. So their claim that it's more smokey because it gets rid of all of the junk in the gun, to me at least, is a bit off. Your mileage may vary.

Bill

SEPTEMBER 14, 2015 AT 15:36

Just get some military lube (widely available) for a lot cheaper and burn some rounds down-range. I like machine gun lube for my SIG M11-A1 and it's just fine.

Aaron A.

SEPTEMBER 14, 2015 AT 15:40

This is far from the first time I have seen something of this nature. It becomes easy to catch when you are in the industry. One that comes to mind is this video from Ted Nugent.

https://youtu.be/GmfLZ4TnW7E

At 1:49 he has a pretty clear FTF and they just edit away and make believe it never happened. So much for a perfect 10 (I have found 10mm to run without issue in 1911's I made…but those were single stack :-/)

https://youtu.be/ATpeX3XBuuw

This is a heavily edited video showing some hard to even see Russian hardware. To this day I have been unable to find slow motion video of the the action of a two round burst of an AN-94 (if anyone can find some I would love to see it). I am pretty sure the Russian government asked to not show that footage. The FTX/double feed also was heavily cut out as it would show just how overly complicated that firearm is.

NDS

SEPTEMBER 15, 2015 AT 08:00

LAV had a video in the last few months detailing the AN-94 action. I'm sure it's up on his YouTube channel – it was fascinating, and super unreliable.

Pingback: SayUncle » More on fireclean

Colin Baird

SEPTEMBER 14, 2015 AT 16:28

Chances are that there were range reloads and mixed head stamp and primers.

★ Andrew Tuohy

SEPTEMBER 14, 2015 AT 17:02

The first two rounds were consistent with PPU factory ammunition in terms of appearance and primer pocket/primer fit.

The last round looked quite like it had had the primer pocket swaged pretty thoroughly.

I'm not buying it.

Haunted Puppeteer

SEPTEMBER 14, 2015 AT 21:06

Yeah, it's bullshit.

Their press release was a study in logical fallacies.

They're on damage control. They're going to turtle up, and threaten people with legal action. Libel my ass.

They don't have shit. They're on a sinking ship doing Chinese fire drills.

Fuck 'em.

And Mr. Tuohy: good catch, and good work!

NDS

SEPTEMBER 15, 2015 AT 08:02

Reloading mixed brass? Sure. Even though as you said the first two rounds LOOK like factory PPU. Nobody reloads with mixed primers. That doesn't even make sense.

CA

SEPTEMBER 14, 2015 AT 17:25

Also, the PPU ammo will make the gun appear dirtier while the Cor-Bon will make it appear cleaner.

Dirk W

SEPTEMBER 14, 2015 AT 18:24

I am glad you published this. I have spent way too much money on gun oil. I do not need the newest, greatest thing, but I do have some pricey historic firearms which I want to take proper care of. I tried one brand last year, only to discover that it turns to some kind of goo in freezing weather. I do not buy the smoke argument. I think the lube is burning off. That is not a big deal with a pistol, but could be a disaster with a class 3 firearm.

DarrenM

SEPTEMBER 14, 2015 AT 19:24

Could you please test Brian Enos's slide glide next? I suspect it is actually Lucas Oil's Red-N-Tacky grease or Permatex's Engine Assembly lube just re-packaged.

DBCooper

SEPTEMBER 15, 2015 AT 03:00

Brownells' MSDS for Slide Glide makes it pretty clear that it's repackaged A.T.B. Bicycle Chain Lube, which can be bought in bicycle shops for 2-3 bucks an oz. Enos apparently slaps a different label on it and hawks it for twice the price (and apparently has been doing so for a decade or more). At any rate, the components aren't anything special. Something something nothing new under the sun…

http://www.brownells.com/userdocs/MSDS/100-004-080_SLIDE%20GLIDE%20STANDARD%20LUBRICANT%20-%2003G_default.pdf

★ Andrew Tuohy

SEPTEMBER 15, 2015 AT 22:23

Interesting. I've been using it for almost a decade and like it a lot. Twice the price isn't a huge markup though considering that there are more people looking for bicycle chain grease than specialty gun grease – and especially considering the 100x markup that appears to relate FireClean to vegetable oils used for cooking. I will look into it though.

DBCooper

SEPTEMBER 16, 2015 AT 00:48

IIRC, you live in AZ — you could probably find some A.T.B. locally, as the company is based out of Mesa.

At least it has an anti-wear additive (zinc), but so do most lithium/calcium greases (not sure which to classify it as, considering it seems to contain both–under "thickener" it states

lithium, however).

BTW, not sure of the extent of the results from the IR spectroscopy of FireClean, but presence of phosphorus or zinc means it has anti-wear additives, absence of them means it's (likely) just a mix of oils. I don't know what other additives they could have used that aren't toxic.

If that wasn't part of the spectroscopy (I'm not very familiar with them), you could ship some of it off to a place like Blackstone Labs and find out for 25 bucks. Probably not worth the money… I think I know the answer.

At any rate, keep up the good work!

Scuba_Steve

SEPTEMBER 14, 2015 AT 19:25

Great stuff man. Seriously. And good for you for not backing down…and for calling BS where you see it.

Frankly, I just don't get anyone who buys something due to a celebrity endorsement. Folks, you do know these folks are almost always compensated in some way…right?

Dr. Wylie

SEPTEMBER 14, 2015 AT 19:37

Compensated!!! Haha…they are bought and paid for. Do you know how many thousands, if not millions these fucktards have made off of honest working Joes like me and you??

MichaelBolton

SEPTEMBER 14, 2015 AT 20:48

LOLZ . . . The house of cards continues to crumble.

Good to see shills get called out too.

Left Thumb

SEPTEMBER 15, 2015 AT 04:55

A classic Vuurwapen blog test would be to take two idential AR's and lube one with Fire Clean and the other with Crisco. Perform a battery to tests with a control ammunition and see how each does.

If there is any real difference, it should show. If they're identical, then if you ever run out of CLP you can run down to the chow hall and get yourself some at least emergency lube. Granted I don't know how lard would do compared to Crisco.

Raymundo

SEPTEMBER 15, 2015 AT 21:11

LAV is now claiming on his Facebook page (the post about the training certificate) that the ammo was Freedom Munitions reman. I've shot about 10,000 rounds of that stuff and I've never seen a nickel colored primer. LOL He keeps digging himself a bigger hole. Fireclean hasn't said anything. They've probably been advised by someone smart to keep quiet. LAV on the other hand… not so much.

★ Andrew Tuohy

SEPTEMBER 15, 2015 AT 22:17

I'm leaning towards him being an innocent victim. The Suggs would be obsequious around him and since they were apparently the ones cleaning the guns between shots (according to the LAV in the video), they were probably the ones loading his mags.

Raymundo

SEPTEMBER 16, 2015 AT 08:33

If he is an innocent victim then why doesn't he just say that instead of creating a dubious cover story like we used Freedom Munitions reman? Someone could easily contact Freedom Munitions and ask them the odds of getting a nickel colored primer in their 9mm reman. I certainly haven't seen it before.

★ Andrew Tuohy

SEPTEMBER 16, 2015 AT 09:08

Because then it would be clear that he was duped. He was used. That's not a position he wants to be in.

Frank M

SEPTEMBER 16, 2015 AT 02:16

LAV also claimed in the same post that this whole thing was started by a competitor who is also a neo-nazi. WTF is that all about? (I mean, besides Vickers trying to avoid the real issue..) Andrew, yer not a jackbooted romper-stomper on the weekends are ya? 😉

★ Andrew Tuohy

SEPTEMBER 16, 2015 AT 07:20

No, George fennell has SS lightning bolt tattoos on his right arm. That's why I called his product weaponSShield. Although I think now that they might be a reference to a biker bar in California that burned down in the 90s. I was watching the first season of x files the other day and saw a guy with an SS lighting bolt t shirt. I was like "what the hell" and Googled the name of the bar. The shirts are now sold as "zz biker bar shirts" for like 100 bucks since as I said the bar burned down about 20 years ago. The logo was supposedly because they were all about freedom of expression and sticking it to the man, man! Fennell looks like an old wannabe badass biker dude. That's the only alternative explanation I can come up with. It's either that or he is selling weaponSShield to fund the return of the fourth reich.

Dave

SEPTEMBER 17, 2015 AT 12:14

A biker bar, eh?

A likely story, meesta Jones!

Dave

SEPTEMBER 17, 2015 AT 12:13

Irrelevant: Ad HomiNazi

Gixp

SEPTEMBER 16, 2015 AT 11:10

Andrew Tuohy It would be great to try to replicate the experiment

David

SEPTEMBER 18, 2015 AT 14:05

Man, I would love to be able to reference your info in a video to shut up some of the people still supporting this product.

★ Andrew Tuohy

SEPTEMBER 18, 2015 AT 23:57

Ian and Karl at Forgotten Weapons made a good one. I might make another yet.

Pingback: WLS 110 – Lifestyle lube | Guns Ammo and Tactical Gear Blog

EXHIBIT E

Vuurwapen Blog

September 14, 2015 ·

Deliberately misleading the consumer in an effort to sell a product. Is there a word for that?

Where There's Smoke, There's Liar

Over the weekend, I posted an article which showed the results of some infrared spectroscopy tests comparing FireClean and two types of Crisco cooking oils. I was not expecting the firestorm of con...

VUURWAPENBLOG.COM

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Josh Horowitz While I have been running Fireclean for the past two years in my 3gun AR's, I am working on moving to Lucas Oil Extreme Duty oil. I've found that Fireclean likes to migrate and/or evaporate in the safe. I can't discount that it does indeed make guns easier to clean, and that it is non-toxic -- these should be important considerations when choosing a lube.

One thing I can't stand for is intentionally misleading customers. Thanks to Andrew for shedding some light on the situation.

Like · Reply · September 14, 2015 at 10:34am

1 Reply

Bob Rosebrock This is on Vickers latest post. My question is why would you use reloaded ammo for a demonstration and not factory??

Like · Reply · 1 · September 14, 2015 at 9:14am

1 Reply

Kevyn Lange I posted the truth on his page. He called you out personally , and when i told him it was the Weaponshield guy, he immediately blocked me and deleted me. I stated nothing other than facts. I was not rude, and was quite nice about it. This was after Larry stated that he would discuss anything with anyone. My conclusion, is two fold. 1) Fireclean is most likely a scam. 2) LAV is not a honest person.

Like · Reply · 9 · September 14, 2015 at 8:56am · Edited

10 Replies · September 16, 2015 at 1:25pm

Chris Whiteowl Travis Haley was in a similar situation with Oral IVgate in 2013. But after enough people questioned the science behind the product, Haley, to his benefit, halted sales of Oral IV until scientific analysis supported the claims made by the company. Huck... See More

Like · Reply · 2 · September 15, 2015 at 3:48pm

2 Replies · September 16, 2015 at 5:09am

Levi Burtner Well they've said it's not Cisco. What if it's baby oil?

Like · Reply · September 15, 2015 at 10:07am

Rob Yang The hipster's gun blogger strikes again.

Like · Reply · 2 · September 14, 2015 at 8:58am

5 Replies · September 15, 2015 at 6:27am

Alan Olinzock I use M-Pro 7 LPX, Gun Scrub, & Oil so this is a non-issue for me.

Like · Reply · September 14, 2015 at 5:49pm

Josh Phillips So... should I stop using this to fry my chicken?

Like · Reply · September 14, 2015 at 4:39pm

Josh Zwez I don't think it's going to make that much of a difference between rounds. And it doesn't matter what it's made of now? It must to you because you blasted it all over the net it's canola oil.

Like · Reply · September 14, 2015 at 10:09am · Edited

Vuurwapen Blog The guy who can pry your nose out of Larry Vickers' butt is going to be crowned the next King of England.

Like · Reply · 23 · September 14, 2015 at 11:04am

View more replies

Edward Macdonald I think you are fast creating a new and much needed niche job for yourself - investigative firearm science journalism. Keep it up!

Like · Reply · 1 · September 14, 2015 at 4:31pm

Mike Shuler Interesting. doesnt look good for something LV promoted. I wonder if he will come back out and address this.

Like · Reply · September 14, 2015 at 3:50pm · Edited

Joey Villasista Dimitri Karras

Like · Reply · September 14, 2015 at 3:08pm

James Naugle This is the dumbest internet feud I have ever seen. The above image doesn't tell us much, and the chemical analysis doesn't tell us much. Take two factory new guns in a side-by-side test, oiled per the tech order, one with spec CLP and one with Fire C... See More

Like · Reply · September 14, 2015 at 2:54pm

Roi Harel

יש לי כזה מכיר פצצה של דבר

Roi Harel

יש לי כזה מכיר פצצה של דבר

Like · Reply · September 14, 2015 at 11:55am

6 Replies · September 14, 2015 at 2:21pm

Cole Bartelds Fireclean has worked for me better than Hoppes, remoil, CLP and a bunch of other cleaner/lubricants. I really don't care what it's made of, because it works well.

Like · Reply · September 14, 2015 at 2:19pm

Jason Gregson Check out the recent Fireclean reviews on Amazon.

Like · Reply · 1 · September 14, 2015 at 11:35am

1 Reply

Taylor Rocha FIRECLEAN CANT MELT CARBON FOULING. VICKERS WAS A COVERUP. CRISCO WAS AN INSIDE JOB.

Like · Reply · September 14, 2015 at 1:43pm

Brett Harris So what about the carbon repealing, easy to clean claims Fireclean make. I'd use it on my work rifle to make cleaning easier.

Like · Reply · September 14, 2015 at 8:54am

2 Replies · September 14, 2015 at 1:13pm

Randy Oswalt Nice observation on the video.

Like · Reply · September 14, 2015 at 12:33pm

Kevin Whitacre I respect an honest answer/review regardless of who (or how many) don't like the truth. Science is repeatable, and if the conclusions of the Vuurwapen Blog testing is refuted by the Crisco Crew, they can do their own tests. I'm sure they already know what it's made from, and that's the sad part.

Like · Reply · 2 · September 14, 2015 at 12:17pm

Kevyn Lange

Like · Reply · 1 · September 14, 2015 at 12:15pm

Fresnel Robert Blake My favorite part about this is that you called out Fireclean and Vickers on your own website/Facebook, so Vickers turns around and talks mad shit about ARFCOM. Now ARFCOM is all confused and angry about it.

Like · Reply · 1 · September 14, 2015 at 11:57am

Chris Settles Stephen Casner I know you're into lube...

Like · Reply · September 14, 2015 at 9:54am · Edited

1 Reply

Igor Farber Roi Harel

Like · Reply · September 14, 2015 at 11:34am

Brock Carlton Here's the deal, you better be coming back hard core, cause these posts have caused me to really miss vuurwapen blog and it's truly scientific tests and comparisons.

The Internet is 90% reviews that are just videos of dudes shooting a gun and saying "I really like this new trigger"

Like · Reply · 64 · September 14, 2015 at 8:52am

View previous replies

Vuurwapen Blog https://youtu.be/BQloBWmHrHk

I Come Back To You Now

At the Turn of the Tide

YOUTUBE.COM

Like · Reply · 26 · September 14, 2015 at 10:43am

View more replies

Cris McRae Robert Amrine #2

Like · Reply · September 14, 2015 at 11:24am

Robert Amrine Robert Bruce

Like · Reply · September 14, 2015 at 11:19am

Like · Reply · September 14, 2015 at 11:00am

Mike Stuble Thanks for the due diligence. Glad to see you in my Facebook feed again as well.

Like · Reply · 1 · September 14, 2015 at 11:00am

Steven Rodriguez Wouldn't WPC treatment or the "like" be a better alternative to using a lube in general? I don't think i've seen it done on weapons.

Like · Reply · September 14, 2015 at 10:39am

Rusty Alverson This is getting better by the day. Haha

Like · Reply · September 14, 2015 at 10:36am

Paul Lowe If I recall the basics of fire science, smoke is the result of incomplete combustion, the more smoke the lesser amount of fuel is being consumed efficiently. The more complete combustion of fuel will result in lesser amounts of smoke. Advertising gimmicks don't alter the basic scientific principles do they? I could be wrong though.

Like · Reply · 5 · September 14, 2015 at 10:26am

Atticus Bryant

Like · Reply · 8 · September 14, 2015 at 10:16am

3 Replies · September 14, 2015 at 10:25am

Zachary Biel That all said, should we start cleaning our guns with Crisco? 😉

Like · Reply · September 14, 2015 at 10:17am

Ryan West I recently buit an AR and have not fired it yet. It is dry. no lube ever. if you would like to do a video test of actual crisco oil used as lube, I am in Tucson and can supply the AR.

Tucson and can supply the AR.
Like · Reply · September 14, 2015 at 10:07am

Tony Mabe

Like · Reply · 2 · September 14, 2015 at 8:59am

1 Reply

Frank Borek And here I was just patiently waiting for Andrew's AR-15 muzzle brake tests.
Like · Reply · 1 · September 14, 2015 at 9:45am

John Smitka I am curious now about what is in Weapon Shield now also.
Like · Reply · 2 · September 14, 2015 at 9:42am

Daniel Sabedra Jon Rivera

Damn, son.
Like · Reply · 1 · September 14, 2015 at 9:38am

Jacob Jackson Smoke means a lube is working... yeah, not ever buying a used car from that guy.
Respect for looking so closely at things. I was a bit surprised by the smoke, as CLP has a flashpoint of 200F while Fireclean has one of 250F, but I paid no further attention, as the basic premise was so stupid to begin with.
Like · Reply · 4 · September 14, 2015 at 9:36am

Jesus Ballesteros Hello my name is sue space shuttles my father was born by Sarahs and my brothers want to buy things Maggie I just got this you send it to me last year I would like to talk to you get to know you I'm your cousin Jesse you can call me my number is 210 840 9 977 I like Lisa lol
Like · Reply · September 14, 2015 at 9:33am

Doug Seibel The very concept of how fireclean works is, in and of itself, enough reason to never use it...YOU'RE VAPING THE FILTH!!! Who would ever consider collecting their used cleaning fluids and sipping them afterwards as a post-cleaning beverage? Anyone? A... See More
Like · Reply · September 14, 2015 at 9:26am

Justin Summerlin Great article

Justin Summerlin Great article

Like · Reply · September 14, 2015 at 9:26am

Nick Chop Where there's smoke...

Like · Reply · 1 · September 14, 2015 at 9:25am

Stan Modjesky "Smoke after firing is put forth as evidence of a cleaner gun."

What earthly difference does that make?

Like · Reply · 1 · September 14, 2015 at 9:22am

Steve DelCegno I've used fireclean for a while I will say it works well. Also don't go using crisco in your guns while they may be similar in composition it is not the same as fireclean. Crisco and cooking oils will leave a tacky film behind in your firearms.

Like · Reply · 1 · September 14, 2015 at 8:48am

11 Replies · September 14, 2015 at 9:21am

Ron Deagle Shitsnacks... Poking holes in the narrative! Good eye (and completely valid point about lack of scientific method/control)!

Like · Reply · September 14, 2015 at 9:19am

Shawn Doughtie Nice catch! If the baseline between comparisons of anything is different, the subsequent events and conclusions are called into question. This ain't apples-to-oranges, but tangerines-to-oranges, and most folks can tell the difference between tangerines and oranges. 🙂

Like · Reply · 1 · September 14, 2015 at 9:17am

Andrew Forsythe Patrick Scott

Like · Reply · September 14, 2015 at 9:14am

Rob McDonald I didnt catch that third case on the video. But what gave it away for me was the owners not talking about formulating a product, or inventing a product. They found a substance. Also the idea that less smoke leaves behind more fouling...

Like · Reply · September 14, 2015 at 9:13am

Nathan Manning I really don't care what's in it. It's worked just fine in my pistols and suppressed ar's. I'm also not out to tell people it's the best there is.

It cleans up pretty easy, doesn't cook off easily, and if you don't put a crap ton on, it stays put. ... See More

Like · Reply · September 14, 2015 at 9:07am

Vincent Eddings Guess I'll stick with Hoppe's for a while...

Like · Reply · 1 · September 14, 2015 at 9:06am

Seamus Moor Snap!
Like · Reply · September 14, 2015 at 9:06am

William Hawbold Non toxic gun lube is vegetable oil? nooooooooooo.....rly? I still use it in my guns. Never had a problem. I don't like using Remoil because it's not a great product..
http://www.ar15.com/.../1626667_Huge_test__46_products...
Like · Reply · September 14, 2015 at 9:05am

Joe Sowards I'm sure a little lube in the gas tube would make for a nice smokey ejection also...

They have ever right to hide the "mixture" from everyone but that picture proves their test was downright fraudulent.
Like · Reply · September 14, 2015 at 9:11am · Edited

John Huey I posted the link to your article in Larry's comment post. I'm anxiously awaiting the rebuttal to your excellent evidence of misdirection and dishonesty.
Like · Reply · September 14, 2015 at 9:04am · Edited

John Vibbert This made me laugh.

Like · Reply · 34 · September 14, 2015 at 9:04am

Terry Moore I have a large group of friends that are loyal to fire clean. I'm more of a clp and rem oil kinda guy.
Either way it's hard to argue with your findings.... See More
Like · Reply · 1 · September 14, 2015 at 8:56am

Josh Day The very first time I saw the fireclean videos I had a huge problem with it. Interesting to see how many ways I could've be correct in my suspicions.
Like · Reply · September 14, 2015 at 8:50am

Levi Burtner PantsOnFIRE
Like · Reply · 4 · September 14, 2015 at 8:48am

Like · Reply · 4 · September 14, 2015 at 8:46am

Danny Ramirez I just hope you feel happy with your facts, and neutral based data

Like · Reply · 1 · September 14, 2015 at 8:48am

Patrick Payne Andrew, I haven't always agreed with everything you've posted in the past, but you are absolutely in your element when you do this kind of work. Well done.

Like · Reply · 11 · September 14, 2015 at 8:43am

Adam Guida Mind = blown! Congrats on a truly great piece of investigative journalism!

Like · Reply · 4 · September 14, 2015 at 8:43am

Scott Snay Uhhh....Fraud?

Like · Reply · September 14, 2015 at 8:40am

Nathan Klein I also had my doubts watching that video. Nice catch while analyzing the video.

Like · Reply · 2 · September 14, 2015 at 8:40am

John Vibbert Excellent work full of astute observations as always.

Like · Reply · 1 · September 14, 2015 at 8:39am

Jim Sadoski Priceless.

Like · Reply · September 14, 2015 at 8:39am

Matt Cats DAMN.

Like · Reply · September 14, 2015 at 8:37am

Write a comment...

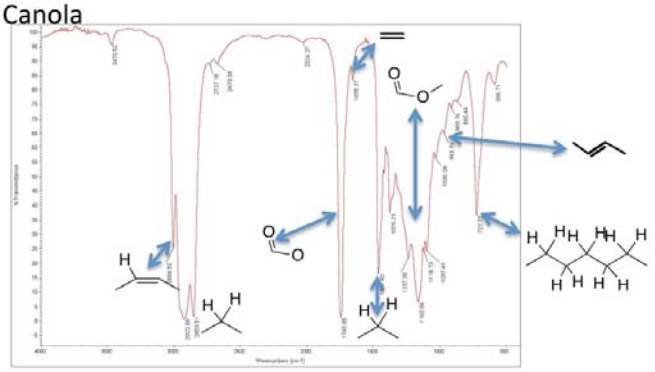
EXHIBIT F

Yes, It's True: FireClean is Vegetable Oil

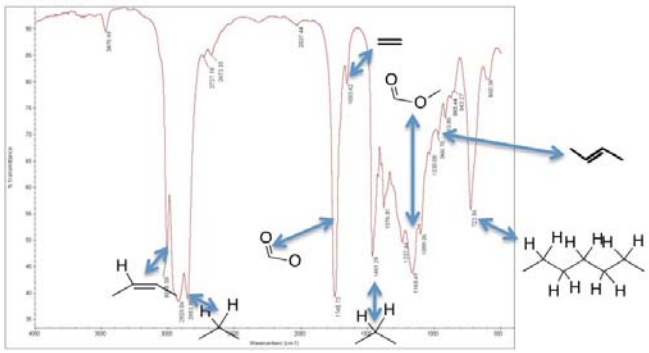
Posted September 13, 2015 in Other Gear & Gadgets by **Nathaniel F** with 535 Comments
Tags: fire clean, FIREClean, lube, oil, vegetable oil, weapon lube

Initially, the idea that FIREClean was basically just Crisco started with rumors of a spectral analysis, but took off after July of this year, when AR15.com member 12_gauge posted a video to YouTube of a burn-off test between FIREClean and canola oil. The results of this poor man's spectroscopy were that FireClean and the canola oil looked identical; not a conclusive result, but it began to raise suspicions. Further, FireClean founder Edward Sugg was listed on a patent available to the public listing alternative uses for vegetable oils, such as canola oil, including as firearms lubricants. It was with this that I was all but convinced: FIREClean was canola oil, commonly sold under the brand name "Crisco". Yesterday the inimitable Andrew Tuohy, a contributor to this blog, posted an article proving to me beyond any doubt that FIREClean is vegetable oil. The results of the infrared spectroscopy he conducted are reproduced below:

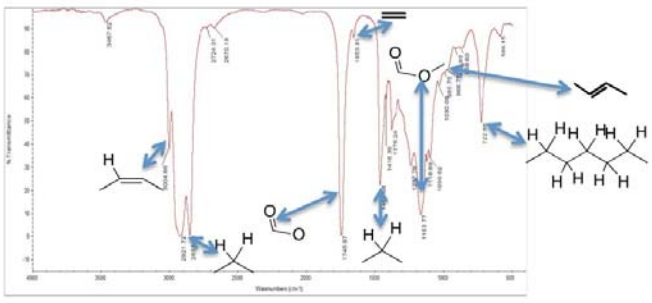
Crisco Pure Canola



Crisco Pure Vegetable oil



Fire Clean



It is quite apparent that the results for FIREClean and Crisco are very similar. While I'd rather see a control, it is apparent to me that none of the three look more similar in this regard to other common oils than they do to each other. So, in short, to the best of my knowledge, FireClean is canola oil.

From my perspective, FIREClean has been one of the most aggressively branded gun lubricants in recent years, promoted as a "revolutionary" lubricant that cleans and removes fouling unlike other offerings. [screenshot here] Gun expert Larry Vickers, who I have great respect for, recently released a spot promoting FIREClean as a superior lubricant, "proven" to carry away more fouling from a firearm due to the greater smoke it produced. Those of us with a modest basis in chemistry were immediately skeptical: The smoke produced by an oil under heat has at best only a tangential relationship to its ability to collect and trap debris.

It was with this video, on the backs of what felt like more than circumstantial evidence, that made many feel that "enough was enough". FIREClean may not have been a poor lubricant, at least for the range where it wasn't applied to firearms that were stored for a long time, but if it really was $15/oz canola oil as the patents and smoke tests suggested, then the company would have quite a lot to answer for.

With Andrew's spectroscopy, this has been realized. FIREClean, marketed as "the real deal", a revolutionary lubricant that would sweep aside all the snake oils that have plagued the gun market for years, has proved to be nothing more than canola oil at a 10,000% markup. Those who bought into it may feel cheated, as they undoubtedly were. Those who learned from previous snake oil gun lubes may feel smug, but they shouldn't. A slick marketing campaign and a reasonably effective (but horrendously overpriced) product was enough to get many people whose opinion I did and continue to respect. Better men than I, for a certainty, were taken in by this product, which has proven to be nothing more than vegetable oil. FIREClean's reputation should suffer; theirs should not .

UPDATE: FIREClean responds here.

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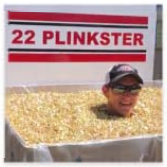
OPINION: An Open Letter To 'Non-Gun' America



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Ask Doc: What is the Big Deal With EpiPens?

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Nathaniel F

Nathaniel is a history enthusiast and firearms hobbyist whose primary interest lies in military small arms technological developments beginning with the smokeless powder era. In addition to contributing to The Firearm Blog, he runs 196,800 Revolutions Per Minute, a blog devoted to modern small arms design and theory. He can be reached via email at nathaniel.f@staff.thefirearmblog.com.

Comments for this thread are now closed.

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Devil_Doc • a year ago

Hey.. This is a glass half full situation if I've ever seen one. Didn't anyone else read this and think, "I can now use my wifes canola oil for gun lube"?

74 • Share ›

El Duderino ➚ Devil_Doc • a year ago

I use lard. Only downside is every time I shoot I really want to go get a bacon cheeseburger afterward.

24 • Share ›

Sergio Velazquez ➚ El Duderino • a year ago

hahahaahaha, thank you, now i am really hungry

1 • Share ›

dshield55 ➚ Devil_Doc • a year ago

That was the most exciting part! I had been contemplating buying FireClean for sometime, at Larry Vicker's suggestion, and I would have actually paid full price. Now I'm going to do it immediately, but use Walmart/Great Value brand spray on Canola oil anyway. I love how canola oil really really does prevent the eggs from sticking to the pan, and it just makes soooooooo much sense that if spam wont stick to canola oil coated pans that this will prevent carbon from sticking to my guns internals as well.

12 • Share ›

Dawna Lockhart ➚ dshield55 • a year ago

Do not use the sprays. The propellants leave residue. I like baking. I discovered there was a cooked on residue left on my pans that took forever to scrub off. Came to find out that it was due to the propellants in the sprays. My pans clean up much easier now that I put oil on a clean paper towel and wipe on my pans. Knowing this, I wouldn't trust the sprays

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EXHIBIT

G

Yes, It's True: FireClean is Crisco

Posted 6 hours ago in Other Gear & Gadgets by Nathaniel F with 227 Comments

Initially, the idea that FIREClean was basically just Crisco started with rumors of a spectral analysis, but took off after July of this year, when AR15.com member 12_gauge posted a video to YouTube of a burn-off test

EXHIBIT
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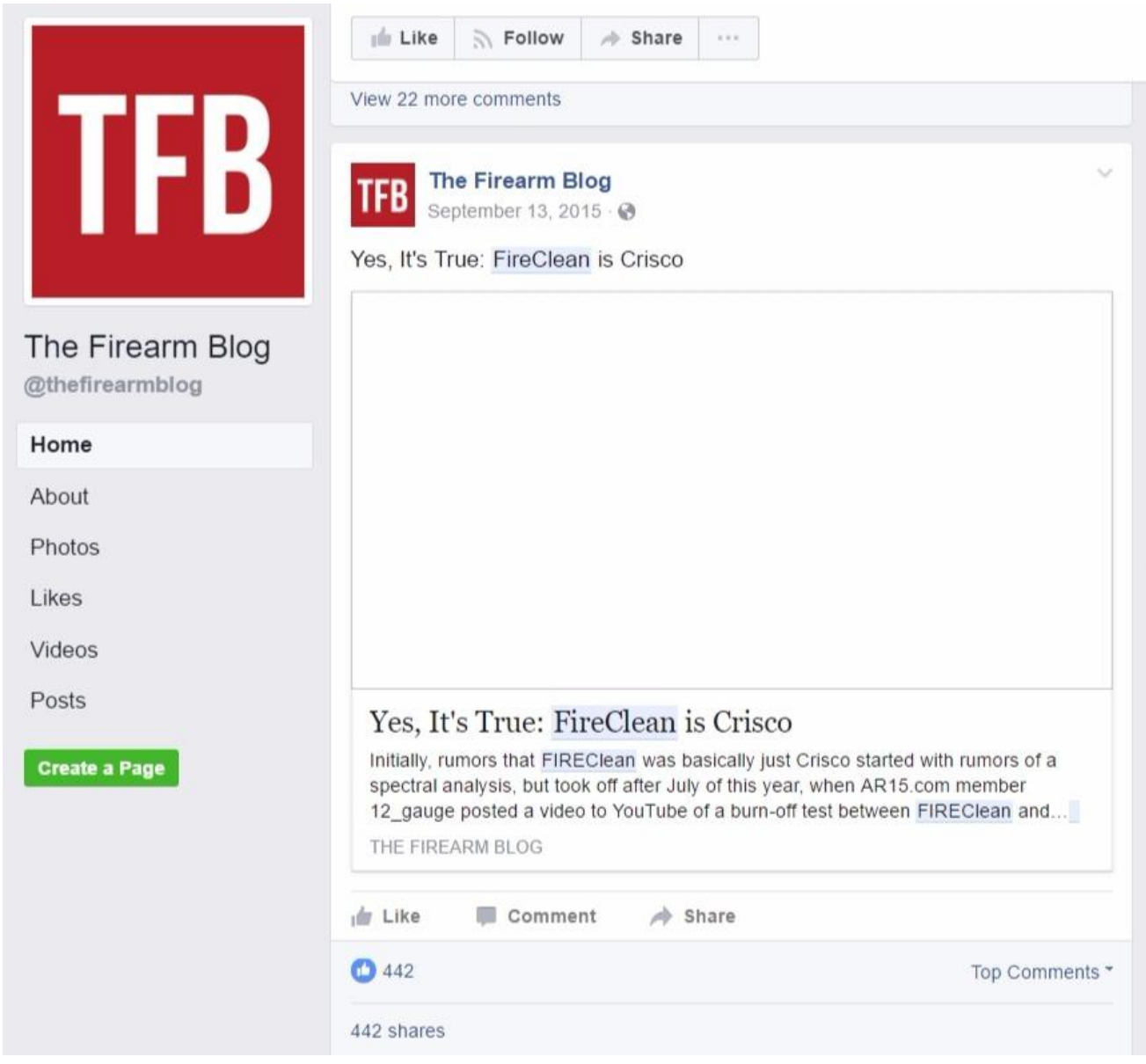
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September 13, 2015
Yes, It's True: FireClean is Crisco
Yes, It's True: FireClean is Crisco
Initially, rumors that FIREClean was basically just Crisco started with rumors of a spectral analysis, but took off after July of this year, when AR15.com member 12_gauge posted a video to YouTube of a burn-off test between FIREClean and...
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H

★☆☆☆☆ **Don't believe the hype.**

By Wool Wearer on August 18, 2016

Fireclean is nothing but canola oil. Amazon Prime Pantry, sells 32oz bottle of Crisco oil is only $3.96. That's 800% more vegetable oil than this two pack, for 87% less money. If it's the flip-top bottles you're after, Amazon has much better deals on that also.

If you're looking for a great non-toxic gun oil that actually works, I suggest Slip 2000 EWL. It's half the price of Fireclean.

▸ Comment | 2 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Never again!!!**

By D on August 2, 2016

I was talked into trying this product by my CCW instructor (some Tacti-Cool, non military type), and found it to be a grievous mistake! I used it as directed, and applied it on my carry gun. After just two months my gun was "jelled-up" so bad that I had to pay a local gunsmith to take it apart and clean it.

He used some cleaner called Breakthrough Clean, which I later found out also makes lubricants. I have swapped out to those products and have never looked back. I am a first time gun owner, and mother of 2. I do not have time to mess around with a product that will not perform a simple task (which is keep my main defense gun protected). I understand that there are a lot of "Tactical" types that like this product because of the "celebrities" that back it, but if it can't keep my simple carry gun ready to be used, then it is a waste of time.

▸ Comment | Was this review helpful to you? Yes No Report abuse

One Star

By TCO211 on June 7, 2016

Verified Purchase

Gummed everything up. Made gun inoperable. I didn't like it. Removed from all my guns. Fireclean did do the right thing and refunded my account. Thanks for doing the right thing. It just didn't work for me.

Comment | One person found this helpful. Was this review helpful to you? Yes No Report abuse

Fireclean is a scam and ripoff. If you like it buy some vegetable oil!!

By Seth Martin on June 3, 2016

I bought this product and also bought the hype. I don't find and improvement in this product over other lubricants that have been around forever. Then I come to find out Fireclean is nothing more than vegetable oil.

I guess I win the suckers award for trusting strangers...

[...]

Comment | 2 people found this helpful. Was this review helpful to you? Yes No Report abuse

Larry Vickers also did a video that was highly doctored to make this look like it was doing things it wasn't doing

By D. Keith on April 9, 2016

Verified Purchase

Google this product and see the bogus promotional videos done about it. It's made from canola oil and according to tests done at a lab it's nothing but canola oil. Larry Vickers also did a video that was highly doctored to make this look like it was doing things it wasn't doing. He has since taken that video off of You Tube. I threw mine in the trash. Apparently canola oil gets sticky over time and gums up whatever it's used on. But if you insist on using canola oil you could get it for much less at the market.

Comment | 7 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Avoid this product!**

By Peter on April 5, 2016

Did not work as advertised. The oil became gummy and led to failure to extract, failure to feed, and failure to lock bolt open. It took a substantial amount of time to remove the gunk from the bolt carrier. I would recommend any other gun lube over this product because of this gummy residue left on the rifle. More headache than any supposed benefit. Will NOT be purchasing ever again.

▸ 2 comments | 3 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Keeps my cast iron from rusting, but...**

By Gunnit on April 1, 2016

Until it gets added to Prime Pantry, I'm sticking with Crisco.

▸ Comment | 12 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Crisco or Wesson?**

By PWS on April 1, 2016

Just by Canola Oil. Zero stars.

▸ Comment | 11 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **great combination for a company**

By Christopher Eddy on March 31, 2016

Litigious and deceptive... great combination for a company. Find your gun lube elsewhere unless you like paying for overpriced cooking oil.

▸ Comment | 8 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Lies!**

By Amazon Customer on March 31, 2016

This is some expensive vegetable oil. FireClean is no different than vegetable oil found in your grocery store it just cost 4x as much to come in a different bottle.

▸ Comment | 8 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **One Star**

By JM on March 31, 2016

Don't use this product. If it doesn't work, they will sue you. Ref: FireClean vs Andrew Tuohy

▸ Comment | 13 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **FRAUD Product**

By Luke Crawford on March 31, 2016

Turns out that FIREClean is nothing more than a slightly different variation of vegetable oil.

You're better off just buying a quart of motor oil for way cheaper.

▸ Comment | 8 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Veg oil**

By Thomas J. Kidder on March 26, 2016

Verified Purchase

It's vegetable oil. Really expensive veg oil. I returned it for a refund.

▸ 1 comment | 11 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Gunky Veggie Oil**

By Matthew Coleman on February 9, 2016

Let me start by saying that I used to be a die-hard promoter of FIREClean, using it for all of my firearms. When it comes to getting carbon off your firearm, it certainly did the trick. The reason behind this updated 'less than optimal score' is two fold.
- First, a recent study came out that proved that FIREClean is actually just VEGETABLE OIL. Im not kidding. Read up on it.
- The second part of this low score is gunk it leaves behind. I shoot about 2-3 times a month and clean my guns immediately after using them. I used FIREClean as both a cleaning tool AND an oil, as advertised. Well what they dont tell you is that since it is just VEGETABLE OIL, it solidifies when it is cold out. For a primarily out door shooter living in VA, this is a big problem. Im not joking when I tell you that this crap jammed both my Glock 19 (which I dont think has ever jammed) and my YUGO O-PAP AK47 (which has definitely never jammed before). The residue kept the slide from moving properly. I wouldnt use this stuff again, even if it were free.

▸ Comment | 12 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **It's Crisco people**

By Guinness on January 30, 2016

You all know this was proven to be Crisco right?

▸ Comment | 9 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Junk!! Don't buy it!!**

By George L on January 10, 2016

Verified Purchase

Junk!! Don't buy it!!

▸ 1 comment | 5 people found this helpful. Was this review helpful to you? Yes No Report abuse

If u could I'd give 0 stars. I don't ...

By louie on January 4, 2016

Verified Purchase

If u could I'd give 0 stars. I don't know who's writing these reviews but this stuff stinks. I'll definitely stick with CLP and never switch again.

1 comment | 8 people found this helpful. Was this review helpful to you? Yes No Report abuse

Allegedly, Fireclean is nothing more than Crisco :(

By Gamer on December 25, 2015

Verified Purchase

I'll just leave some links for reading. It has been alleged and supported by spectral analysis that Fireclean is remarkable similar to Crisco canola oil. Whether it's true or not is up for debate, but here is just one of the many articles that show up if you google "Fireclean vegetable oil"
http://www.thefirearmblog.com/blog/2015/09/13/yes-its-true-fireclean-is-crisco/

I bought it when it first came out, used it, and ultimately decided I would use a different product. Seems there is some controversy surrounding the product and the allegation that it is ~ a 10,000% markup if it really is Crisco.

1 comment | 12 people found this helpful. Was this review helpful to you? Yes No Report abuse

Great for cleaning your wallet!

By Tackdriver on December 9, 2015

Wallet Clean! This product does a great job of cleaning out your wallet. Just buy a bottle of this vegetable oil that is marked up 5000% and presto! Your wallet is now sparkling clean. Never mind that vegetable oil gums up in the receiver and putrefies-Just use it and don't ask any questions. It's Okay to get ripped off because it's made in the USA!!! Yaaaay!!!!!

Comment | 14 people found this helpful. Was this review helpful to you? Yes No Report abuse

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▸ Comment | 14 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Does not work as advertised.**

By Jonas Byrd on December 7, 2015

I applied Fireclean to a Knight's Armament carbine per the directions on the manufacturer's website. After 150 rounds of suppressed fire, most of the Fireclean had burnt away leaving a sticky residue. Subsequently the cleaning of the bolt carrier, bolt, and interior of the upper receiver was no easier than if I had used CLP, Mobil1 or TW25B.

Fireclean may work fine as a lubricant, but given how tedious it is to apply (per the manufacturer's directions), how much more expensive it is than more common lubricants, and the fact that it simply doesn't allow for an easy cleanup as it is advertised to do, I cannot recommend Fireclean.

I would also like to point out that when I posted my experience with their product on the Fireclean Facebook page, my comment was deleted and I was blocked from the page.

▸ 3 comments | 9 people found this helpful. Was this review helpful to you? Yes No Report abuse

Showing 21-30 of 39 reviews (1 star). Show all reviews

★☆☆☆☆ **Crisco**

By M. D. Milner on October 24, 2015

[...]

Seriously overpriced.

▸ Comment | 9 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Ordinary Vegatable Oil**

By Chuck Diesel on October 6, 2015

Verified Purchase

Its marked up Vegatable Oil

▸ Comment | 9 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Expensive plant oil**

By Land Cruiserman on September 23, 2015

Verified Purchase

I've been using Mobil 1 to lube my guns and either CLP or non-chlorinated brake cleaner to clean them. Purchased two bottles because a friend I shoot with swears by the stuff.

Why I won't use it again

-this turns to a waxy mess if you plan on storing your rifle/handgun
-this turns into waxy mess in the cold (at below 0 temperatures it looks like you melted a candle on your BCG)
-it's not very thick, so it tends to run off whereever you apply it, on a 1911, it'll probably have run out of the rails if it hasn't gummed up the gun
-it burns off, motor oil will stick around with repeated fire, this stuff burns off and smells like fry oil when it does. Not sure how much lubrication it's doing when it does.
-if you lose the red inner cap, it will leak out and you'll have lost your liquid gold

Because of its consistency and tendency to burn off, I started to experience malfs when this stuff had left a handgun "dry." I was at a range far from home and the only thing that saved the day was some 20w50 from an AutoZone down the street.

Not really sure what the appeal of this product is.

▸ Comment | 7 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Don't let them rip your off.**

By Anthony on September 20, 2015

It's literally just Canola oil. Which works great, but for god sake just buy it from the grocery store not for $30 per 2oz bottle.

▸ 1 comment | 10 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **DONT BUY! Fireclean = Will RUST YOUR GUNS! Causes rust. Stay away!!!!**

By Hurricane Ace on September 20, 2015

Fireclean has caused rust on every firearm I've used it on. It WILL RUST YOUR GUNS!!! Steer clear! I had a suspicion, they are con artists and were scamming us out of millions the whole time. Firecleans own patent states it's just vegetable oil. Look for yourself:

[...]

▸ Comment | 8 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Don't buy! Just Canola Oil!**

By Chris Wardell on September 19, 2015

Verified Purchase

Revealed to be nothing but the cheapest of canola oil! Save your money and buy canola oil if you want this stuff! Funny they state that this is used by the US military/Special Forces, but it does not have an NSN number which is required for purchasing by the military. Put these guys out of business, damn charlatans! Do a google search if you don't believe me!

▸ 1 comment | 9 people found this helpful. Was this review helpful to you? Yes No Report abuse

This has been great at keeping food from sticking to my stainless steel ...

By G of KC on September 18, 2015

This has been great at keeping food from sticking to my stainless steel cookware. Also great at exposing Larry Vickers as a fraud.

Comment | 7 people found this helpful. Was this review helpful to you? Yes No Report abuse

One Star

By W. Chen on September 16, 2015

Bad at gun cleaning. Great for cooking.

Comment | 10 people found this helpful. Was this review helpful to you? Yes No Report abuse

Works but not worth supporting a liar company

By E. Jackson on September 14, 2015

Verified Purchase

Supposedly just Crisco, but it works well enough. Just have to remember to degrease before the first use, then soak it in and wipe down after a day. From there, everything stays supper clean and lubricated. That said, the company are scum balls that used deceptive marketing in videos (they did a FC vs CLP video claiming to compare oils, when really they just used two different types of ammo).

Comment | 12 people found this helpful. Was this review helpful to you? Yes No Report abuse

One Star

By Hodor on September 13, 2015

Great oil but too expensive for daily cooking unless you're sponsored by them, which explains Larry Vickers' weight.

Comment | 32 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Crisco is better**

By robert dorchak on September 13, 2015

Shout out to all you fire clean fan boys that have been using Crisco to lube your guns for the past year

▸ Comment | 24 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **The results of this poor man's spectroscopy were that FireClean and the canola oil ...**

By Charles W Story on September 13, 2015

$32 for canola oil?
"Initially, the idea that FIREClean was basically just Crisco started with rumors of a spectral analysis, but took off after July of this year, when AR15.com member 12_gauge posted a video to YouTube of a burn-off test between FIREClean and canola oil. The results of this poor man's spectroscopy were that FireClean and the canola oil looked identical; not a conclusive result, but it began to raise suspicions. Further, FireClean founder Edward Sugg was listed on a patent available to the public listing alternative uses for vegetable oils, such as canola oil, including as firearms lubricants. It was with this that I was all but convinced: FIREClean was canola oil, commonly sold under the brand name "Crisco". Yesterday the inimitable Andrew Tuohy, a contributor to this blog, posted an article proving to me beyond any doubt that FIREClean is vegetable oil". - See more at: [...]

▸ 2 comments | 38 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Crisco repakaged and marked up enormously**

By John4315 on September 13, 2015

This product has been exposed as nothing but cooking oil. You can get the same results for about 125 times less here.

http://www.amazon.com/Crisco-Pure-Canola-Oil-48/dp/B00I8G79ES

▸ Comment | 43 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **FRAUD**

By John Freckleson on September 13, 2015

Recently the product has been chemically analyzed and has been revealed to be rebranded Crisco vegetable oil.

▸ 1 comment | 38 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **Warning to consumers regarding FIREClean Gun Oil**

By Shawn Cathcart on September 13, 2015

Warning to consumers: An Infrared Spectroscopy test has proven that Fireclean Gun Oil is "...a modern unsaturated vegetable oil virtually the same as many oils used for cooking." Source: [...]

Users may find that this oil is a fine lubricant, but please be aware that if this analysis is true, this product is sold at an absolutely enormous markup.

▸ 2 comments | 66 people found this helpful. Was this review helpful to you? Yes No Report abuse

★☆☆☆☆ **I had two 4 ounce bottles of Pure Rapeseed Oil courtesy of the great people at Fire Clean LLC**

By M. Potter on September 13, 2015

So we were in the middle of baking some gluten free, sustainably sourced, all organic, artisinal Banana Bread and the recipe called for Rapeseed Oil, unfortunately when we rode our dutch-style single speed bicycles to Earth Fare and Whole Foods we found out that the mouth breathing cis-gendered sithlords there had not stocked any Organic Rapeseed Oil that day :((micro-aggressions triggered!) Luckily, I had two 4 ounce bottles of Pure Rapeseed Oil courtesy of the great people at Fire Clean LLC, and it only cost me $31.49 (and free two-day shipping!). The Banana Bread turned out great, Rapeseed Oil is good if you want to cut back on your bad cholesterol levels and still enjoy all organic, gluten free banana bread patisseries!

▸ 1 comment | 97 people found this helpful. Was this review helpful to you? Yes No Report abuse

A sucker born every minute.

By James R. McCain, Jr. on September 13, 2015

Fire lean is nothing more thank canola oil. Crisco, Wesson Oil. [...]

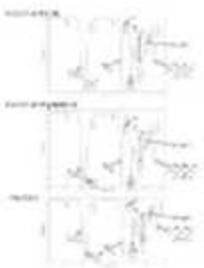
Comment | 62 people found this helpful. Was this review helpful to you? Yes No Report abuse

Over priced Crisco vegetable oil

By Sean Collins on September 13, 2015

This is Crisco vegetable oil.

[...]



2 comments | 27 people found this helpful. Was this review helpful to you? Yes No Report abuse

I believe this is actually CANOLA OIL (Crisco cooking oil)?

By GScott on October 15, 2013

Verified Purchase

I'm not a "true believer".....yet. So far, I'm not seeing anything especially noteworthy about it's cleaning or lubricating properties. I've cleaned my gun about 2 or 3 times now after shooting sessions using Fireclean. I'm not ready to drink the coolaid yet.

I may be wrong (I often am, just ask my wife), but I suspect this is some commercially available product that is being repackaged. Judging from the manufacturers website, this is a small operation. The website is fairly amateurish. For instance, the section of the website titled "WHO", which is were you would expect to find out particulars about the history of the company and qualifications of the principals, contains only the following two clumsy sentences:

"Lucky for you we insist on offering the best products available."
"We are committed to highest quality products that deliver excellence repeatedly."

That's not exactly indicative of a firm that is on the cutting edge of lubrication chemistry.

Update: 9/29/2015 - I just checked my AR, which has been unfired since my last cleaning with Fireclean oil about the time I originally wrote this in late 2013. Sure enough, the film of fireclean has thickened significantly. It's not exactly "gummy", because there is only a thin film. But it is definitely MUCH higher viscosity than it is straight out of the bottle. So I decided to get my bottle of fireclean, and TASTED it. Sure tastes like Canola oil to me!

▸ 4 comments | 15 people found this helpful. Was this review helpful to you? Yes No Report abuse

EXHIBIT

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Vuurwapen Blog

LIES, ERRORS, AND OMISSIONS

A CLOSER LOOK AT FIRECLEAN AND CANOLA OIL

OCTOBER 23, 2015 | ANDREW TUOHY | 70 COMMENTS

If you read the first article on this blog regarding whether or not FireClean is the same as Crisco, you are aware that people became really, really upset over the results.

Lines were drawn, accusations were made, the science was championed by some and attacked by others.

A second round of testing, conducted at the Worcester Polytechnic Institute in Massachusetts, sheds more light on the controversy. I submitted eighteen samples for various tests, including gun oils, gun pastes, cooking oils, and gear oils. If you would like to read about the methodology, you may do so here – straight from the horse's mouth. These tests included IR spectroscopy and nuclear magnetic resonance testing. Click that link to learn more about both.

In addition, separate testing of FireClean and a different brand of canola oil was conducted by a different individual (who has a PhD in chemistry) at a different lab. This testing included HPLC (high performance liquid chromatography) and two variants of NMR (nuclear magnetic resonance). I did not supply the samples for this test, but the results were remarkably similar.

Some of the people involved wished to remain anonymous after they saw the vitriol directed at various parties after the first test, but others did not. Everett, who conducted the bulk of this testing, wanted me to thank the following people:

-Professor Drew Brodeur of Worcester Polytechnic institute for advising the project
-Daryl Johnson, Andy Butler, and Professor John MacDonald of WPI for help with the methods and testing
-Curtis of The VSO Gun Channel for help with the methods

Several of these tests of the eighteen various lubricants will be of interest to those in the firearm sphere, but perhaps none will be as interesting as this one. Summarized in one sentence, here's why:

According to every PhD who looked at the NMR results, FireClean and Canola oil appear to be "effectively" or "nearly" identical.

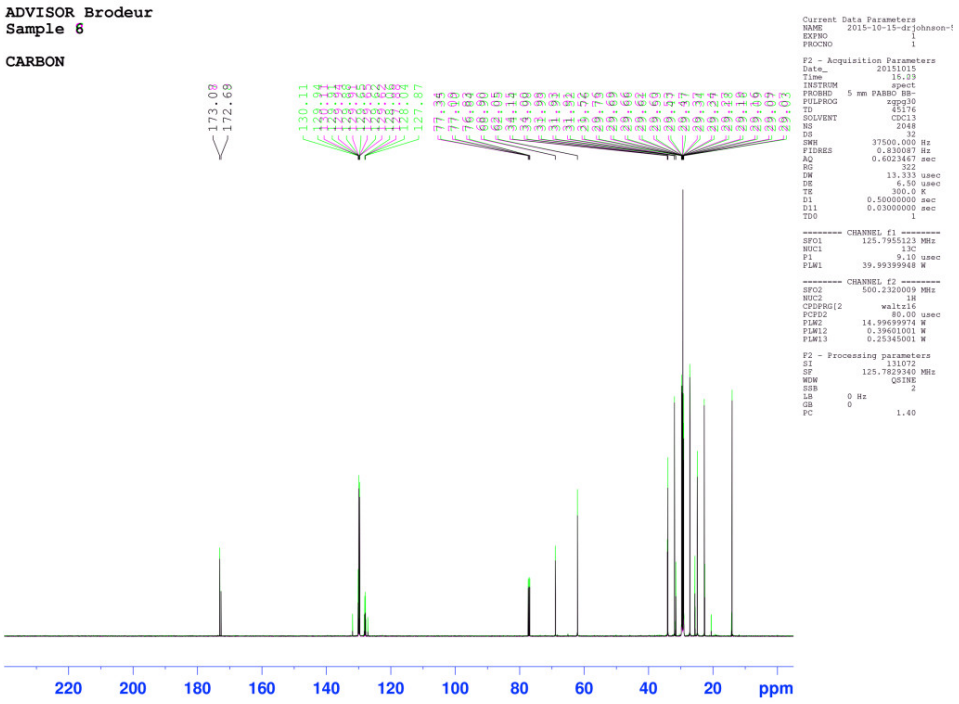
This was also the opinion of the chemistry student conducting the testing (Everett) and two other people with similar undergraduate degrees.

Here is the data:

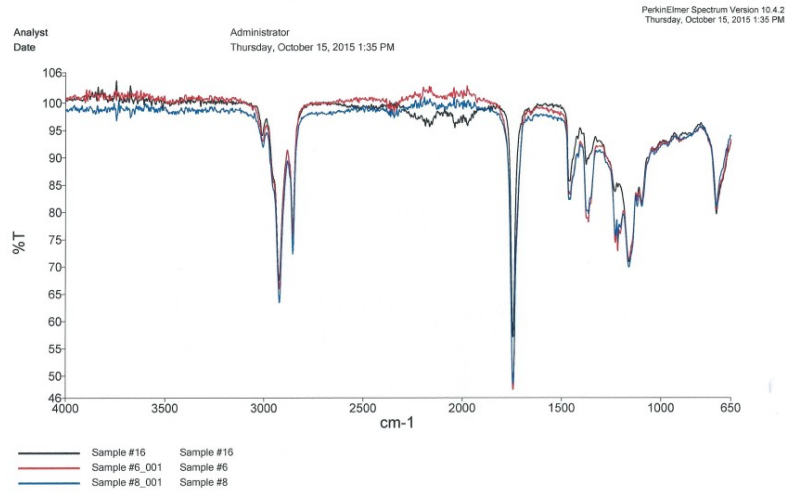
NMR Sample #6 (2015 production Crisco brand canola oil)

NMR Sample #8 (2015 production FireClean)

Here is the NMR data superimposed upon one another:



Here is some additional IR data which also includes sample #16, generic corn oil:



Here is what people with chemistry experience and/or degrees had to say:

"For NMR, you have environment, shift, area and splitting. Presuming these samples were processed identically, I find the NMR spectra to be effectively identical. Each peak in a carbon NMR spectrum identifies a carbon atom at a distinct place along a molecule. Each place reflects its local environment. You can look up the peaks in the spectrum to referenced guides to then identify where along the spectrum the peaks correspond with molecular species in the molecule. For instance, is it next to another carbon atom, or an oxygen or hydrogen, etc… The important part is that the peaks overlap precisely. I made an image attached below that shows sample 8 superimposed in the green channel of sample 6 **(see above)**. *The height of the peaks is slightly different reflecting effectively nothing as it is the area under the peak that matters which here is negligible. Sample 6 and 8 are effectively identical." – PhD (Neurophysiology, BS Chemistry/Biology)*

—

"Height from one spectrum to another is irrelevant and can vary with a slight difference in amount of sample put in the NMR tube. As one of my professors put it "NMR is the gold standard for structural chemistry." Structural chemists that know the molecular formula of their compound can combine NMR with IR data to figure out what the structure of their molecule is. The chances of two different molecules having the same NMR spectra is almost zero." – Everett (conducted testing)

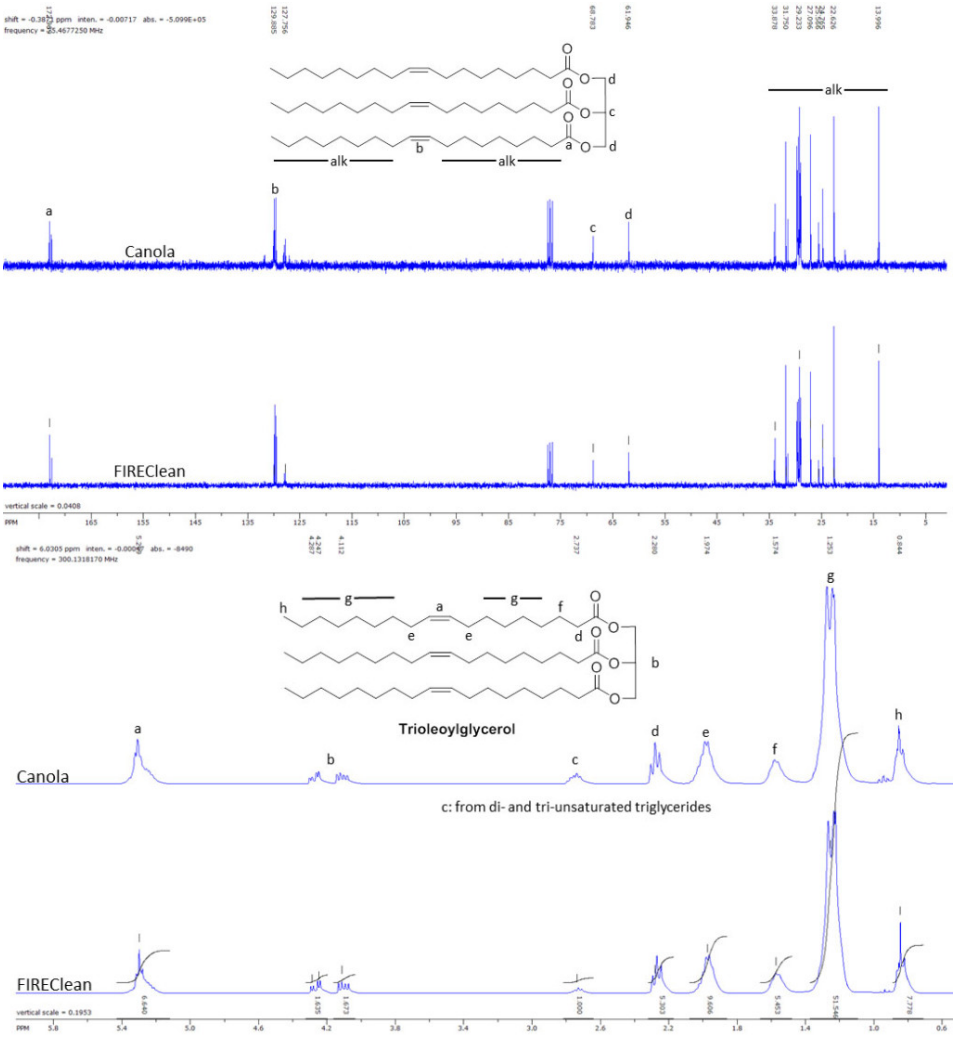
—

"In terms of your data, the two 13C NMR spectra look nearly identical and are expected for a vegetable oil blend. Some differences are apparent in the 'alkene' region (~129 ppm), and this is likely due to varying ratios of

different unsaturated triglycerides being present in different products. Wikipedia has ratios of the various fatty acid compositions for different oils (here). The minor differences between oleic, linoleic, paltimic, stearic, etc acids will result in slightly different peak patterns in that region of the spectrum." – Anonymous, PhD (Chemistry)

—

Here is the second NMR test – two types of NMR, actually, proton (1H) and carbon (13C) done at a different lab, by a different individual, using different samples of FireClean and Costco brand Canola oil:



Here is what he had to say about the results:

"The structure I pasted over the spectrum is not the exact identity of the canola or fireclean, it's just a representative. These products contain a mix of various compounds, so the carbon chain length, number and placement of double bonds, etc will all vary between various chemical species and vegetable oil blends. The paper sums that up, for your more demanding readers. I haven't kept up with the press on fireclean all that much, but if they are claiming any addition of anticorrosives or stabilizers, they would likely show up in either

the IR or NMR spectra unless in very small quantities. I would feel confident claiming that FIREclean is just a vegetable oil or vegetable oil blend of some sort.

Some differences in the NMR spectra are apparent, but they are relatively inconsequential and easily explained by the complexity of lipids derived from natural sources. In the 13C NMR, we see some variation in alkene peaks around 128 ppm (peak b) that are likely due to di- and tri-unsaturated fatty acids, and similarly in the 1H we see changes in the relative amounts of allyl protons due to additional unsaturation (2.7 ppm, peak c) between fireclean and Costco canola oil. There's still nothing about the NMR that would indicate that fireclean is anything but vegetable oil.

This means that some of their claims are true. Vegetable oil is certainly nontoxic/biodegradable, and somewhat odor free. However, it would be difficult to argue that vegetable oil possesses "extreme heat resistance" when it is known to degrade in the presence of heat and oxygen. As far as conditioning the metal substrate to resist further carbon buildup, a good comparison might be that of seasoning a cast iron skillet, where oil or fat is heated to the point of degradation, leaving behind a complex layer of polymerized triglycerides. If you are comfortable with this on your firearms' internal components, then this would be a good product to use, otherwise a more thermally stable product might be in order. The attached paper (Review of Food Lipids 2014) details the degradation of food lipids under conditions relevant to firearms use, so readers may make their own determination." – Anonymous, PhD (Chemistry)

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As I have continued to state since forming an opinion on the product, **FireClean works very well as a lubricant for the AR-15.** I chose it for the LuckyGunner 40,000 round ammo test because I had used it with good results – I was provided with samples early in 2012 – and wanted to give a fledgling company a chance in a crowded field. I don't regret that decision – the lubricant worked well for the test. The FireClean folks must have felt the same way, because my work on that test is in almost every sales pitch they've made about their product.

That said, even the best lube can't make a bad rifle or a bad magazine or bad ammunition function 100%. All of those items working together – a good rifle built by Bushmaster, Magpul PMags, Federal brass cased .223, and a good lubricant (FireClean) came together for 10,000 rounds with no malfunctions in that particular carbine. The steel cased carbines didn't perform at quite the same level, but still performed remarkably well, all things considered.

FireClean is, as stated previously on this blog, a common vegetable oil, with no evidence of additives for corrosion resistance or other features. The science is solid in this regard. Questions or concerns about the limited value of IR testing should be, I would think, put to rest with two discrete tests – tests regarded as "the gold standard in analytical chemistry" – and analysis by multiple sources.

Viewed in this light, FireClean's recent claims that using cooking oils such as canola oil on your firearm could lead to serious injury or death are simply laughable. They also claimed that it should not be used for cooking due to health concerns – but they also claim that it's non-toxic. Well, which is it?

I have absolutely no issue with the concept of making money (I applaud those who make money hand over fist), or taking a product from one sphere and introducing it to another. I think a certain amount of "finder's fee" is absolutely reasonable. If they discovered that the product would work as a gun oil, introduced it to the gun world, etc., then they did people a favor by telling them about something they never would have discovered on their own. There are also marketing costs, packaging, etc. We couldn't expect them to sell a 2oz bottle of Fireclean for the same per ounce price as a gallon of Walmart brand Canola oil.

That said, I don't think I could look someone in the eye and tell them that a bottle of vegetable oil was the most advanced gun lube on the planet, but those who can? Well, they're good salesmen, I guess.

What I do take issue with are attempts to mislead consumers and distort the facts. There is a line between being an aggressive and effective salesman and not being entirely truthful about your product, the way it works, or what it contains. It is my belief that FireClean crossed that line long ago – and that many of their recent statements are simply egregious.

70 THOUGHTS ON "A CLOSER LOOK AT FIRECLEAN AND CANOLA OIL"

Pat

OCTOBER 23, 2015 AT 09:14

Excellent article. Thank you (and those involved) for taking the time to conduct these tests and for sharing the results with us in an informative manner.

I have yet to use FireClean, and based on how they've handled things since this whole thing started, I probably never will. I'm sure your data won't change the minds of their most hardcore supporters, but hopefully it'll start a dialog and some people might start thinking critically for a change.

I started using CLP back when I was in the Canadian Army, since that's what I was taught to use, and I still use it occasionally. Nowadays I tend to use Slip 2000 EWL and I've had good results with it. I am curious to see if it's one of the lubricants that you have tested, since it seems to have similar application instructions, and makes similar claims of metal conditioning. Their website even mentions seasoning a frying pan: https://www.slip2000.com/slip2000_gunlube.php

Everett

OCTOBER 23, 2015 AT 10:52

Since the samples yet to be discussed were “solid” grease type samples I don’t think that slip 2000 was included. But I’ll make sure to keep it in mind if I do a future round of testing.

Dane

OCTOBER 23, 2015 AT 10:17

I have been using gunzilla for a couple years now and love the stuff. It is marketed in much the same way as Fireclean, what with the non toxic, biodegradable and so on. I would imagine it is likely similar, if not the same, as vegetable oil as well. Thanks for putting in the work on this Andrew, it’s been interesting reading about the process.

Bill

OCTOBER 23, 2015 AT 10:45

Vegetable oils and animal oils/grease are nothing new in the firearms world. The only thing fireclean did was use fancy marketing and questionable claims to market an already established product.

Sian

OCTOBER 23, 2015 AT 10:51

So I think the definitive test would be if someone whipped up a batch of fries cooked in FireClean and did a taste test.

Brian

OCTOBER 23, 2015 AT 12:12

There is a video of 2 guys frying eggs with Fireclean. The amount of Fireclean needed to deep fry french fries can probably only be afforded by LAV with his employee discount.

Dink

OCTOBER 23, 2015 AT 12:33

Who has $400 to spend on fireclean for frying? Would have to be a very small batch of fries.

RyanDaNurd

OCTOBER 23, 2015 AT 17:50

Yaaay Bruker NMR!

But seriously I'm happy to see actual NMR data to back up the IR work previously done. It's much better than IR for comparing things such as this. (IR does a good job but if you really want to be sure, you go to the NMR dungeon and stuff your sample in the magnet)

Steve Sanders

OCTOBER 23, 2015 AT 23:09

This article says 18 different oils were tested, to include Fireclean and Canola Oil. Where are the results for the other 16? I would be interested to see where they compare with the Canola Oil.

★ Andrew Tuohy

OCTOBER 24, 2015 AT 17:26

Check the previous two articles on this blog and check back for future articles.

ZANG

OCTOBER 28, 2015 AT 20:20

This certainly is a slam dunk on the whole issue. So much science. And then more science, twice with Doctors. The world needs more of this.

I thank you!

Senior Zang .

Greg

OCTOBER 24, 2015 AT 07:51

canola oil will oxides and gum. Far as I know,no complaints from the gun community. It might be canola but they might found away from keeping It from oxidizing.

Everett

OCTOBER 26, 2015 AT 17:34

I'll hang on to the samples and check back in a few years, but it doesn't look like it. the C13 NMR shows relatively equal peaks in the areas indicating C=C double bonds. A lot of the chemistry relating to oxidation and gumming up (which could also be from polymerization) would likely come from either those double bonds or the ester bonds in the triglycerides.

Andrew R

OCTOBER 24, 2015 AT 08:35

Andrew,

This is exactly the sort of thing I've come to expect from your blog and one of the reasons I've continued to read. Thanks for being a beacon of truth and accuracy.

Everett

OCTOBER 26, 2015 AT 17:34

Science: It's like magic without the lies

Chuck

OCTOBER 24, 2015 AT 09:34

Here's my take fwiw. I guess I got taken. I've used fireclean and it worked, but now with all this evidence and especially the video with LV, I no longer have any faith in this company or LV. I actually threw out all my fireclean and unsubscribed to LV. Let's see if they are at next years shot show. This will also hurt other manufactures because it will cause serious doubt on any claims that are made. I also threw out my Rand CLP, Gunzilla, and Frog lube. I went back and read Grant Cunninham's lube 101 article, and promptly bought the lubriplate kit. At least it's honest and does what a lube should do without all the bullshit claims.

Everett

OCTOBER 26, 2015 AT 17:37

I'd love to see this make people question things. I hope I don't make you distrust lubricant companies, but question claims before you blindly believe things. I spent way too much on Fireclean at one time too. Don't be mad about it, it still works as a lubricant, so use it for that. And when you go to buy more just know you can get it for less in the cooking section.

ShawnB

OCTOBER 25, 2015 AT 05:28

I've been using single stroke motor oil on my guns for years, really cheap generic hardware store brand, the kind intended for a lawnmower that sells for $2 per jug. It works really well too. Generic white lithium grease also does a good job. People have always called me crazy, the same people who were paying $10 for a tiny bottle of Militec-1, or whatever trendy high tech space lube had just been invented.

I can't say I'm really surprised that a company came along and started repackaging cooking oil to sell

to the gun community. Ours is an industry that is filled with disposable income, and at times shockingly little common sense. Ripe for the picking by a company with good marketing and endorsements by figure heads with questionable scruples.

Everyone should take this article to heart and remember it well when your local gun shop starts stocking a new wonder lube. They may not all be snake oil, but 99% of the time it hissed and had fangs before they bottled it.

2hotel9

OCTOBER 26, 2015 AT 04:27

Well, good. I'll just keep using remoil in the spray can and 3n1 oil in the squeeze bottle, and wd40&elbow grease for cleaning.(remember, kids, wd is a water dispersion/cleaning product, not a lubricant!) I know you been taking a lot of grief over this, AT, and I say f*ck'em. I was skeptical of FC when I smelled it and it made me think of some concoction a chick would rub on her snootch before a date. 'nough said.

★ Andrew Tuohy

OCTOBER 26, 2015 AT 17:29

I laughed heartily at this.

2hotel9

OCTOBER 27, 2015 AT 03:48

Glad I could lighten your day!

2hotel9

OCTOBER 26, 2015 AT 04:39

Oh, and AT? Now that you have put this one in its grave how about some write ups on AKs. I know, I know, AR plat is your wheelhouse, still, applying your lazer-like focus to any subject will surely improve it! Look what you did for the fast food industry.(sorry, you left that chain lying there and I had to give it a yank, since you never got around to reviewing the Primanti Bros Samich)

Jon Gifford

OCTOBER 26, 2015 AT 10:24

Mr. Touhey, I have noted that you used to sing the praises of Fireclean, and now you do not. Even going back on your sentiments so much as to call the firearms which you used in your 40,000 round

ammo test as a "a good rifle built by Bushmaster". Well, originally half of them had barrel nuts hand-tight, as I remember that article. Regardless, you have shown that the weapons functioned very well in dust, rain, mud, etc. for thousands upon thousands of rounds, with little lube involved, and you praised the product heavily at the time. So, I would ask…why are you now attacking it? You have yet to produce a single failure of it to deliver on its advertised performance. You have managed to find / create NMR test data which shows FIREClean has similar signature as Canola oil. However, similar is not identical, and it may well contain Canola oil. The patent has made it quite clear that the product is a blend of various oils, yet you have set out on a path to stat that it is one specific oil, and you are pushing Canola (Rapeseed) oil, as that oil.

Further, I would direct you to numerous research articles which expound on the film strength, heat management/endurance, and other attributes of vegetable oils, in general. Vegetable oils are indeed VERY resilient when dealing with heat, and have boundary film strengths far in excess of petroleum based products. I have found nothing wrong with Fireclean's claims, here. A quick Google will show this to be born out on many pieces of very expensive equipment in the food and other industries where petroleum is a no-go, or where the specific attributes of a vegetable oil are better suited.

I would then address your regression back to the realm of fact…calling Fireclean a vegetable oil. Okay…but we already knew this.

Then you attack the product again, saying that a vegetable oil / blend does not warrant the cost, nor the title of "most advanced", etc.

The rub here, is you still don't know what the product is, how it is created/mixed/synthesized, etc.

Goose and Taaka are very similar, chemically speaking.

So I would ask…why are you attacking a product you once championed, and using half-truths and changing your story to do so? Has Fireclean caused an issue in function? Did one of the guys who owns the company kick your dog, metaphorically? I am curious, why the about-face?

Jon Gifford

OCTOBER 26, 2015 AT 10:25

I'm sorry for the butterfingered typing, Mr Tuohy. It's been a long shift, and I did not mean to butcher your name. Apologies.

★ Andrew Tuohy

OCTOBER 26, 2015 AT 17:19

No offense taken. If I had a dollar for every time someone has misspelled my name, I could buy a months' supply of FireClean.

★ Andrew Tuohy

OCTOBER 26, 2015 AT 17:18

An obvious question, I guess, but one not based on facts. My only agenda here has been to conduct research and report on it truthfully.

You say that I used to sing the praises of FireClean and have now changed my story. Well, let's look at my actual statements, not your recollections.

I have been very consistent in saying that FireClean works very well as a lubricant for the AR-15 platform. I even say that in this article to which you responded (perhaps you missed that).

However, unlike others in the industry, I haven't quite championed it. In the LuckyGunner test article, where you claim I "praised the product heavily," FireClean is mentioned in wholly objective terms as the lubricant used and I neither champion it nor denigrate it. I also reviewed the blog's Facebook page from that timeframe and did not see any outstanding praise of FireClean. If you look at this article written in 2013, I say that Fireclean works very well but that I would not buy it due to cost. If you don't believe me, check internet archives – that article hasn't changed since publication, to the best of my recollection.

If you can find any quote from me in which I champion FireClean above all other oils or say that it is the best oil ever or say that I'll never use another oil or say that it made my rifles run better than anything else or say that it made all the difference in the 40,000 round test and without it the rifles wouldn't have worked as well – the likes of which we've heard from others in the industry and ones which I would certainly consider championing – by all means, bring it to my attention.

More recently, I set out to address two rumors that were going around regarding FireClean – that it was Crisco, and that it would gum up over time. In this post, you can see that I intended to address both. On the first one, gumming up an action after prolonged storage – draw your own conclusions from the video – but it was hardly an attack on FireClean. Naturally, the FireClean people loved that video.

On the second point – the Crisco rumor – I conducted research and reported on it. I attempted to include feeback from the company, but they were more interested in misdirection.

I then saw the obvious manipulation of the "Fireclean Lube Test" video – ridiculousness of the claims notwithstanding – and reported on that as well.

Finally, you have this post which addresses concerns from those who say IR spectrography is not conclusive enough.

I hope that this helps you understand that at no point have I used half truths or changed my story. I feel that I have been exceptionally consistent, considering recent revelations. I'll repeat what I said in 2013 – Fireclean works very well as a lubricant, but I wouldn't buy it because it's too expensive.

Jon Gifford

OCTOBER 29, 2015 AT 00:47

I suppose my largest qualm with what I've read on your blog is that FIREClean claims to be a blend of multiple oils. I myself have tried physically mixing it with vegetable oil, as well as canola (rapeseed) oil, and it does not readily mix. For all I know, it contains rapeseed oil as a component, I won't argue for/against that. However, even to the casual observer, it is clearly not the same. All of the lab data you have produced/had produced also indicates that it varies significantly from pure rapeseed oil. For example, please see this: http://www.process-instruments-inc.com/images/PI_Raman_Cooking_Oils.jpg I am sorry that the image is so bloody small, but the point is made. There are AT LEAST as much variances on the spectrum analsysis you have shown of Fireclean, and yet you say that it is "functionally the same", or at least that's the gist, as Canola/Rapeseed oil. Well, there is Raman spectra of multiple oils with VERY different properties, and they look just as similar as your Fireclean vs. Canola graphs, yet we clearly know that Canola oil and Vegetable oil (soybean) have very different properties. So I guess what I'm asking is…why have you chosen spectrum analysis as your method to prove that Fireclean = Canola oil? I think that if you want to prove that Canola = Fireclean, you need to subject them to PERFORMANCE tests, such as falex weld point, smoke point, iodine uptake (already done by fireclean), and other things like that, because as we can see, most vegetable oils look darn similar on spectrum analysis, and I feel that using that tool is very misleading to the public at large. It would be like me trying to sell you TAAKA instead of Grey Goose and using "alcohol content" as the thrust of my sales pitch. So I would ask…why have you chosen the most ambiguous method? Why choose the only method that seems to support your views, which is also scientifically valid, instead of some of the other tests which are more in line with its intended use? A firearm cannot read a spectrum analysis any better than most of your audience, but it CAN see smoke-point, coefficient of friction, falex weld point, etc…I would like to see how FIREClean and Rapeseed oil differ on THOSE points…now if they don't…THEN you have a case. Otherwise, you're just selling me TAAKA instead of Goose and brandishing alcohol % by volume as the reason I should buy, IMO

2hotel9

OCTOBER 29, 2015 AT 05:26

"why have you chosen the most ambiguous method?" Really? Repeated testing by multiple sources is "ambiguous"? Glad I was done with my coffee when I read that one.

Jon Gifford

OCTOBER 30, 2015 AT 07:43

Here is NMR data for 20 distinct marine, plant, and animal oils. Would you say that they look "almost identical"? I think you'll find NMR is rather ambiguous for some applications…

[img]http://www.process-nmr.com/images/productspage/edible10.gif[/img]
http://www.process-nmr.com/edible_oils_nmr_spectra_at_60.htm

Have some more coffee. It probably doesn't matter which brand you drink, either, as they are all "almost identical" ;)

★ Andrew Tuohy

OCTOBER 30, 2015 AT 07:57

I have no clue, that's why I relied on the opinion of people with PhDs in related fields who are paid a lot of money to analyze this stuff.

2hotel9

OCTOBER 31, 2015 AT 06:48

So, you are one of those people who always asks the deal to hit you when you have 19. Glad we sorted that out.

★ Andrew Tuohy

NOVEMBER 2, 2015 AT 10:26

I think the fact that FC chose to conduct their own NMR testing speaks volumes about its importance. They probably planned to release their tests as triumphant evidence of how their product was different, not knowing I and others were pursuing NMR as well.

2hotel9

NOVEMBER 3, 2015 AT 07:14

They have fallen victim to "overzealous advertising executives", people who watched Mad Men too much. They are not the first and will certainly not be the last. Bad thing is they had

a product that appears to work as well as others in the market, could have turned it into a multi-product brand. Instead people are laughing at them.

David

OCTOBER 29, 2015 AT 07:02

Well, AT has this to say about "tests carbines can see":

"I'm also happy to report that my ARs lubricated with canola oil almost two months ago are still chugging along with no malfunctions."

So, I bet the FC guys never did spectrum analysis or anything – probably just bought different brands of oil and tested them in their suppressed SBR. After they found one they like then talked to a lawyer for their patent who said "whoa – you can patent a repackaged product – you need to make some changes" – so the FC guys added a little something or other to their oil.

So Andrew, running Canola oil, is doing the exact same testing if my hypothesis is correct.

★ Andrew Tuohy

OCTOBER 29, 2015 AT 12:55

The very first video on this subject, the one that started all the controversy, showed that the smoke point was the exact same for the two oils. This was repeated elsewhere with the same results.

Iodine, as I understand it, is a range. It's not like body temperature, where if you're not really close to 98.6 you're in trouble. Canola oil can be anywhere in a range, and that range is very close to FireClean's self reported value. But knowing that FireClean has been willing to manipulate testing to make themselves look good, why would you trust anything they say?

I'm already testing the functional side.

As for why these tests? I went to recognized experts in chemistry and asked them how to answer the question originally posed on this blog. They went with IR and NMR. When conducting their own testing to determine the same things, they used the same tests.

You seem to have a real problem with twisting what I say and/or putting words in my mouth and I'm getting pretty tired of it. Quote me directly or don't bother.

Jon Gifford

OCTOBER 30, 2015 AT 07:49

That was MY video, and it was done on a kitchen stove. I believe I prefaced it as “the best tool I had available for the job, at the time”. Also, considering that FC may indeed contain Canola oil, in an unknown percentage, the results of it may be rather explainable/accurate. Regardless, why not have a professionally done flash-test? That would be much less error-prone. Here is another video I did with Rand and Froglube. Can you conclude that they are identical because they burst into flames simultaneously?
https://www.youtube.com/watch?v=P_GMBvypr7M

★ Andrew Tuohy

OCTOBER 30, 2015 AT 07:56

Oh. Now I understand the pedantic behavior.

Everett

OCTOBER 29, 2015 AT 16:51

This issue first came up due to the smoke point testing. Back then the argument was “smoke point doesn’t show anything, do real chemistry before you make claims.”

So I did, and Andrew did, and other chemists did. Now I have FireClean Facebook messaging me trying to get me to believe that their reaction based chemistry “data” somehow proves the exact opposite of what data is saying, and they want to go back to performance testing. All the while they refuse to post the entire data set from any test and claim they have their testing done by “the most respected lab in the industry” but refuse to provide the name of the lab.

As soon as I get back to the lab I’ll be doing as much more testing as I can. I guess this is what Andrew warned me about when he said the results would piss people off either way…

★ Andrew Tuohy

OCTOBER 29, 2015 AT 16:54

I do find it funny that they’re now referring to me as simply a “blogger” when before this, they were offering to pay me money to make videos for them and pushing my work far and wide as proof that their product works. Well, they’re still doing the latter, they just don’t want people to know I’m behind both the 40k test and this one.

2hotel9

OCTOBER 30, 2015 AT 04:57

Marginalizing and silencing “bloggers” is the next big thing. Just look at the wailing&gnashing of teeth from “professional journalists” over bloggers banging their a$$es. Shutting up the rabble is going to fail, cause the harder they try the louder the “rabble” gets.

David

OCTOBER 29, 2015 AT 18:59

“Pay no attention to the man behind the 40k test… he’s a blogger, he’s a nobody!”
sigh

2hotel9

OCTOBER 30, 2015 AT 04:49

Just be glad they can’t Galileo you!

Jon Gifford

OCTOBER 30, 2015 AT 07:51

Let’s get some physical property data. NMR is useless as I have pointed out and demonstrated previously here. Lets see specific gravity, flash-point, pour point, coefficient of friction modification, etc.

★ Andrew Tuohy

OCTOBER 30, 2015 AT 08:00

You haven’t demonstrated anything, you’ve just thrown a bunch of crap at the wall in attempt to see what sticks.

Benjamin Toombs

DECEMBER 3, 2015 AT 16:53

The infinitesimally small thumbnail you linked is a bit misleading, here is a link to the full size document:

http://www.process-instruments-inc.com/pdf/PI_Raman_Cooking_Oils.pdf

Benjamin Toombs

DECEMBER 3, 2015 AT 16:53

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David

OCTOBER 27, 2015 AT 12:41

Andrew,
If FireClean is too expensive (and, like you, I'm not a big fan of their handling of this whole thing…) what lube would you recommend?
David

★ Andrew Tuohy

OCTOBER 27, 2015 AT 18:52

If you want to buy a gun oil, I have used FP-10 with excellent results over the years. I'm also happy to report that my ARs lubricated with canola oil almost two months ago are still chugging along with no malfunctions.

David

OCTOBER 27, 2015 AT 20:24

Hehe. And how does performance/cleanability compare to FireClean?

My hunch is that, since there are various versions of Canola Oil (derivitives of Rape Seed Oil, with less of certain acids), that the FireClean guys found the version that worked the best. So there was, as they say in the Vickers Video, some trial and error.
So, what kind of oil (brand/name) are you using, and how is it faring? Can you perceive ANY difference compared to FireClean?
My other hunch (and this is based on me never having used FC) is that part of what makes FC work is their specific application instructions (i.e. strip off the old oil, etc). Thoughts?

2hotel9

OCTOBER 29, 2015 AT 05:20

Plus that delicious chickenwings and french fries aroma after 100 rds!

Seriously, though, there are so many effective and relatively inexpensive weapon lube options that it comes down to personal preference in the end. FC made its biggest mistake in letting a REMF advertising hack go way overboard in their initial roll out, then doubling down on stupid when people called them on it. Not uncommon in the business world, it just did not fly with the firearms using crowd and they got smacked for it.

David? AT is right on FP-10. I am a fan of remoil spray and 3n1. Its kinda like beer, got to find one you like and run with it.

Pingback: FIREClean vs. Canola Oil | Granite State Guns

Pingback: Weekend Knowledge Dump- October 30, 2015 | Active Response Training

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Adam

OCTOBER 30, 2015 AT 13:16

So if the vegetable oil works so well then why pay any manufacturers to buy their expensive gun oils?

AT, how many rounds have you shot in your weapons lubricated with canola oil? It sounds like with an election year coming that vegetable oil should be hard to find. 😉
Can you do a performance write up on your results? Keep us updated!

Everyone knows LAV is a paid and sponsored advertiser. Daniel Defense, Glock, Fireclean, Wilson combat, the list goes on.
I found FireClean through his website and I have used one bottle for over a year and a half. It works like you said. If Crisco works exactly the same I'm eager to know before I need to purchase another bottle of lubricant. Who wouldn't want to save money and run something cheap and so plentiful that you can find it everywhere easily.

Jon Gifford

NOVEMBER 4, 2015 AT 03:22

I have not "thrown a bunch of crap at the wall to see what sticks", Mr. Tuohy. Respectfully, you have posted numerous graphs that students and professors have taken the time to create for you, based on data gleaned from FTIR and NMR tests. Every graph shows a slight difference in the signature of FC and every other oil you have used. I then posted a graph of 20 distinctly different oils, as tested via NMR, and they all look just as similar as your FC vs. Canola oil NMR test. I understand the FTIR

and NMR are the only tests you have posted comparing Fireclean to other products? Am I mistaken?

You are using tests which will not show much variance at all, as demonstrated here: http://www.process-nmr.com/edible_oils_nmr_spectra_at_60.htm

Then you are basically saying "Science!" and concluding the issue, as best I can tell. Well, the issue is not concluded, as you can see, as I have data which when subjected to the same sensitivity that you are requiring, shows 20 distinct oils as being "functionally the same". Yet we know this is, of course, not an accurate interpretation of the data.

I see then that you've insulted me by saying I'm "being pedantic", and "throwing a bunch of crap at the wall". I think this is a perfect example of projecting, Mr. Tuohy, as I have simply countered your assertion that the NMR data and FTIR data is meaningful within context. I countered it with lab data which I sourced, and have linked you to, from a vetted and established institute, which you can readily see. For my trouble, I was told "you're throwing a bunch of crap at the wall to see what sticks". My interpretation of all of this? You're slinging crap at Fireclean to see what sticks, and it's starting to slide off, because you did not do your homework, used tests whose sensitivity you did not understand with regards to the task at hand, presented them as conclusive, and are now seeing that they support the evidence of the opposition when compared with more tests of their ilk, in context. The next insult I will dignify by addressing, is your calling me "pedantic". What does pedantic mean? Mr Tuohy, the definition of "pedantic", as I am sure you are aware, is to be overly concerned with details…Mr. Tuohy…this entire topic is about DETAILS…this is chemistry, science, and it might turn into law. All of which hinge upon being a little bit pedantic, although I prefer the term "diligent".

So, again, I would ask…why did you choose these methods to compare the substances? Why are you insisting that FIREClean is 1 substance, and not the multiple substances that it claims it is a mixture of in the patent? Why have you resorted to insulting me and my methods when you don't even claim to understand the methods you are presenting, and are now distancing yourself by saying "I have no clue, that's why I relied on the opinion of people with PhDs in related fields who are paid a lot of money to analyze this stuff." That sounds very much like "I was just following orders". It's not a good defense, legally, personally, or even socially.

I suppose I would close my argument in saying that I hope you can product data which shows a functional difference in FIREClean with more sensitivity than the NMR/FTIR data shows. If indeed it truly is Canola/Rapeseed oil, which I doubt, I'd be the first to cry foul, but everything your FTIR/NMR data shows indicates that it differs meaningfully, when the tests are viewed in relation to the sensitivity that is expected between two samples of organic oils (see my composite of 20 different).

Your own data is supporting FIREClean's assertions. I say "your", yes, I acknowledge that this data is sourced.

At any rate, Mr. Tuohy, I cannot say that your material is conclusive either way, when viewed objectively, except to say that Fireclean is indeed organic oil(s). I believe that an honest review of what you've posted, as well as comparisons from 3rd party companies to your data, regarding other organic oils and their NMR/FTIR signature similarities will lead the reader to similar conclusions. I wish you well in your en devours, and hope that the students/professors supplying data for you will be able to create a conclusive comparison that is transparent and definitive, one way or another.

★ Andrew Tuohy

NOVEMBER 4, 2015 AT 15:21

Several months ago, FireClean wanted to sue you. When we were still on speaking terms, I urged them not to. Maybe they still threatened to do so, and that's why you've made such an abrupt about face? They certainly alluded to suing me before I ever published any of this.

It's funny that you were so ready to call FireClean and Crisco identical based on burning some nickels on your stove, and now you're saying that these methods and conclusions are flawed. You must have earned the world's fastest chemistry degree in the last two months. I quoted the PhDs because they are more qualified to look at and analyze these results. That's a pretty simple fact.

As to the rest of your wall of text, I do not care what you think of the data. Your past history of erratic behavior and obsession with various firearm lubricants calls into question any authority you may have on the subject. I am, however, not FireClean, and so I will not censor your responses here. Feel free to continue tilting at windmills.

Jon Gifford

NOVEMBER 5, 2015 AT 00:18

I call things like I see them. Mr. Tuohy. That means that my viewpoints and my opinions are subject to change as I have new data available to me. You like FP-10…you had to use something before that, right? Then you learned of it, tried it, liked it, and new data available to you created a change in habit, yes? Well, there ya go!

As to the rest of your post, I sent you a PM because it is more appropriate as a personal conversation.

★ Andrew Tuohy

NOVEMBER 10, 2015 AT 01:34

No, you rush into things headlong and jump from extreme to extreme, with no middle ground whatsoever.

"Fireclean is crisco!" a short time later "Fireclean isn't crisco!"

"My stovetop test is conclusive!" a short time later "Your multiple lab tests and analyses from multiple PhDs are meaningless!"

You are welcome to continue sending me dozens of private messages, but I will continue to ignore them.

Mr Glock

APRIL 5, 2016 AT 06:11

Mr. Gifford-

Butthurt much? Stop whining about the alleged "insults". Methinks you talk too much, and may well even be "pedantic", anal retentive, or whatever. Now hush and go play with your Legos.

Jim R

NOVEMBER 5, 2015 AT 19:49

Once again, thank you. I don't have a dog in this fight; I am a casual shooter and the CLP I learned to use in the Army is good enough for me.

What is impressive to me is the rigour with which you've followed this up. In this day when people argue "science" based on what they think they remember reading on a web page or heard on TV, it's refreshing to see the tools of actual science – STARTING WITH A SKEPTICAL MIND – brought to bear on a question.

Jon Gifford

NOVEMBER 7, 2015 AT 08:20

Well, my corrosion test between FireClean and Canola oil is pretty conclusive so far: Canola = rust spots, FC = none. Must be something to it.

Pingback: » The Yankee Gunner Podcast – 058The Yankee Gunner

Jon Gifford

NOVEMBER 9, 2015 AT 16:58

Looks like someone read a bunch of graphs and decided to do a bunch of shooting. Graphs didn't equate to the real world, it seems:
http://www.m4carbine.net/showthread.php?176065-My-2000-round-Fireclean-vs-Canola-Oil-test

★ Andrew Tuohy

NOVEMBER 10, 2015 AT 01:35

I see no difference in performance.

2hotel9

NOVEMBER 10, 2015 AT 05:32

Well, it does appear to have discolored the crappy metal that bolt carrier was made from. Then again, DoD issued solvent and lube can do the same thing when troops don't scrub vigorously enough. Could be a case of a little from column A and a little from column B, as it were.

★ Andrew Tuohy

NOVEMBER 10, 2015 AT 08:03

I've never had a nickel boron carrier that didn't discolor – including the ones I used FireClean on.

2hotel9

NOVEMBER 10, 2015 AT 19:59

Yeah, I know. And yet it was fun as hell making all those boots scrub and scrub and scrub. And then we have THIS gem of knowledge to further confuse/terrify the less than aware masses,http://www.telegraph.co.uk/news/health/news/11981884/Cooking-with-vegetable-oils-releases-toxic-cancer-causing-chemicals-say-experts.html

Makes me wonder how much the Central Pacific Copra Producers Commissariat (CPCPC) is paying him to publish these results. 😉

2hotel9

NOVEMBER 10, 2015 AT 20:06

And in the interests of full disclosure, I love coconut oil for cooking, use it in all manner of dishes and recipes. (The CPCPC did not compel me to make this statement!)

Adam

NOVEMBER 18, 2015 AT 13:50

I'm still waiting for a response to my comment but I guess that's not going to happen unless a direct argument is made lol

---

2hotel9

NOVEMBER 18, 2015 AT 16:15

So, you can't read anything not directly addressed to you? Really? Here is a hint, either read through this thread or put your cursor on the name of this blog, in the upper lefthand corner, and read all the posted material. If that doesn't clear it up for you I don't know what else to tell you.

Lance behind enemy lines in Dumphuckistan, formerly known as California.

MARCH 21, 2016 AT 16:42

Excellent review! I ran out of Canola oil a couple weeks back and was frustrated that I could not cook my fish & chips, but then remembered this article and the fact that I had a case of Fireclean! The fish and chips cooked up nicely in Fireclean and actually tasted a bit better! I think I have found my frying oil of choice! Thank's Andrew! Though it costs astronomically more, that tiny bit of taste difference is worth it!

EXHIBIT

J

Granite State Guns

"I love to watch extreme forces at work. Sometimes, It involves destroying things."

FIREClean vs. Canola Oil

Posted by *granitestateguns* on *October 29, 2015*
Posted in: Testing and Reviews. Tagged: Fireclean, Lies, Science, Technology, Testing. 1 Comment
NOTE: A few minutes after this was posted I received a message from FIREClean to my personal Facebook page. They sent a well worded and reasonable response stating that they will "wait and see what will be published or shared" regarding their products. I still have some research to do regarding the Iodine Value testing (I love that ASTM makes you pay to read what their standards are) so this post may be edited later, or followed up. We will see how this goes.

So I'm a bit late to the party, but Andrew Tuohy posted the results of the FIREClean/Crisco testing (../../../../../www.vuurwapenblog.com/general-opinion/lies-errors-and-omissions/a-closer-look-at-fireclean-and-canola-oil/index.html). I'm sorry I didn't post this earlier, but I was traveling and starting an internship. Maybe it's a good thing that I didn't get to writing about this right away, all things considered…

Before I discuss the results, I want to make it clear that I put a lot of thought into it before I even volunteered to test these samples for Andrew. I am a firm believer in free market economics, and I love to see small businesses get going and do well. If my testing showed FIREClean to be standard canola oil, I was concerned that I would play a part in the downfall of a business. Regardless of your feelings towards any company, I don't like to see companies fail. On the other hand, if my testing showed that FIREClean was different than canola oil, I would likely be accused of faking my data (more on that one later) or being paid off by FIREClean. In the end, I decided that no matter the outcome, I would do a fair and honest test in the name of scientific fact. That being said, on to the results.

You've probably already read the conclusion, so I won't hold you in suspense any longer. According to multiple tests and after analysis by several different chemists, FIREClean is pure and unmodified canola oil. I sent the spectra to my academic advisor at WPI and this was how he responded:

Well, those look fairly identical to me, who is not exactly an NMR expert. Your chemical shifts are all the same, except the peaks around 130 are more intense in one sample so the integration "found" more of them. But, the visual inspection of both spectra side by side shows that they are actually present, just not above the software's threshold for peak ID.

That's pretty good evidence for the two samples being identical, but of course it isn't 100% conclusive. You do have other tests to provide additional evidence, though!

The "other tests" he is referring to are the IR spectra of the samples. As many have claimed (and I agree), IR is not definitive proof of anything. What it is is simply another tool for an analytical or structural chemist to use in testing of samples. Combined with the NMR data, I feel confident when I say that the FIREClean I tested is canola oil without the addition of any corrosion inhibitors, stabilizers, or other enhancement materials. In addition, my advisor (a professor of chemistry at a technical school) and other chemists have agreed.

But FIREClean still refuses to accept facts. Shortly after Vuurwapen Blog posted the results of the testing they responded by claiming that their competitors were spreading lies and that "independent testing" showed that the Iodine Value of FIREClean is different than that of canola oil. I'd never heard of this method in analytical chemistry before, so I started doing some research. To summarize the process, a known mass of the sample being tested (usually 100g) is reacted with a known amount of excess iodine. The iodine breaks open the double and triple bonds in the oils and attaches to the carbon atoms on either side of where the bond was. Then the excess iodine is reacted with something to make it turn a dark color (the exact reactant varies based on the procedure, but some examples include starch or potassium iodide), and the solution is titrated to determine the amount of excess iodine that was in solution. This value is used to determine how much iodine was used in the reaction with the oil, giving an idea of how unsaturated the oil is (how many double and/or triple bonds the material has).

Unfortunately, this testing isn't as exact as FIREClean would claim. Various published papers I found showed that values for the same oil can vary dramatically. The procedure, exact reactants and solvents used, and a variety of other factors change the calculated iodine value. So when FIREClean claimed that they "proved" their product isn't canola oil, but then refused to post the labs that did their testing, it didn't help their cause.

Shortly after the iodine value post, FIREClean posted their own NMR data… sort of. They posted a clip of their own NMR spectra of canola oil and Fireclean, only showing the shift range from 2.5 to 4.7. I commented encouraging the use of scientific facts and asking what lab provided the "independently collected" data. They responded that they did "lots of testing" at lots of labs," but didn't say what labs or provide any other tests. I asked for a look at the full proton NMR spectrum, but they claimed that they are "a small private company" with "large well funded competitors," so they don't post much of their testing. I see this as an attempt to hide something. If the testing has been done (and it had to be done for them to post a piece of the spectrum at all), I don't see why they refuse to post the full dataset. I openly stated that I am the person who did the testing for Vuurwapen Blog, and that I want to give them a fair chance (and I do), so we will see what they do here.

Why is the full dataset a big deal? For some tests it isn't. But this is NMR analysis. Remember how I said that peak size is relative in NMR spectra? Well you don't have something to compare the peaks with if you don't have the full spectrum. NMR peaks are compared via the integral value (the total area under each peak). FIREClean highlighted a difference of less than 1.1 between FIREClean and canola oil, claiming it "proved" their product is different than canola oil. If these were the only peaks then this could be a big difference, but these peaks represent only a small percentage of the total number of

hydrogen atoms in the molecule. The majority of the hydrogen atoms in the samples are bonded to SP3 carbons (fancy science talk for the carbon having no double bonds) consisting of -CH3 or -CH2- bonds, and will result in a large peak with a shift in the 0.7 to 1.5 ppm range. With a peak this large (the spectrum posted on Vuurwapen Blog had an integral value of over 51) a difference of 1.1 between two smaller peaks is negligible. But what do I know. It's not like I took an entire college class to understand NMR. FIREClean is probably right, and clearly doesn't have a hidden agenda here.

What does all this mean? Take it as you wish, but I see it as FIREClean trying to save themselves. They are relying on a diehard group of customers that don't care about the absurd price and overwhelming scientific facts. FIREClean is trying to pretend they know chemistry and have "proof" that their product has some magical additives to make it worth $15 a bottle. In their defense, they likely do know chemistry decently well. Someone without chemistry knowledge wouldn't do as well at hiding behind their lies this long. ~~FIREClean started out just ignoring science, but now they have gone to blatant misrepresentation of scientific facts, something that really pisses me off. I took part in this testing to bring facts into the discussion, but FIREClean is heading toward the point of complete lies. Let's see how well that goes for them.~~ EDIT: FIREClean just messaged me stating that they will "wait to see what exactly is published or shared" regarding their products. See the note up top.

One comment that FIREClean has continued to use to attack those calling them out is the "Go see how canola oil works on your rifle" line. Unfortunately, our nation's capital isn't too friendly to firearms, so that testing will have to wait until my current internship is finished. But when I'm home in December I fully plan to make use of the gallon of canola oil I have. And what better way to test it than a New England winter and a few hundred rounds of cheap steel cased ammo. Soon enough…

One comment on "FIREClean vs. Canola Oil"

Pingback: FireCLEAN Files Lawsuit against Bloggers – GunsAmerica Digest

EXHIBIT

K

January 18, 2016 ·

It has been just over three years since the LG brass/steel 40,000 round test was published. If you have not looked at it in a while, I would encourage you to do so again. There are lessons in there for everyone (including me).

If we look at this photo from the article which I have selected, you can see one of the bolt carrier groups at the halfway point. This would be five thousand rounds with a brief scrub at 2500 rounds. It is filthy and has lots of carbon caked on. The con... See More

Brass vs. Steel Cased Ammo - An Epic Torture Test

This comprehensive 40,000 round brass vs. steel torture test examines at key indicators of ammo performance and cost in AR-15 rifles.

LUCKYGUNNER.COM

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EXHIBIT

L

Vuurwapen Blog
January 18, 2016 ·

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156 shares

Press Enter to post.

Damien Diaz Is that carbon buildup or damage to the lug on the cover photo?

Looks like the metal is warping

Like · Reply · January 18, 2016 at 6:47pm

View 2 more replies

Vuurwapen Blog Just a contact point between bolt and barrel extension where carbon is scraped away as the bolt turns

Like · Reply · January 18, 2016 at 8:35pm

Simon Ni Didn't some of the locking lugs in that test shear off or something?

Like · Reply · January 18, 2016 at 6:41pm

Vuurwapen Blog Nope

Like · Reply · January 18, 2016 at 6:42pm

View more replies

John Siwen Wang Speaking of FireClean, is this a good deal?

Like · Reply · 30 · January 18, 2016 at 6:46pm

View previous replies

Vuurwapen Blog Canola oil. Go for the green cap.

Like · Reply · 12 · January 18, 2016 at 8:49pm

View more replies

Dan Filkins Interesting, and well presented article. First time I've been able to read it.

I bought one of their Windham, Maine-built uppers in 2009 and it came with several warnings not to use steel-cased ammo, period. Did this change once they moved production to New York?

Like · Reply · January 18, 2016 at 8:41pm

Vuurwapen Blog The Remington built ones were completely different. However, that's mostly a CYA so that if you have problems with steel case ammo they can deny you warranty coverage.

Like · Reply · January 18, 2016 at 8:48pm

View more replies

Frank Borek For as much crap as we give fudds, I did learn from perusing their forums that high-temp wheel bearing or maritime grease sounds like a fairly good lubricant. Got a pound of that stuff at the hardware store for $8.00. I might not be able to eat it, but I wasn't planning to anyways.

Like · Reply · 1 · January 18, 2016 at 6:58pm · Edited

Dylan Harter I remember shooting a few thousand of those rounds!!!!

Like · Reply · January 19, 2016 at 8:44pm

Christopher Kagan That photo looks like Russian .223, which is much dirtier than US mfr brass case ammo.

Like · Reply · January 19, 2016 at 11:24pm

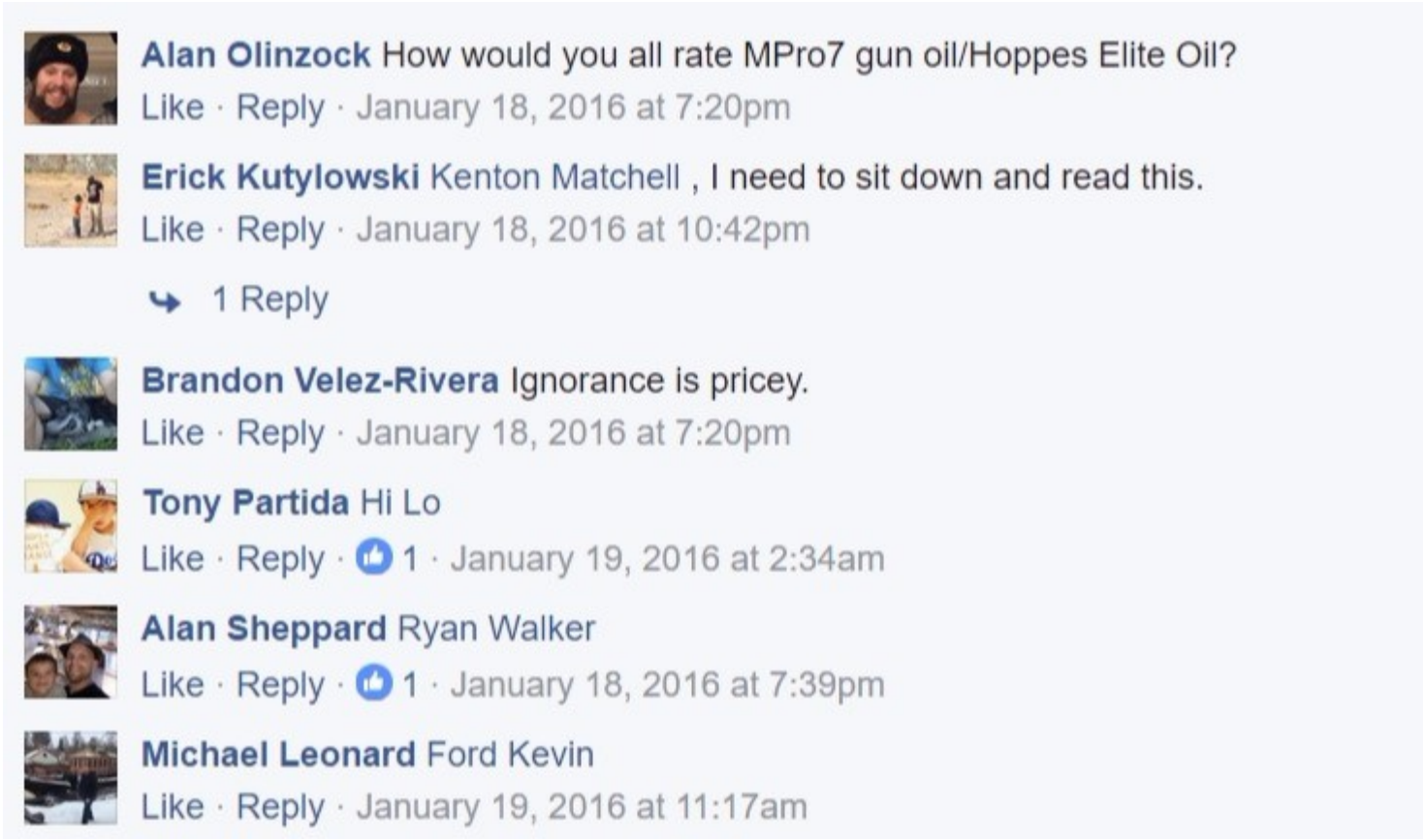
Kyle Fender When a companies statements claim to violate physics, skepticism is not a bad response.

Like · Reply · 5 · January 18, 2016 at 6:55pm

Bill Levie What are thoughts of the oil that drips out of the "meat" from Taco Bell?

Like · Reply · 1 · January 19, 2016 at 3:38am

1 Reply



Alan Olinzock How would you all rate MPro7 gun oil/Hoppes Elite Oil?
Like · Reply · January 18, 2016 at 7:20pm

Erick Kutylowski Kenton Matchell , I need to sit down and read this.
Like · Reply · January 18, 2016 at 10:42pm

1 Reply

Brandon Velez-Rivera Ignorance is pricey.
Like · Reply · January 18, 2016 at 7:20pm

Tony Partida Hi Lo
Like · Reply · 1 · January 19, 2016 at 2:34am

Alan Sheppard Ryan Walker
Like · Reply · 1 · January 18, 2016 at 7:39pm

Michael Leonard Ford Kevin
Like · Reply · January 19, 2016 at 11:17am

EXHIBIT

M

PETRO-LUBRICANT TESTING LABORATORIES, INC.

Member A.S.T.M.

116 Sunset Inn Road
PO Box 300 Lafayette, N.J. 07848
fax 973-579-9447
phone 973-579-3448

September 28, 2015

Test Report 15091801

Fireclean LLC
P.O. Box 192
Ashburn, VA 20146

RE: Your samples of September 18, 2015 Final Report

Dear Sir,

Analysis of your samples has been completed. The results are as follows:

	Test Methods							
	ASTM D5554 Iodine Value	ASTM D445 Kv @ 40°C	ASTM D445 Kv @ 100°C	ASTM D97 Pour Point	ASTM D92 Flash point	ASTM D92 Fire Point	ASTM D1298 Specific Gravity @ 15.6°C/15.6°C	ASTM E1252 FTIR Spectrograph
Crisco Pure Canola Oil Lab# 15091801	113 cg/g	36.07 cSt	8.069 cSt	-21°C	324°C (615°F)	356°C (673°F)	0.9200	Graph attached
Crisco Pure Vegetable Oil Lab# 15091802	132 cg/g	30.92 cSt	7.521 cSt	-6°C	324°C (615°F)	356°C (673°F)	0.9230	Graph attached
Fireclean Lab# 15091803	93.8 cg/g	31.75 cSt	8.364 cSt	-15°C	325°C (617°F)	357°C (675°F)	0.9163	Graph attached

Please call if you have any questions regarding this report.

Respectfully submitted,

Josiah Wintermute
Chief Chemist
JW:sh
Attachment (1 ASTM E1252 FTIR Graph)

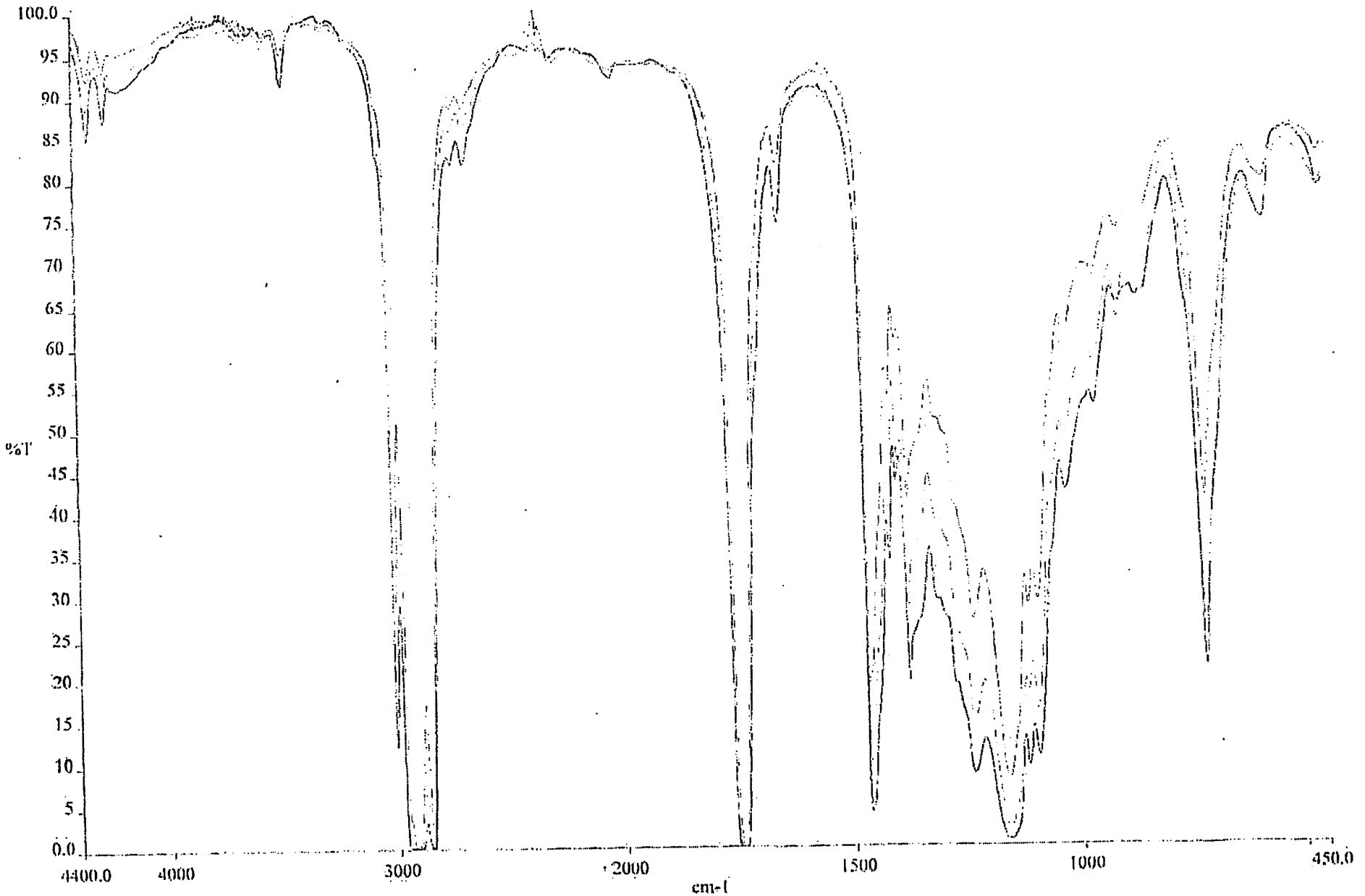
tabbies EXHIBIT S

Petro-Lubricant Test Labs

Crisco pure Canola Oil (Lab# 15091801) neat
Crisco Pure Vegetable Oil (lab# 15091802) neat

Client: Fireclean, LLC **Sample ID:** Fireclean (Lab# 15091803) neat

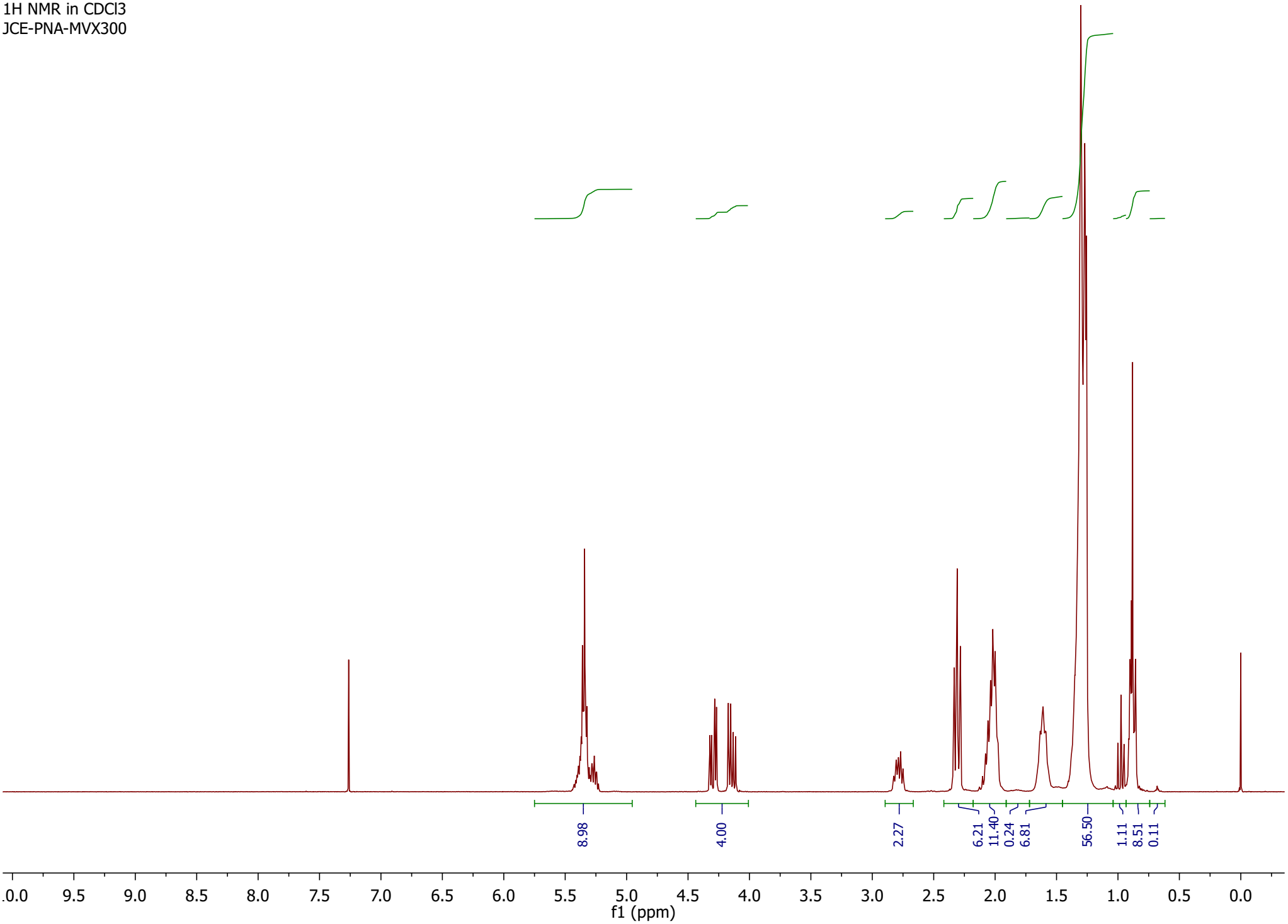
ASTM E1252 FTIR Spectrograph **Date: 9/25/2015**



EXHIBIT

N

Fireclean-001-H
Crisco Pure Canola Oil
1H NMR in CDCl3
JCE-PNA-MVX300



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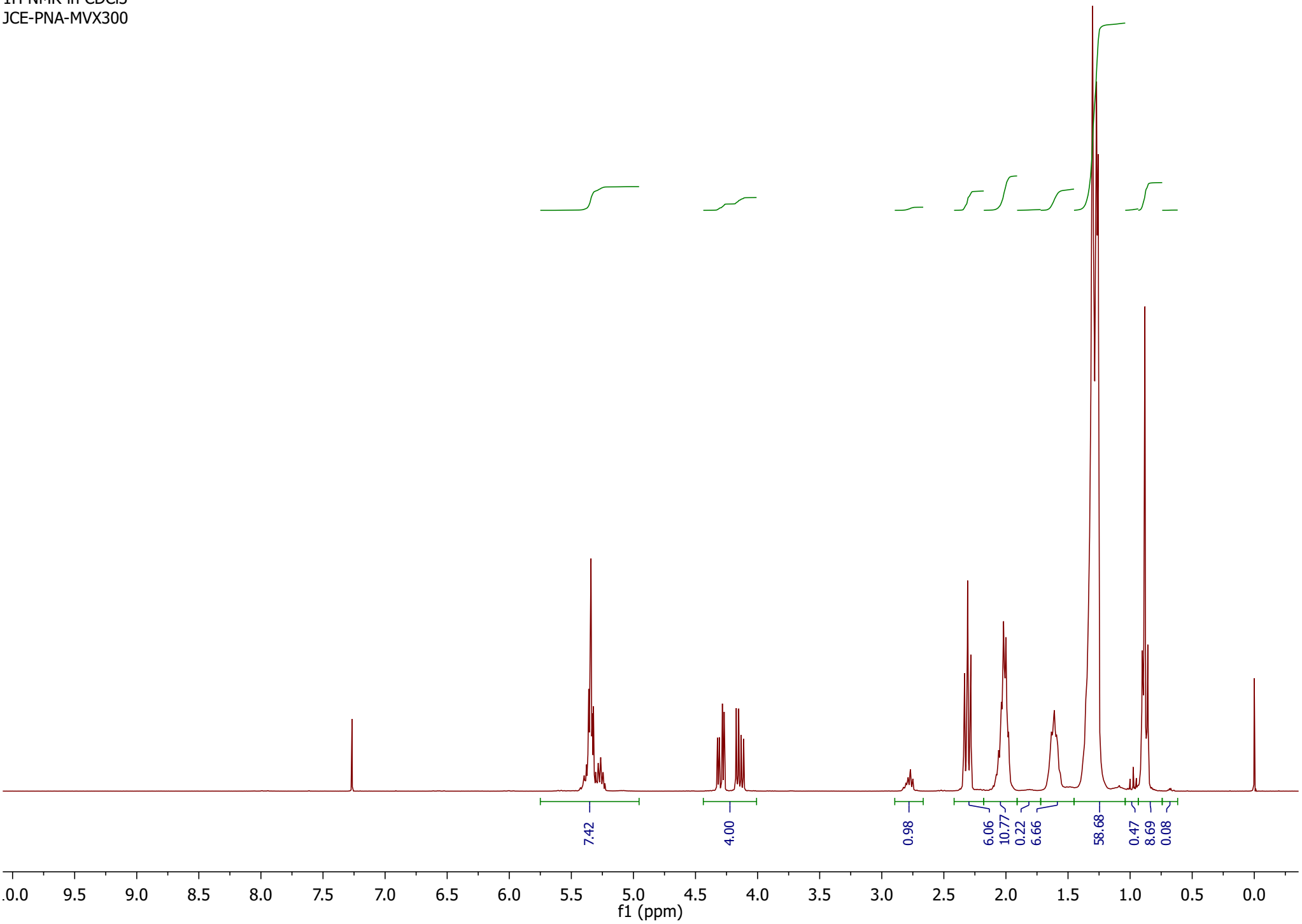
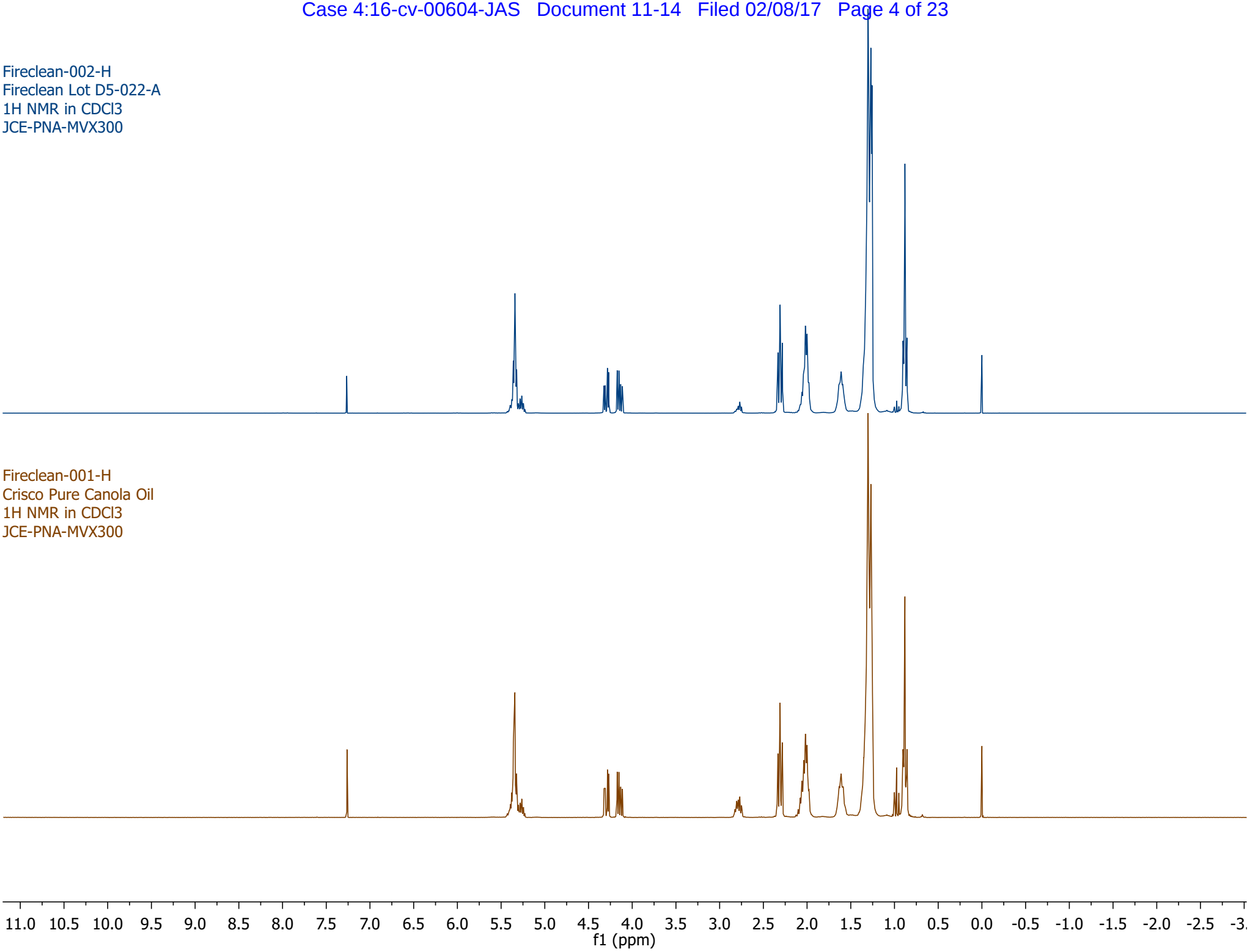
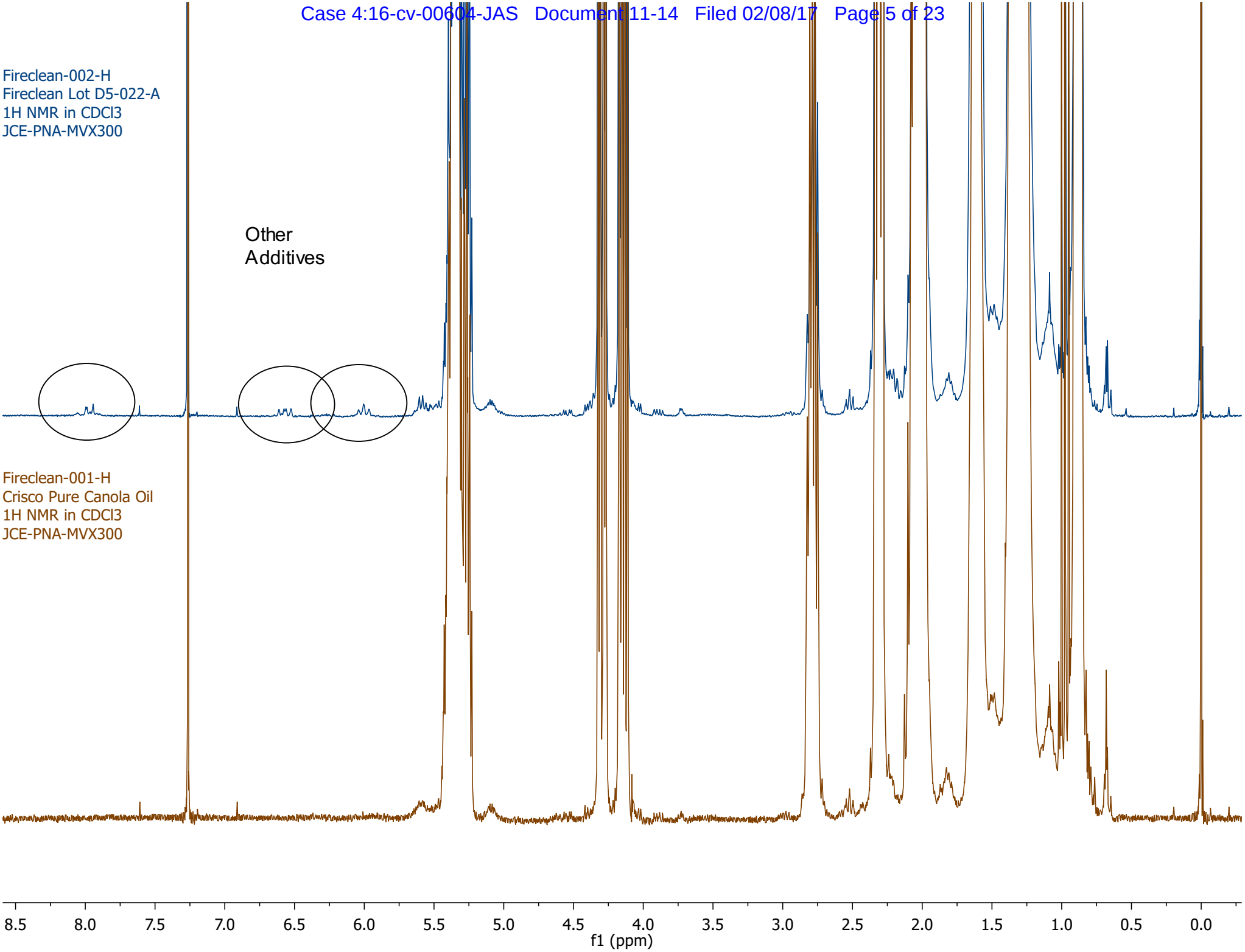
Fireclean Lot D5-022-A
1H NMR in CDCl3
JCE-PNA-MVX300




Fireclean-002-H
Fireclean Lot D5-022-A
1H NMR in CDCl3
JCE-PNA-MVX300
Fireclean-001-H
Crisco Pure Canola Oil
1H NMR in CDCl3
JCE-PNA-MVX300
11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0 -1.5 -2.0 -2.5 -3.
f1 (ppm)


Fireclean-002-H
Fireclean Lot D5-022-A
1H NMR in CDCl3
JCE-PNA-MVX300
Other
Additives
Fireclean-001-H
Crisco Pure Canola Oil
1H NMR in CDCl3
JCE-PNA-MVX300
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
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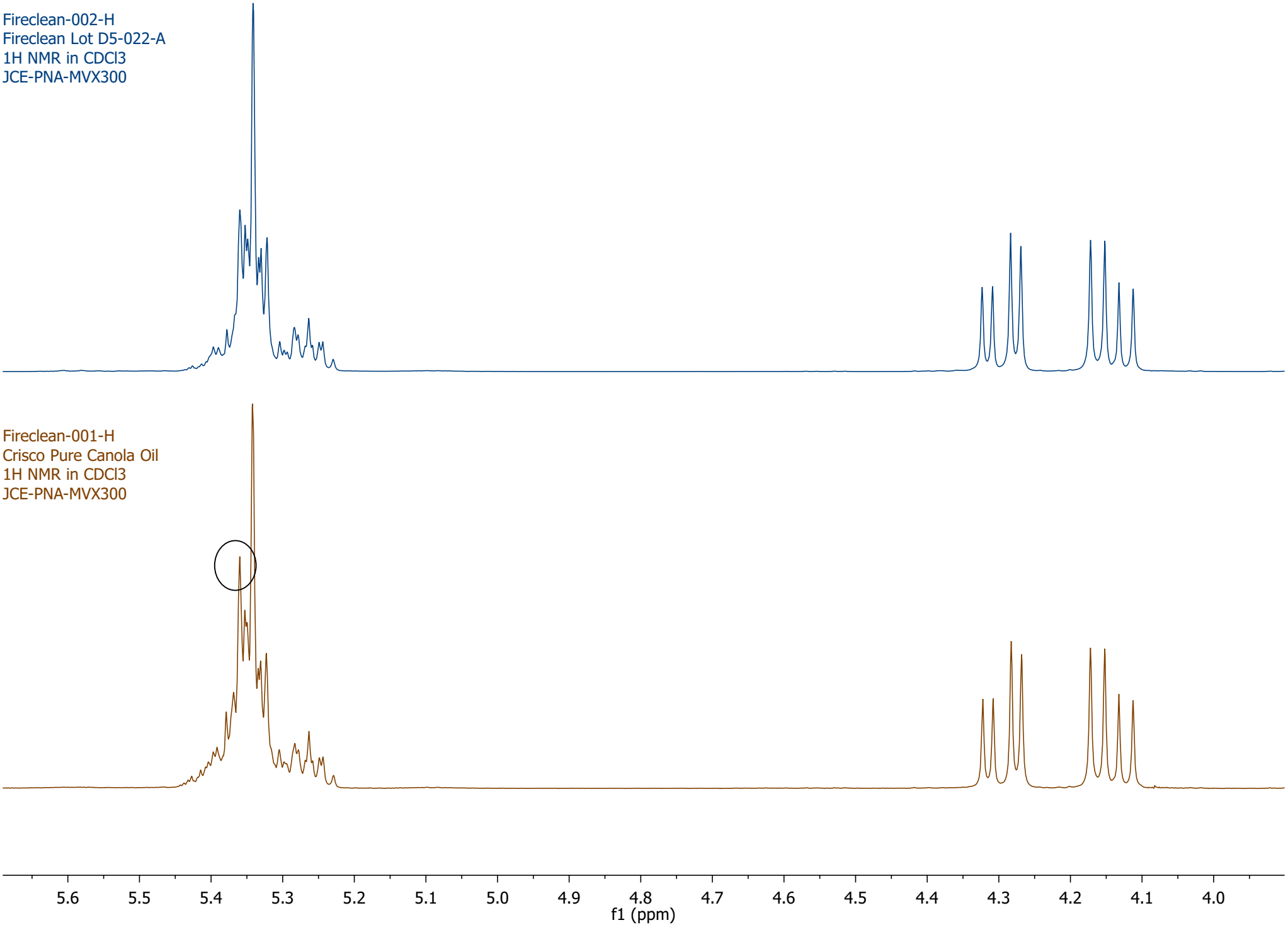
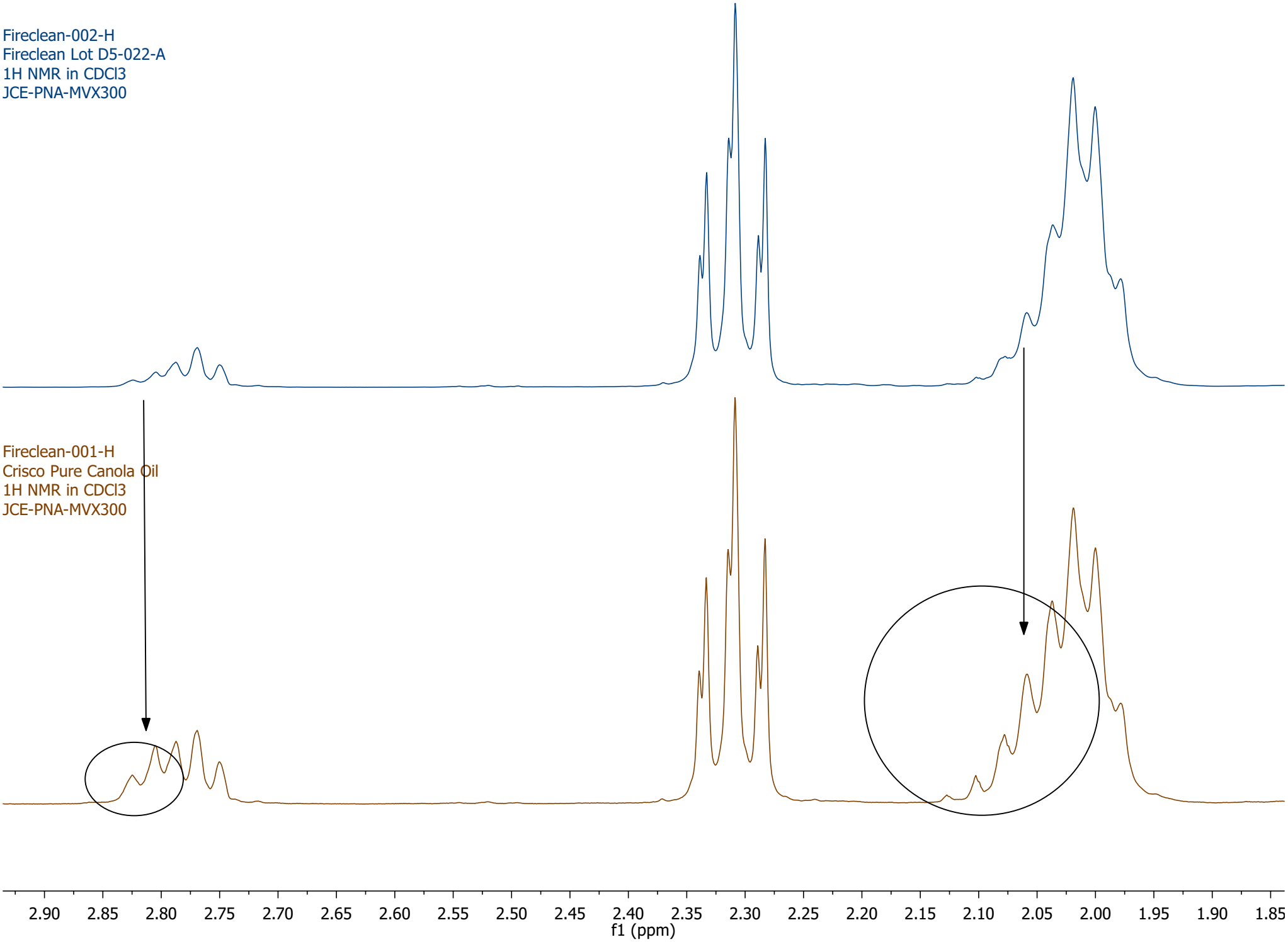
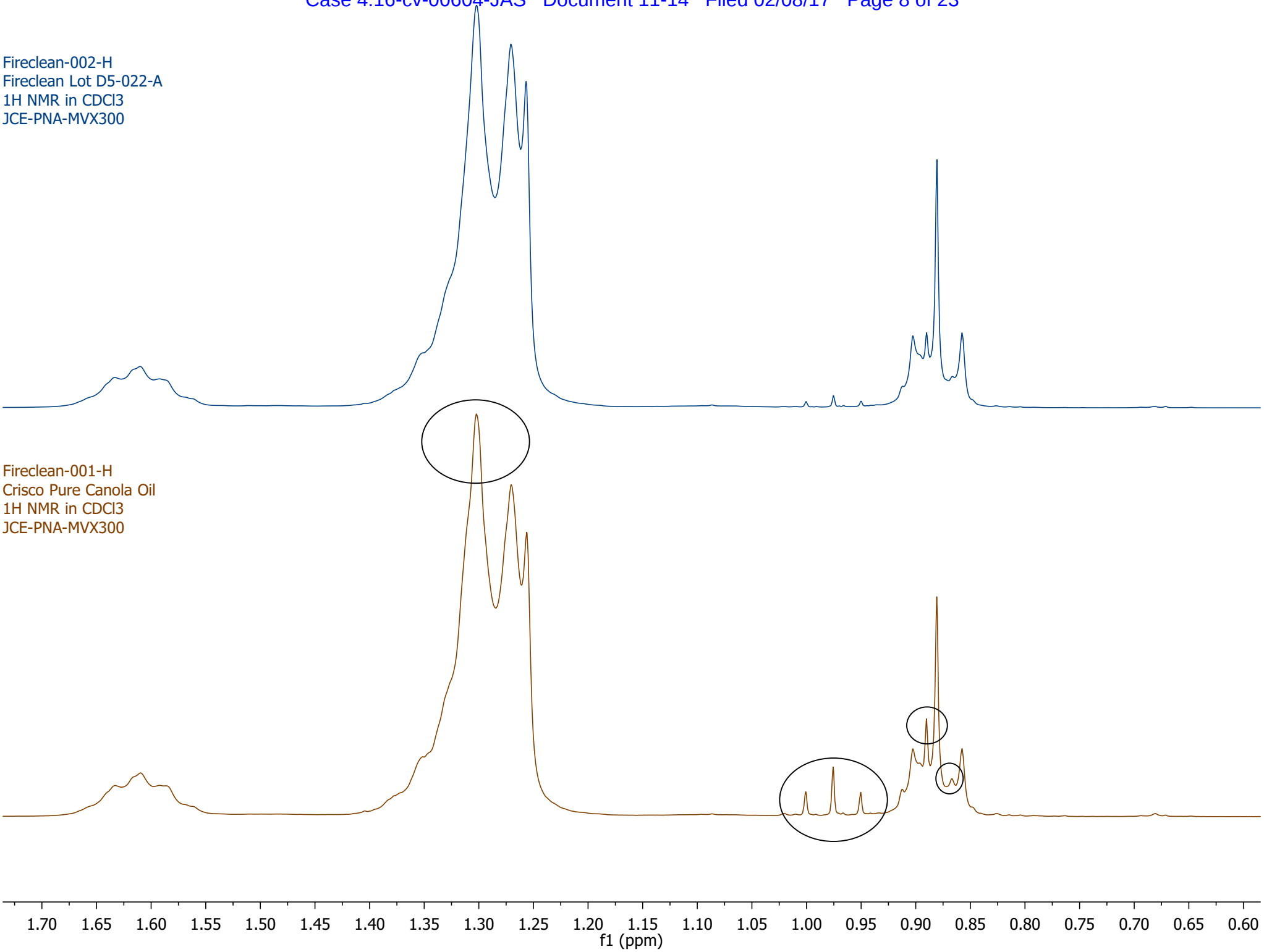
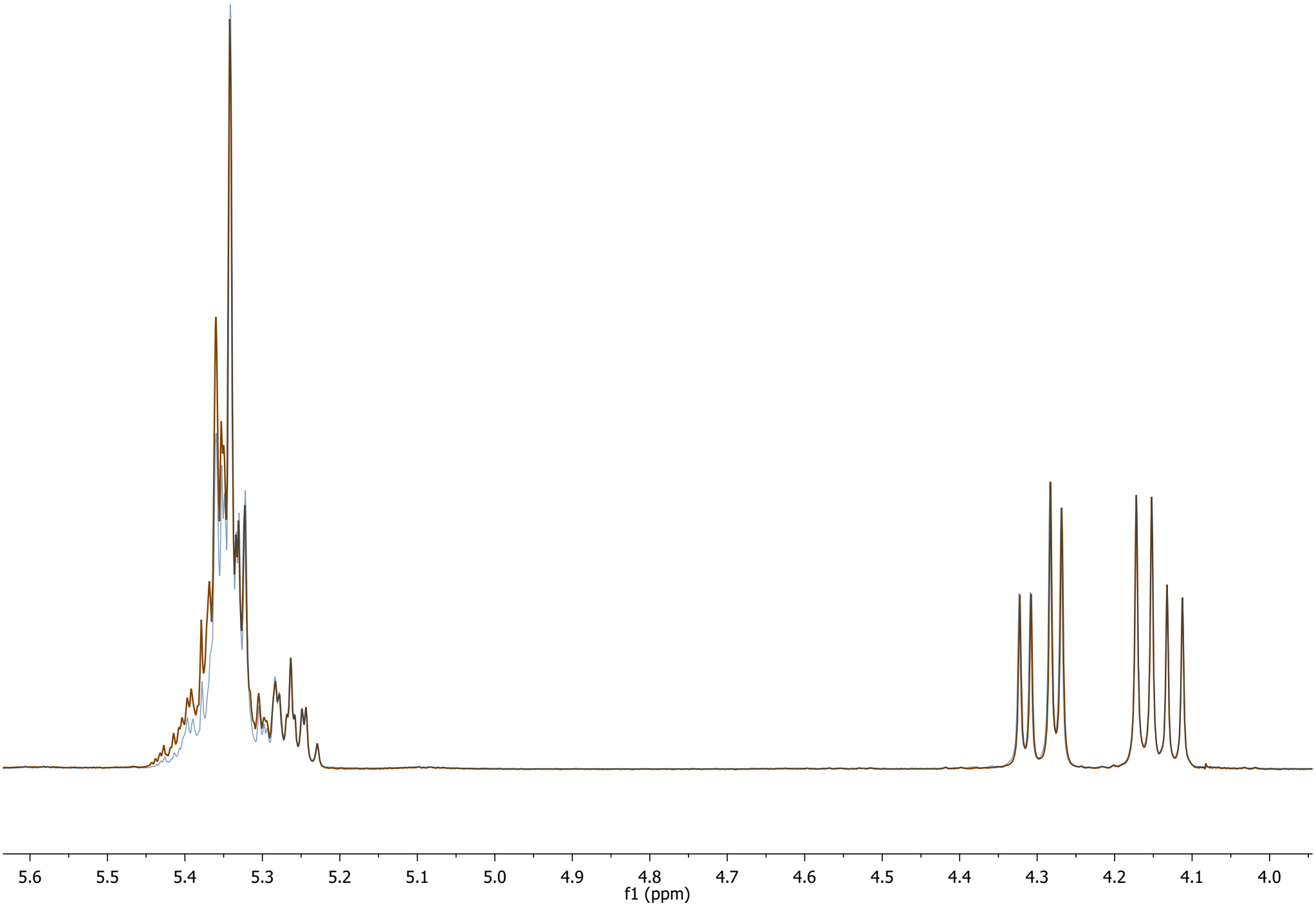
f1 (ppm)


Fireclean-002-H
Fireclean Lot D5-022-A
1H NMR in CDCl3
JCE-PNA-MVX300
Fireclean-001-H
Crisco Pure Canola Oil
1H NMR in CDCl3
JCE-PNA-MVX300
5.6
5.5
5.4
5.3
5.2
5.1
5.0
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4.0
f1 (ppm)

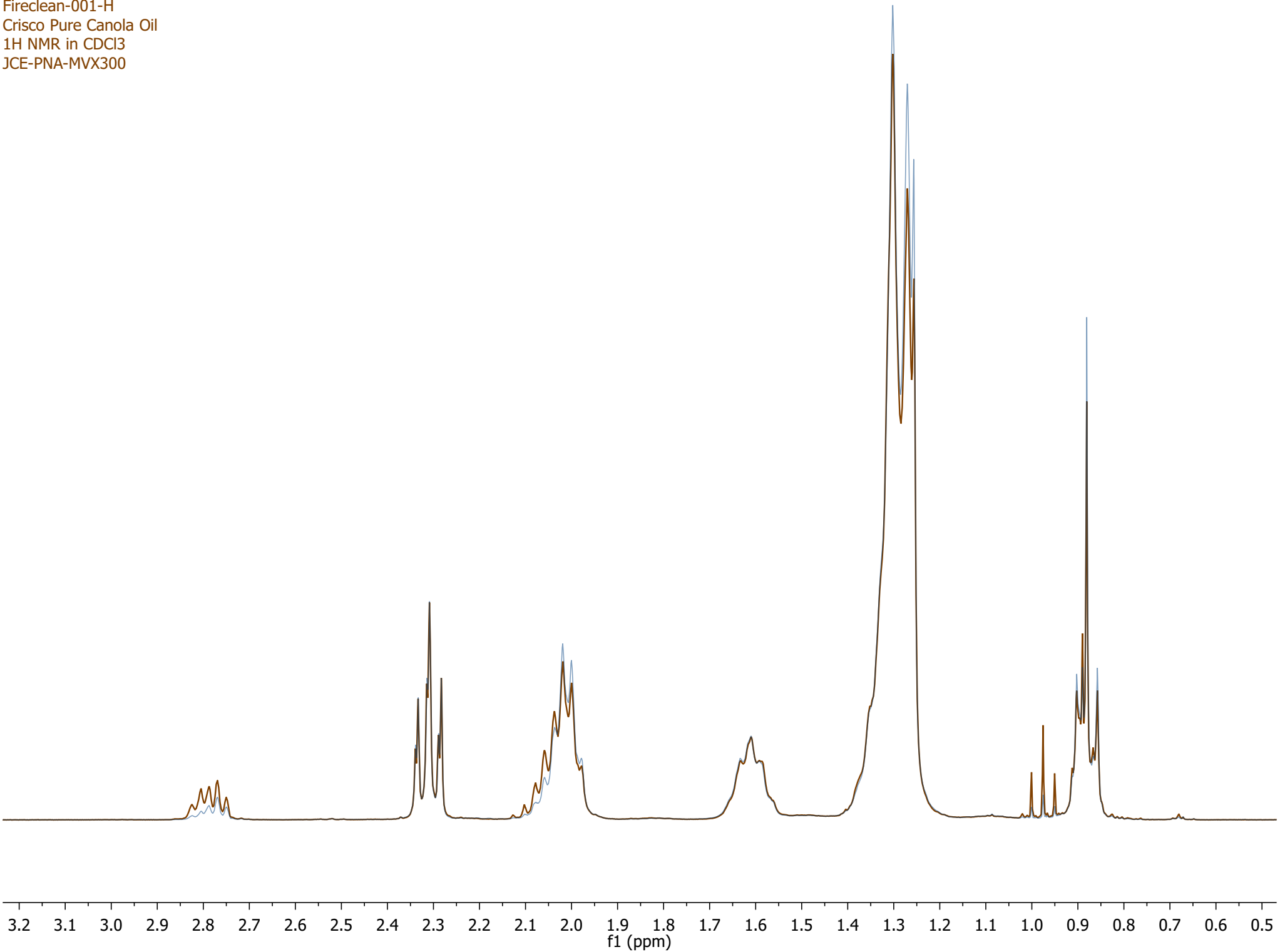

Fireclean-002-H
Fireclean Lot D5-022-A
1H NMR in CDCl3
JCE-PNA-MVX300
Fireclean-001-H
Crisco Pure Canola Oil
1H NMR in CDCl3
JCE-PNA-MVX300
2.90 2.85 2.80 2.75 2.70 2.65 2.60 2.55 2.50 2.45 2.40 2.35 2.30 2.25 2.20 2.15 2.10 2.05 2.00 1.95 1.90 1.85
f1 (ppm)


Fireclean-002-H
Fireclean Lot D5-022-A
1H NMR in CDCl3
JCE-PNA-MVX300
Fireclean-001-H
Crisco Pure Canola Oil
1H NMR in CDCl3
JCE-PNA-MVX300
1.70 1.65 1.60 1.55 1.50 1.45 1.40 1.35 1.30 1.25 1.20 1.15 1.10 1.05 1.00 0.95 0.90 0.85 0.80 0.75 0.70 0.65 0.60
f1 (ppm)

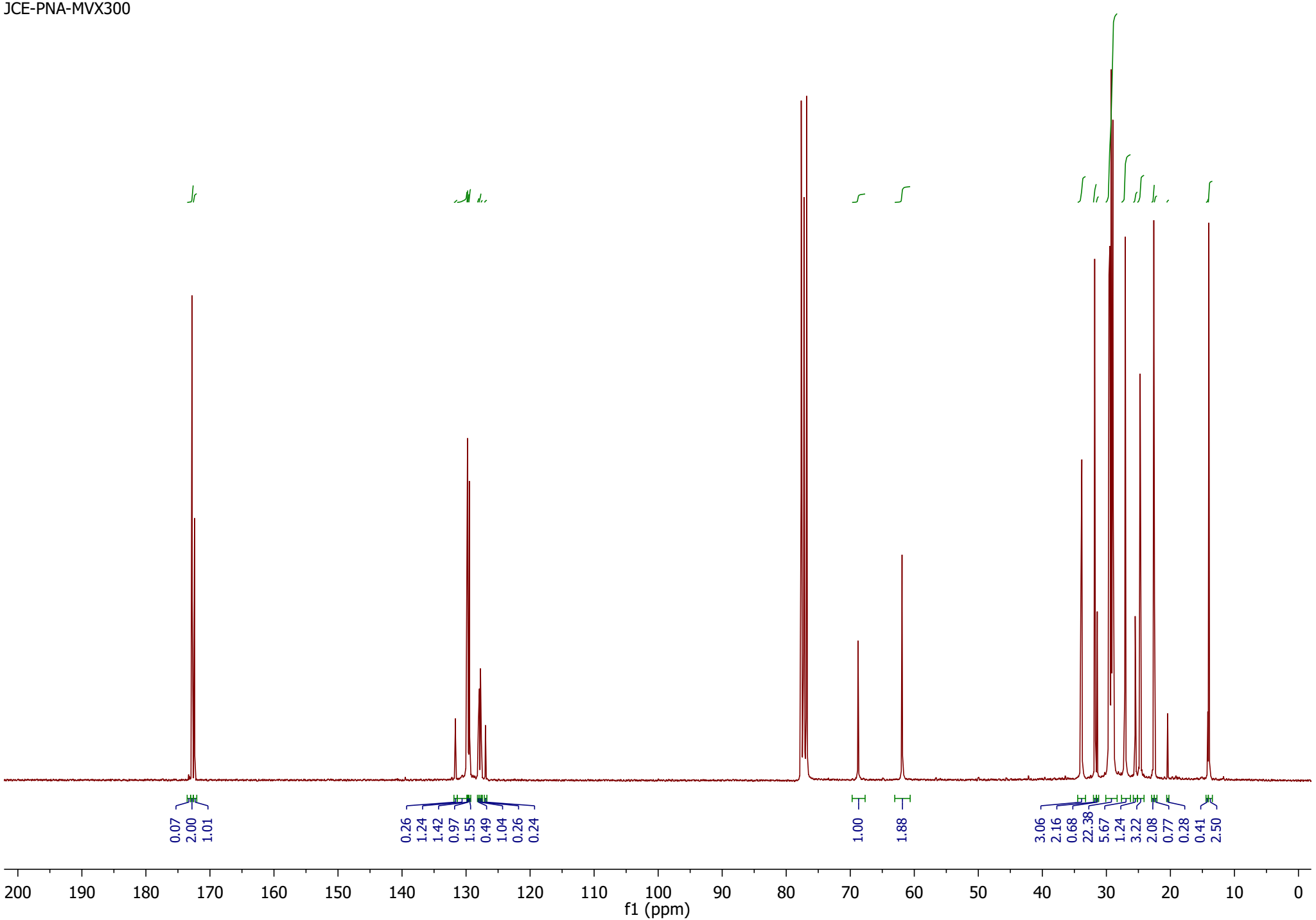
Fireclean-001-H
Crisco Pure Canola Oil
1H NMR in CDCl3
JCE-PNA-MVX300



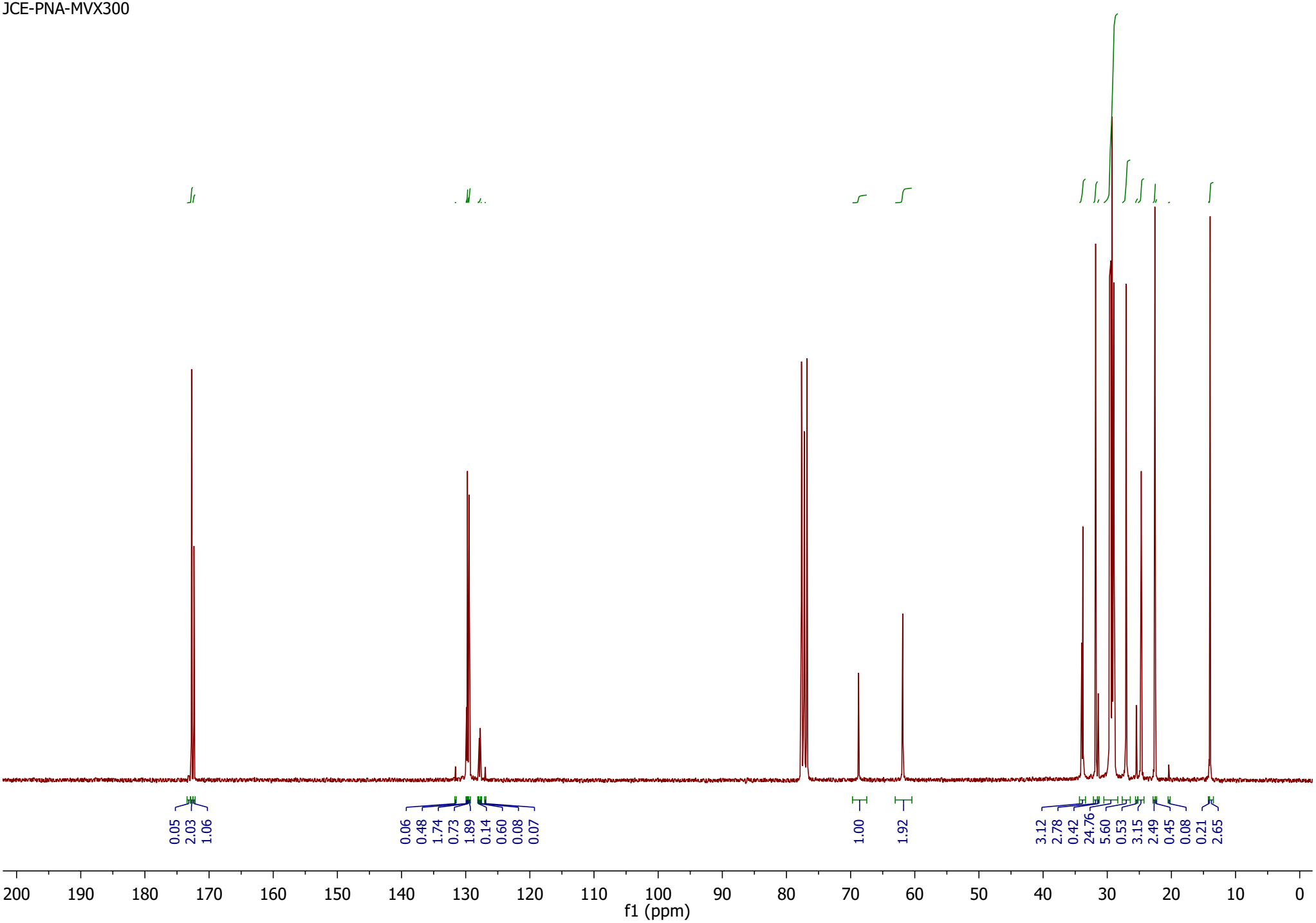
Fireclean-001-H
Crisco Pure Canola Oil
1H NMR in CDCl3
JCE-PNA-MVX300

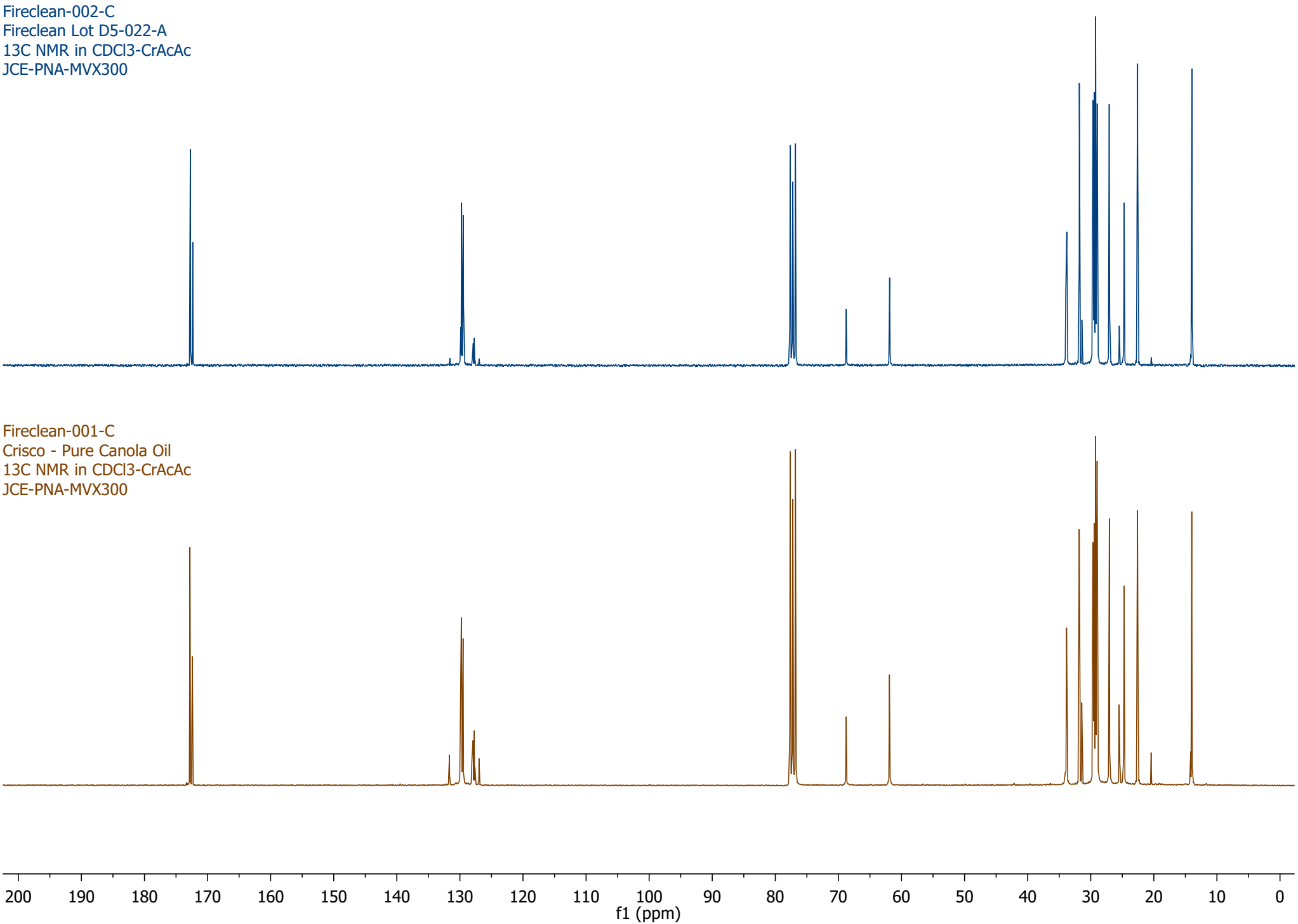


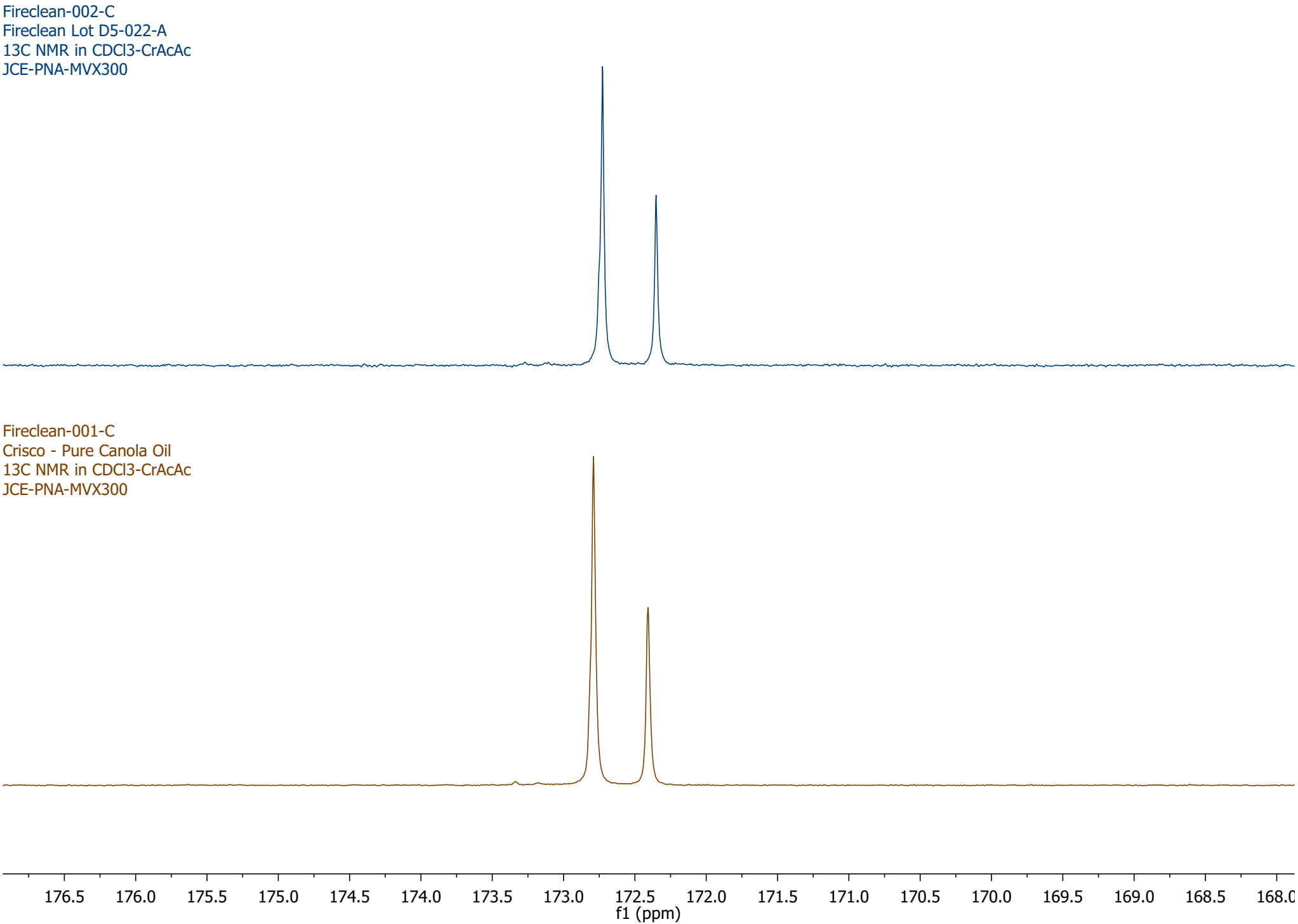
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300

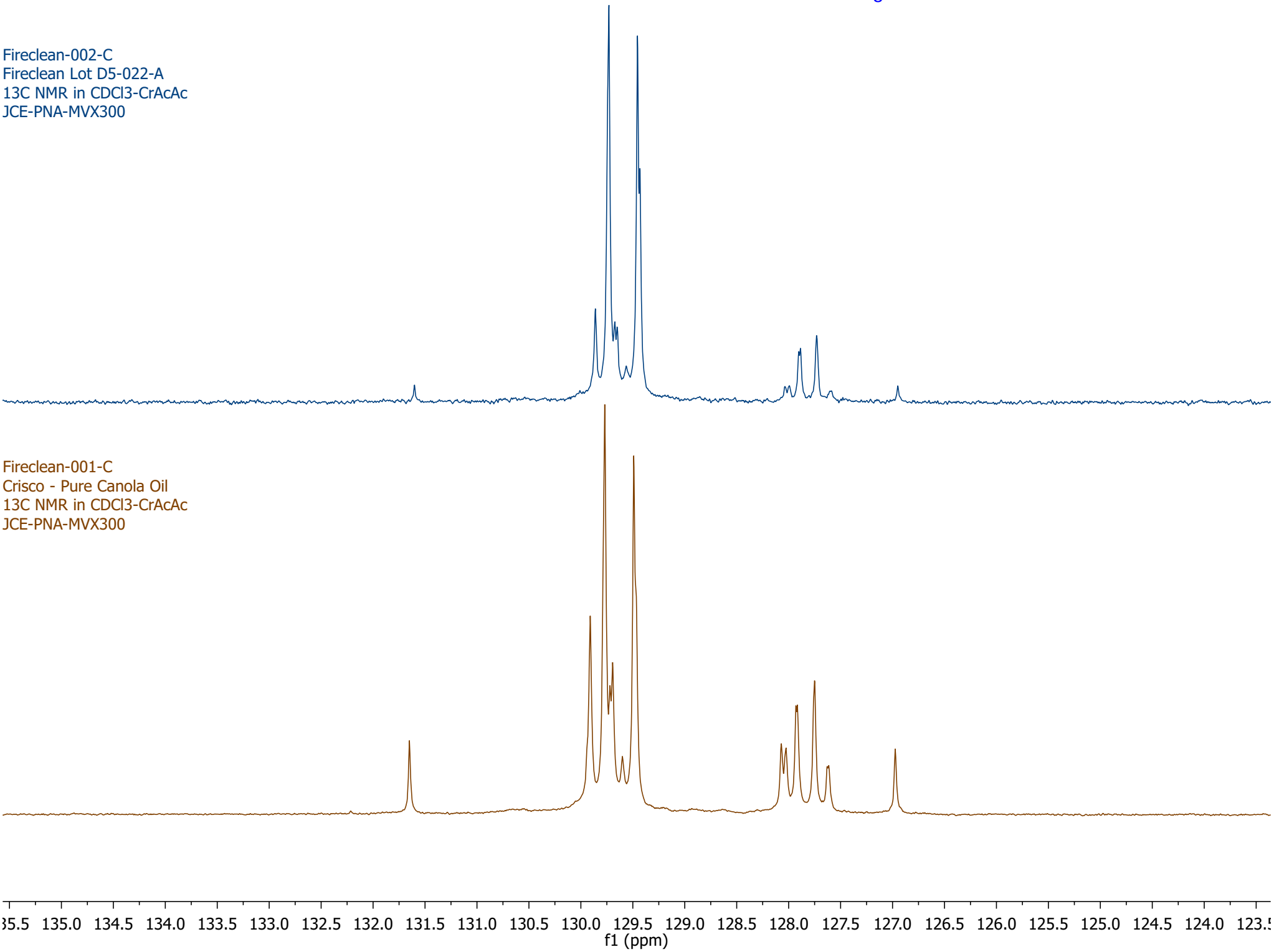


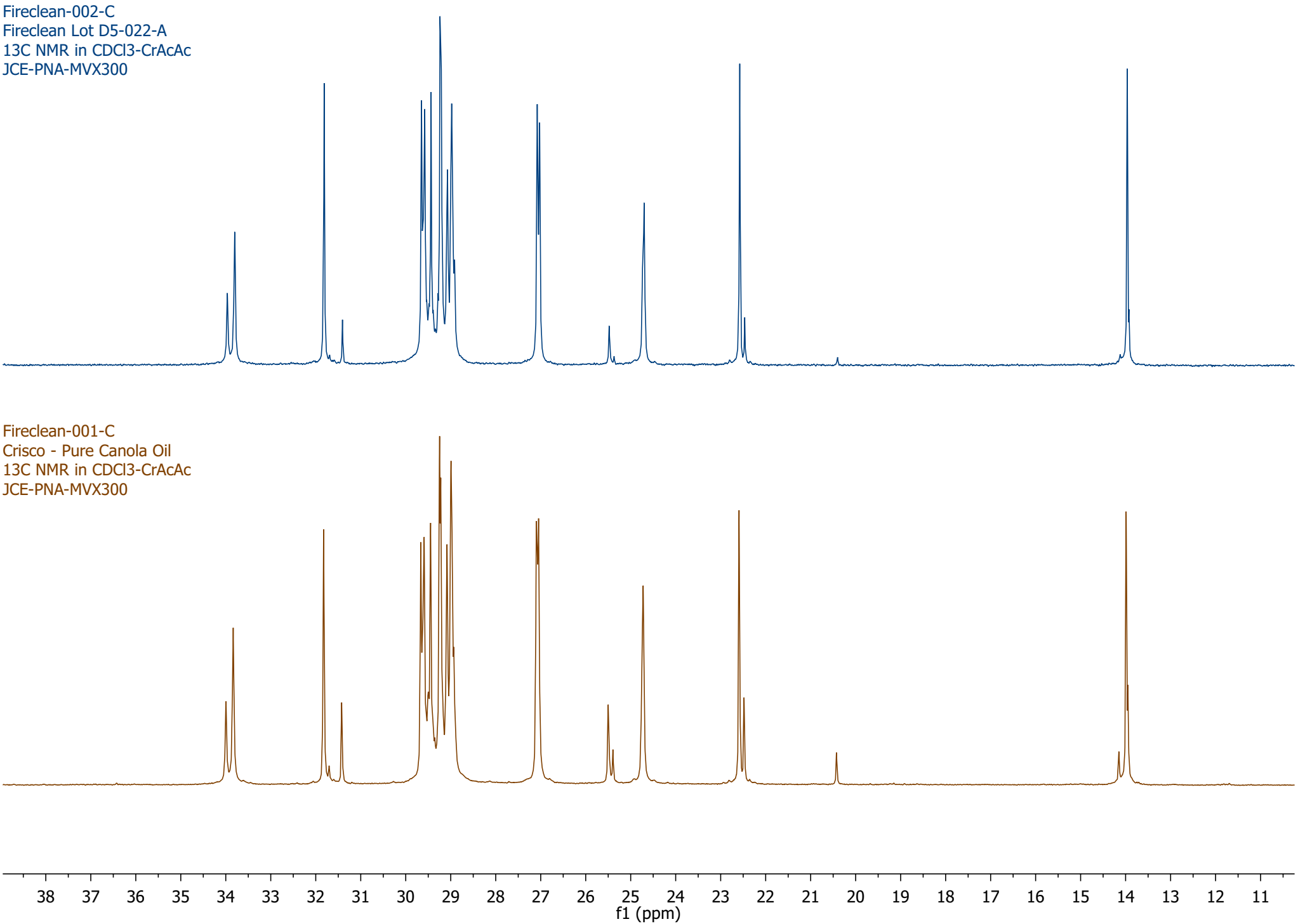
Fireclean-002-C
Fireclean Lot D5-022-A
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300



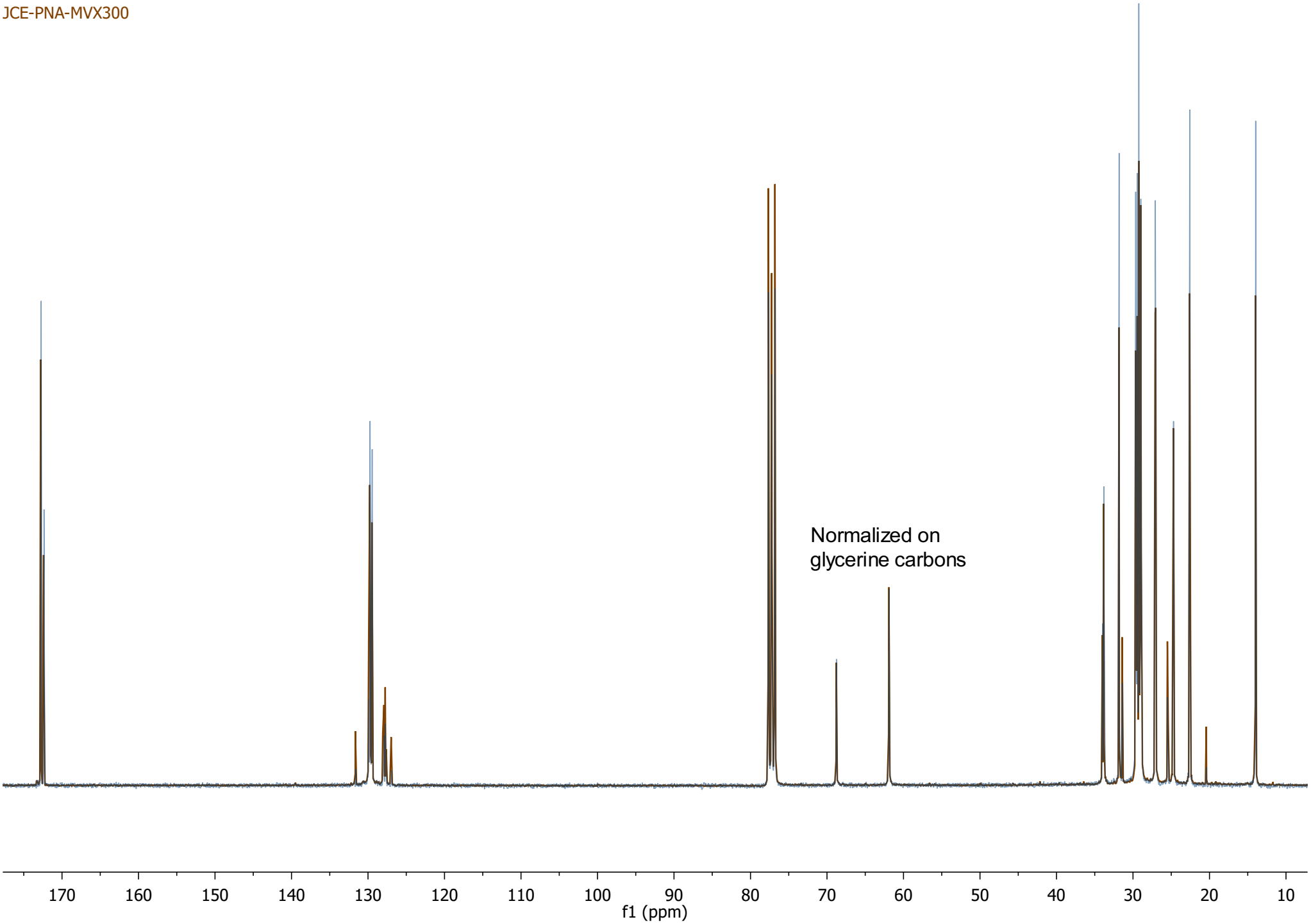

Fireclean-002-C
Fireclean Lot D5-022-A
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)


Fireclean-002-C
Fireclean Lot D5-022-A
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300
176.5
176.0
175.5
175.0
174.5
174.0
173.5
173.0
172.5
172.0
171.5
171.0
170.5
170.0
169.5
169.0
168.5
168.0
f1 (ppm)

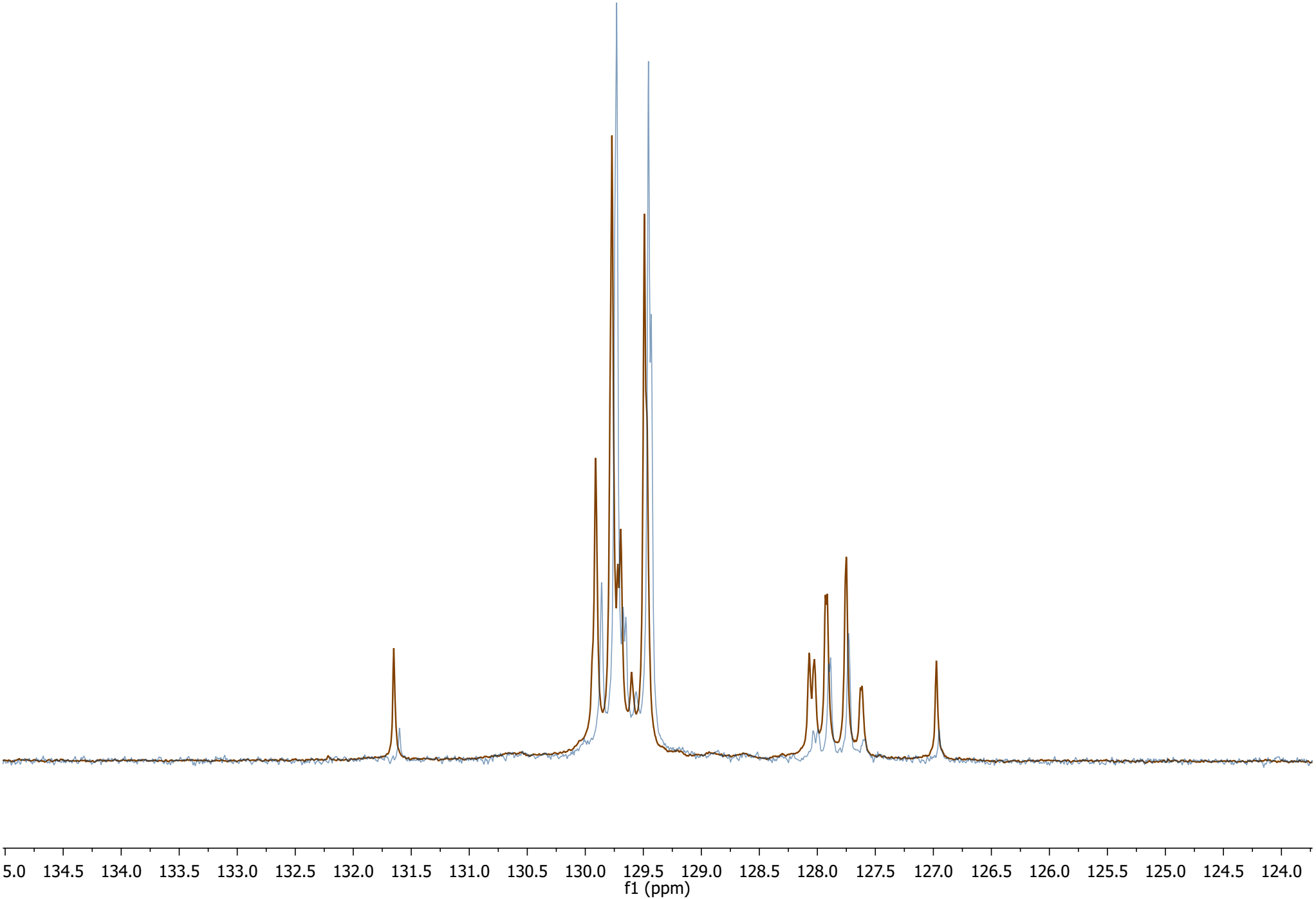

Fireclean-002-C
Fireclean Lot D5-022-A
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300
135.5 135.0 134.5 134.0 133.5 133.0 132.5 132.0 131.5 131.0 130.5 130.0 129.5 129.0 128.5 128.0 127.5 127.0 126.5 126.0 125.5 125.0 124.5 124.0 123.5
f1 (ppm)


Fireclean-002-C
Fireclean Lot D5-022-A
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300
38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11
f1 (ppm)

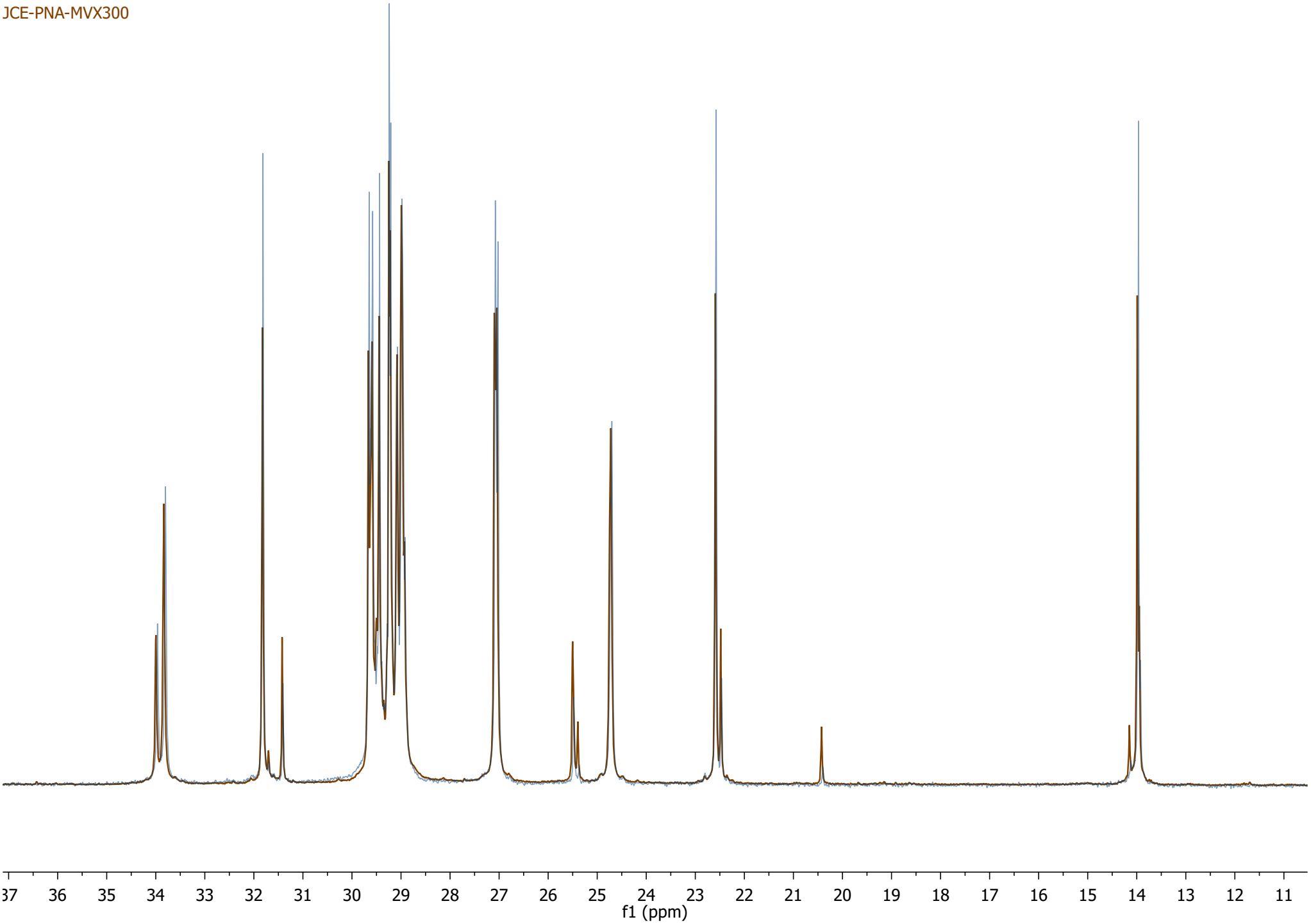
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300



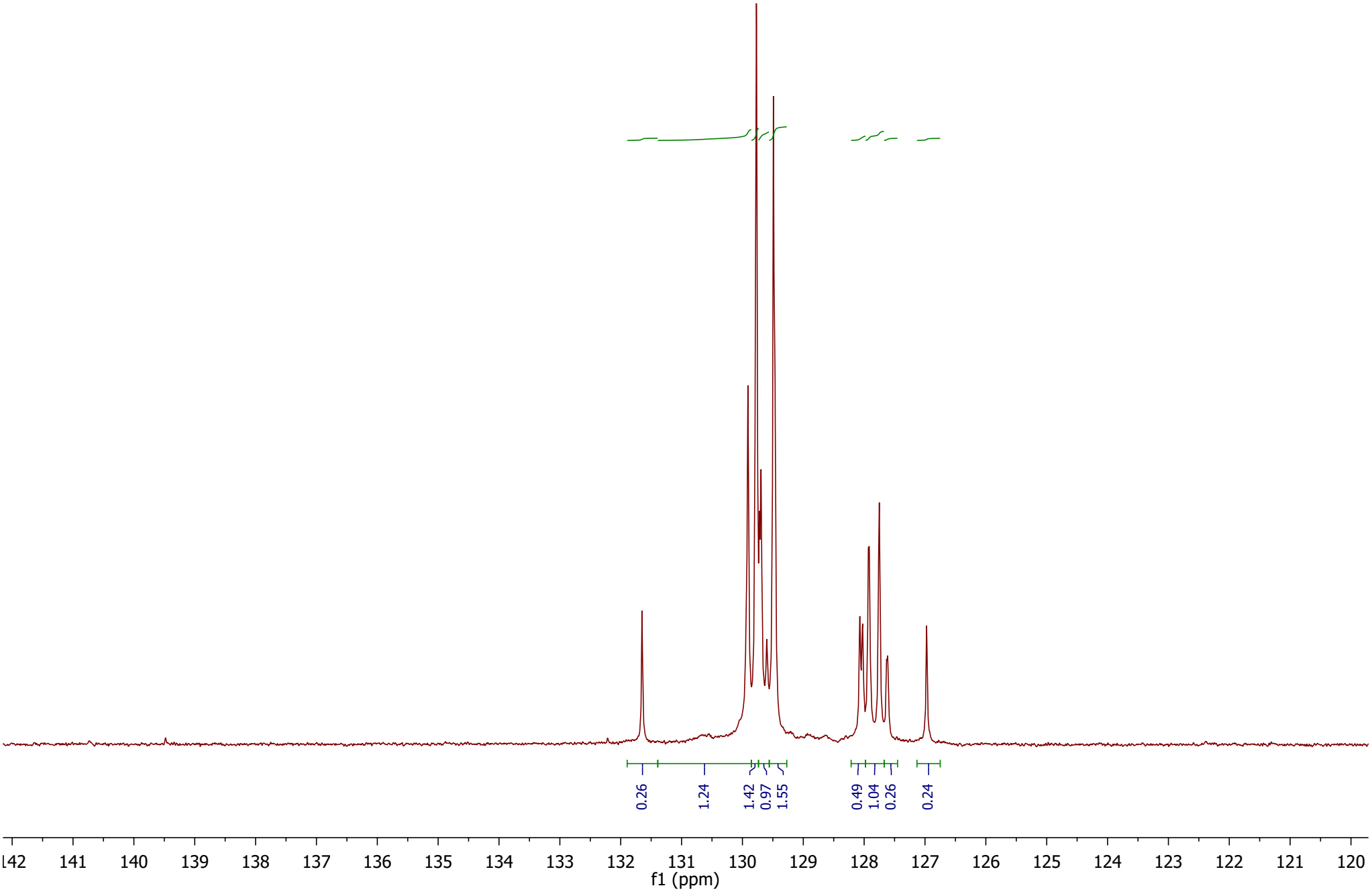
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300



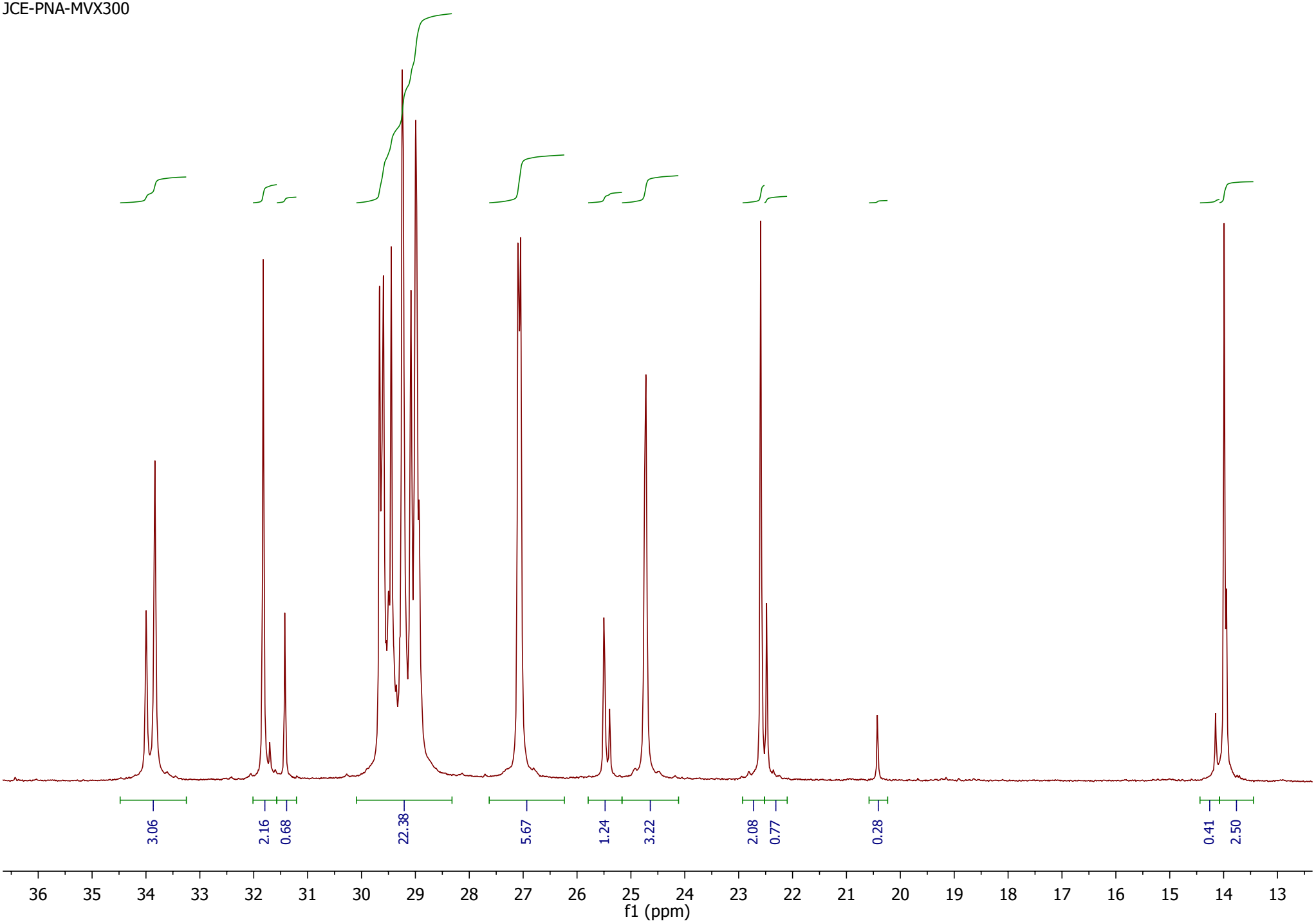
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300



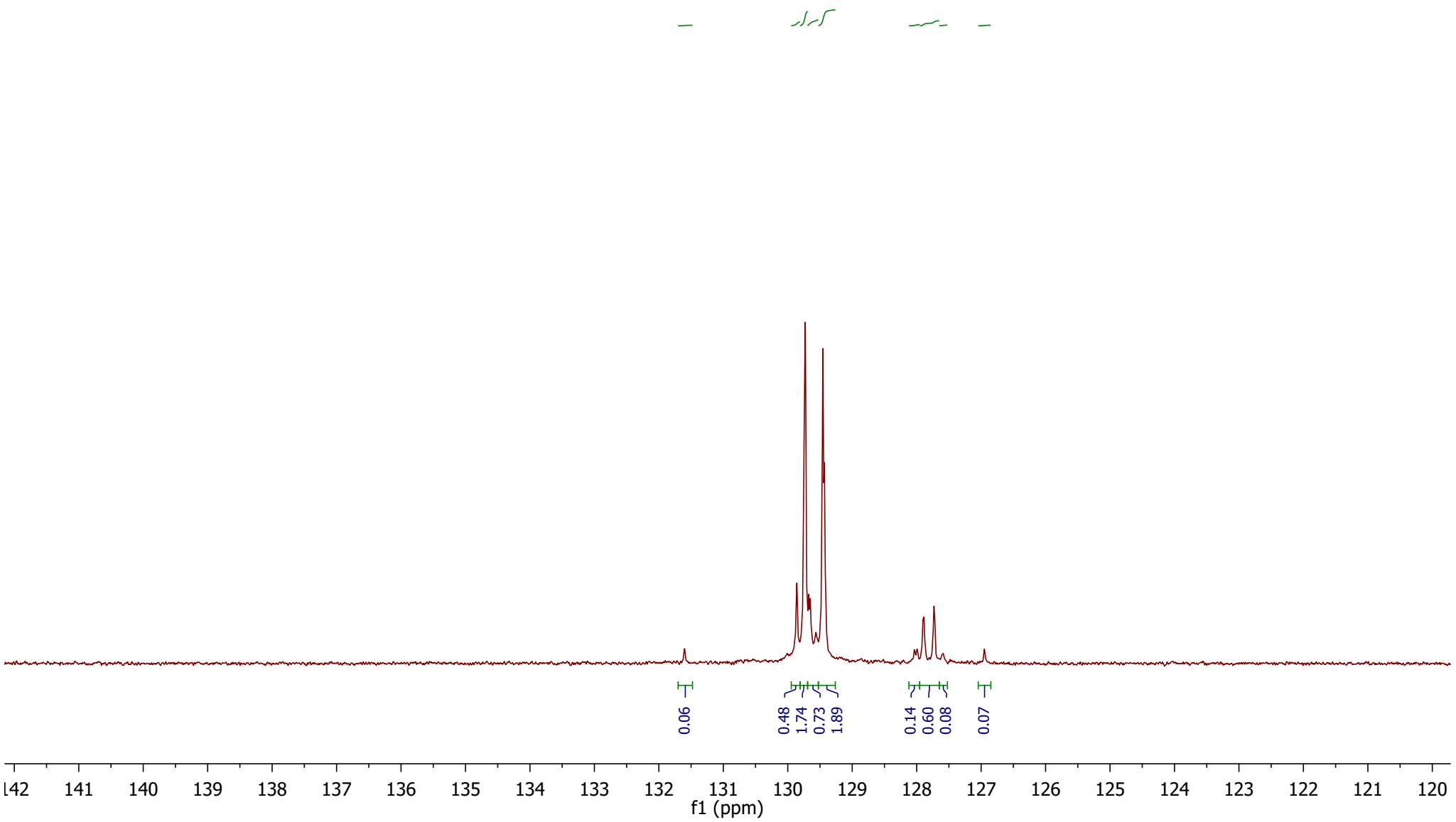
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300



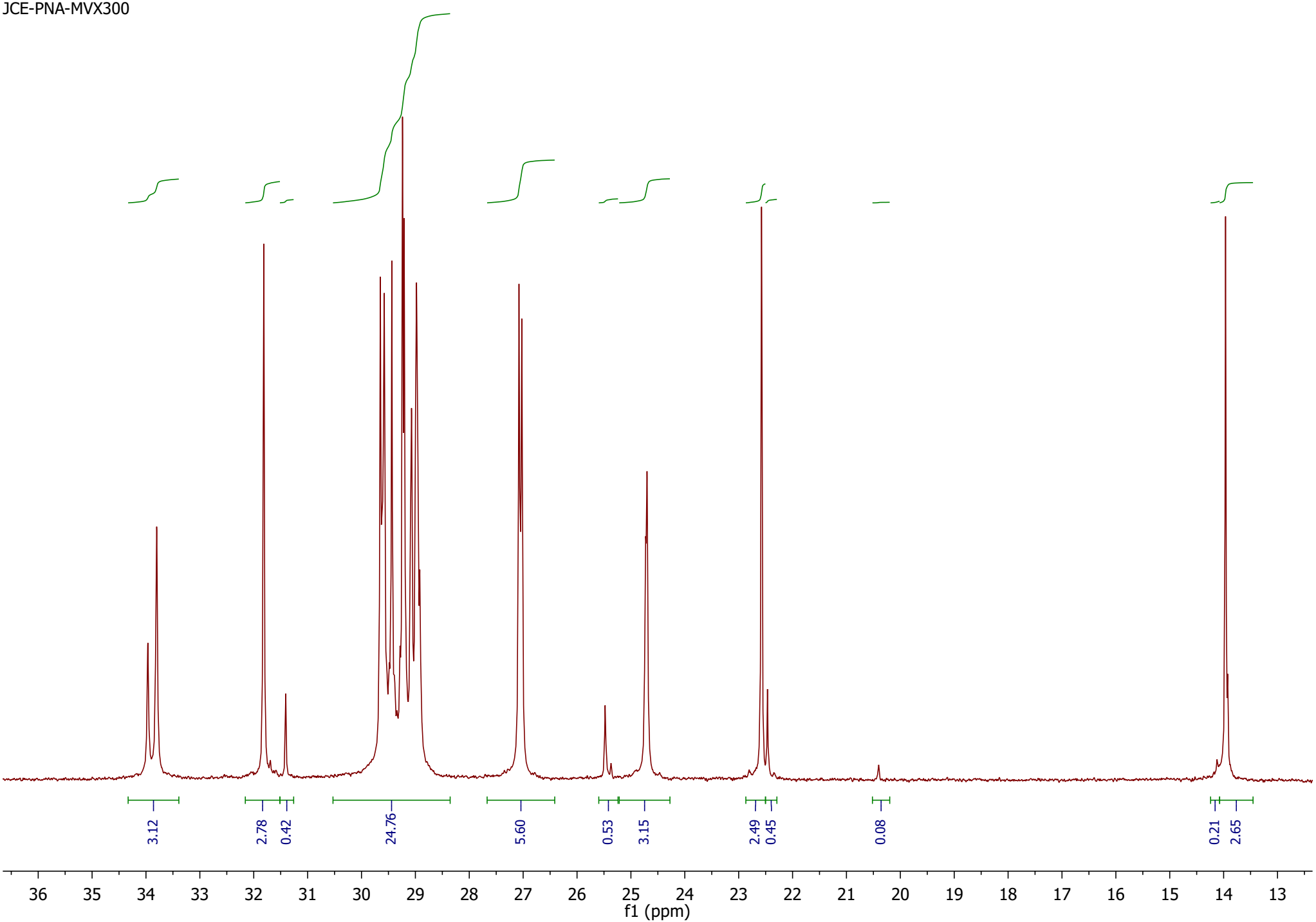
Fireclean-001-C
Crisco - Pure Canola Oil
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300



Fireclean-002-C
Fireclean Lot D5-022-A
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300



Fireclean-002-C
Fireclean Lot D5-022-A
13C NMR in CDCl3-CrAcAc
JCE-PNA-MVX300



EXHIBIT

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Final Fatty Acid Profile

Medallion Labs

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Completion Date: September 16, 2016
Date Submitted: September 12, 2016
Medallion Company ID: FIRECLEAN01
Company Code: 16572
Library: 2016-MED-12627
PO Number: CC#
Fax:

Sample ID: 2016-MED-12627-01 **Indentifier:** #1 **Date Reviewed:** 09/16/2016
Description: Fireclean (R), No Serial
Analysis: Triglycerides **Date Run:** 09/16/2016

Component Name	Normalized by Weight	% (w/w) as Triglyceride in Product	% (w/w) Fatty Acids in Product: Saturated Fatty Acids	Monounsaturated Fatty Acids	cis-cis Polyunsaturated Fatty Acids	trans Unsaturated Fatty Acids
4:0 Butyric						
6:0 Caproic						
8:0 Caprylic						
10:0 Capric						
12:0 Lauric						
13:0 Tridecanoic						
14:0 Myristic	0.038%	0.036	0.034			
14:1 t-Tetradecanoic						
14:1 Myristoleic						
15:0 Pentadecanoic						
15:1 Pentadecenoic						
16:0 Palmitic	5.125%	4.882	4.652			
16:1 t-Hexadecenoic	0.020%	0.019				0.018
16:1 Palmitoleic	0.103%	0.098		0.093		
17:0 Margaric	0.215%	0.205	0.196			
17:1 Margaroleic	0.359%	0.342		0.327		
18:0 Stearic	2.811%	2.678	2.564			
18:1 trans-Elaidic	0.075%	0.071				0.068
18:1 Oleic	74.780%	71.229		68.166		
18:2 t-Octadecadienoic	0.171%	0.163				0.156
18:2 Linoleic	12.270%	11.687			11.181	
20:0 Arachidic	0.405%	0.386	0.371			
18:3 g-Linolenic						
18:3 t-Linolenic	0.370%	0.352				0.337
20:1 Gadoleic	0.493%	0.470		0.452		
18:3 Linolenic	1.854%	1.766			1.689	
21:0 Heneicosanoic						
18:2 conjugated-Linoleic	0.063%	0.060				
18:4 Octadecatetraenoic	0.147%	0.140			0.134	
20:2 Eicosadienoic						
22:0 Behenic	0.452%	0.431	0.416			
20:3 g-Eicosatrienoic						
22:1 Erucic						
20:3 Eicosatrienoic						
20:4 Arachiodonic						
23:0 Tricosanoic						
22:2 Docasadienoic						
24:0 Lignoceric	0.181%	0.172	0.166			
20:5 Eicosapentaenoic						
24:1 Nervonic	0.068%	0.065		0.063		
22:3 Docosatrienoic						
22:4 Docosatetraenoic						
22:5 Docosapentaenoic						
22:6 Docosahexaenoic						
Totals:	**100.00%**	**95.25**	**8.40**	**69.10**	**13.00**	**0.58**
Percent of Fatty Acid Components based on Total Fat:			**9.23%**	**75.80%**	**14.27%**	**0.64%**

Omega-3 Fatty Acids, Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA): **0.00%**

Sample ID: 2016-MED-12627-02 **Indentifier:** #11 **Date Reviewed:** 09/16/2016
Description: Fireclean (R), Serial D5-022-D

Final Fatty Acid Profile

Medallion Labs

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Completion Date: September 16, 2016
Date Submitted: September 12, 2016
Medallion Company ID: FIRECLEAN01
Company Code: 16572
Library: 2016-MED-12627
PO Number: CC#
Fax:

Sample ID: 2016-MED-12627-02 **Indentifier:** #11 **Date Reviewed:** 09/16/2016
Description: Fireclean (R), Serial D5-022-D
Analysis: Triglycerides **Date Run:** 09/16/2016

Component Name	Normalized by Weight	% (w/w) as Triglyceride in Product	% (w/w) Fatty Acids in Product: Saturated Fatty Acids	Monounsaturated Fatty Acids	cis-cis Polyunsaturated Fatty Acids	trans Unsaturated Fatty Acids
4:0 Butyric						
6:0 Caproic						
8:0 Caprylic						
10:0 Capric						
12:0 Lauric						
13:0 Tridecanoic						
14:0 Myristic	0.034%	0.033	0.031			
14:1 t-Tetradecanoic						
14:1 Myristoleic						
15:0 Pentadecanoic						
15:1 Pentadecenoic						
16:0 Palmitic	5.230%	5.069	4.830			
16:1 t-Hexadecenoic	0.023%	0.022				0.021
16:1 Palmitoleic	0.100%	0.097		0.092		
17:0 Margaric	0.205%	0.199	0.190			
17:1 Margaroleic	0.323%	0.313		0.299		
18:0 Stearic	2.779%	2.694	2.579			
18:1 trans-Elaidic	0.197%	0.191				0.183
18:1 Oleic	73.219%	70.971		67.919		
18:2 t-Octadecadienoic	0.231%	0.224				0.214
18:2 Linoleic	13.211%	12.805			12.251	
20:0 Arachidic	0.419%	0.406	0.390			
18:3 g-Linolenic						
18:3 t-Linolenic	0.431%	0.418				0.400
20:1 Gadoleic	0.520%	0.504		0.484		
18:3 Linolenic	2.191%	2.124			2.031	
21:0 Heneicosanoic						
18:2 conjugated-Linoleic	0.027%	0.026				
18:4 Octadecatetraenoic	0.129%	0.125			0.120	
20:2 Eicosadienoic						
22:0 Behenic	0.476%	0.461	0.444			
20:3 g-Eicosatrienoic						
22:1 Erucic						
20:3 Eicosatrienoic						
20:4 Arachiodonic						
23:0 Tricosanoic						
22:2 Docasadienoic						
24:0 Lignoceric	0.187%	0.181	0.175			
20:5 Eicosapentaenoic						
24:1 Nervonic	0.069%	0.067		0.065		
22:3 Docosatrienoic						
22:4 Docosatetraenoic						
22:5 Docosapentaenoic						
22:6 Docosahexaenoic						
Totals:	**100.00%**	**96.93**	**8.64**	**68.86**	**14.40**	**0.82**
Percent of Fatty Acid Components based on Total Fat:			**9.33%**	**74.23%**	**15.53%**	**0.88%**

Omega-3 Fatty Acids, Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA): **0.00%**

Sample ID: 2016-MED-12627-03 **Indentifier:** #13 **Date Reviewed:** 09/16/2016
Description: Fireclean (R), Serial J5-016-B

Final Fatty Acid Profile

Medallion Labs

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Completion Date: September 16, 2016
Date Submitted: September 12, 2016
Medallion Company ID: FIRECLEAN01
Company Code: 16572
Library: 2016-MED-12627
PO Number: CC#
Fax:

Sample ID: 2016-MED-12627-03 **Indentifier:** #13 **Date Reviewed:** 09/16/2016
Description: Fireclean (R), Serial J5-016-B
Analysis: Triglycerides **Date Run:** 09/16/2016

Component Name	Normalized by Weight	% (w/w) as Triglyceride in Product	% (w/w) Fatty Acids in Product: Saturated Fatty Acids	Monounsaturated Fatty Acids	cis-cis Polyunsaturated Fatty Acids	trans Unsaturated Fatty Acids
4:0 Butyric						
6:0 Caproic						
8:0 Caprylic						
10:0 Capric						
12:0 Lauric						
13:0 Tridecanoic						
14:0 Myristic	0.034%	0.033	0.031			
14:1 t-Tetradecanoic						
14:1 Myristoleic						
15:0 Pentadecanoic						
15:1 Pentadecenoic						
16:0 Palmitic	5.089%	4.939	4.706			
16:1 t-Hexadecenoic	0.020%	0.019				0.018
16:1 Palmitoleic	0.099%	0.096		0.091		
17:0 Margaric	0.186%	0.181	0.173			
17:1 Margaroleic	0.333%	0.323		0.308		
18:0 Stearic	2.818%	2.735	2.618			
18:1 trans-Elaidic	0.140%	0.136				0.130
18:1 Oleic	73.778%	71.606		68.527		
18:2 t-Octadecadienoic	0.214%	0.208				0.199
18:2 Linoleic	12.821%	12.444			11.905	
20:0 Arachidic	0.408%	0.396	0.381			
18:3 g-Linolenic						
18:3 t-Linolenic	0.446%	0.433				0.414
20:1 Gadoleic	0.499%	0.484		0.465		
18:3 Linolenic	2.217%	2.152			2.058	
21:0 Heneicosanoic						
18:2 conjugated-Linoleic	0.022%	0.021				
18:4 Octadecatetraenoic	0.131%	0.127			0.121	
20:2 Eicosadienoic						
22:0 Behenic	0.484%	0.470	0.453			
20:3 g-Eicosatrienoic						
22:1 Erucic						
20:3 Eicosatrienoic						
20:4 Arachiodonic						
23:0 Tricosanoic						
22:2 Docasadienoic						
24:0 Lignoceric	0.190%	0.184	0.178			
20:5 Eicosapentaenoic						
24:1 Nervonic	0.071%	0.069		0.067		
22:3 Docosatrienoic						
22:4 Docosatetraenoic						
22:5 Docosapentaenoic						
22:6 Docosahexaenoic						
Totals:	**100.00%**	**97.06**	**8.54**	**69.46**	**14.08**	**0.76**
Percent of Fatty Acid Components based on Total Fat:			**9.21%**	**74.78%**	**15.17%**	**0.82%**

Omega-3 Fatty Acids, Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA): **0.00%**

Sample ID: 2016-MED-12627-04 **Indentifier:** #14 **Date Reviewed:** 09/16/2016
Description: Fireclean (R), Serial S5-008-C

Final Fatty Acid Profile

Medallion Labs

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Completion Date: September 16, 2016
Date Submitted: September 12, 2016
Medallion Company ID: FIRECLEAN01
Company Code: 16572
Library: 2016-MED-12627
PO Number: CC#
Fax:

Sample ID: 2016-MED-12627-04 **Indentifier:** #14 **Date Reviewed:** 09/16/2016
Description: Fireclean (R), Serial S5-008-C
Analysis: Triglycerides **Date Run:** 09/16/2016

Component Name	Normalized by Weight	% (w/w) as Triglyceride in Product	% (w/w) Fatty Acids in Product: Saturated Fatty Acids	Monounsaturated Fatty Acids	cis-cis Polyunsaturated Fatty Acids	trans Unsaturated Fatty Acids
4:0 Butyric						
6:0 Caproic						
8:0 Caprylic						
10:0 Capric						
12:0 Lauric						
13:0 Tridecanoic						
14:0 Myristic	0.039%	0.038	0.036			
14:1 t-Tetradecanoic						
14:1 Myristoleic						
15:0 Pentadecanoic						
15:1 Pentadecenoic						
16:0 Palmitic	5.021%	4.875	4.645			
16:1 t-Hexadecenoic	0.022%	0.021				0.020
16:1 Palmitoleic	0.103%	0.100		0.095		
17:0 Margaric	0.180%	0.175	0.167			
17:1 Margaroleic	0.297%	0.288		0.275		
18:0 Stearic	2.826%	2.744	2.627			
18:1 trans-Elaidic	0.119%	0.116				0.111
18:1 Oleic	73.160%	71.032		67.978		
18:2 t-Octadecadienoic	0.241%	0.234				0.224
18:2 Linoleic	13.394%	13.004			12.441	
20:0 Arachidic	0.405%	0.393	0.378			
18:3 g-Linolenic						
18:3 t-Linolenic	0.565%	0.549				0.525
20:1 Gadoleic	0.481%	0.467		0.449		
18:3 Linolenic	2.250%	2.185			2.090	
21:0 Heneicosanoic						
18:2 conjugated-Linoleic	0.025%	0.024				
18:4 Octadecatetraenoic	0.135%	0.131			0.125	
20:2 Eicosadienoic						
22:0 Behenic	0.486%	0.472	0.455			
20:3 g-Eicosatrienoic						
22:1 Erucic						
20:3 Eicosatrienoic						
20:4 Arachiodonic						
23:0 Tricosanoic						
22:2 Docasadienoic						
24:0 Lignoceric	0.184%	0.179	0.173			
20:5 Eicosapentaenoic						
24:1 Nervonic	0.066%	0.064		0.062		
22:3 Docosatrienoic						
22:4 Docosatetraenoic						
22:5 Docosapentaenoic						
22:6 Docosahexaenoic						
Totals:	**100.00%**	**97.09**	**8.48**	**68.86**	**14.66**	**0.88**
Percent of Fatty Acid Components based on Total Fat:			**9.14%**	**74.11%**	**15.78%**	**0.95%**

Omega-3 Fatty Acids, Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA): **0.00%**