

FRYTEST.COM OIL CONTEST

FINAL TESTING PROTOCOL

December 15, 2006

Testing Entity:

Texas A&M University

Note: This protocol is subject to amendment. Check "The Contest" page of the FryTest.com website for any amendments.

FINAL TESTING PROTOCOL

This is the Final Testing Protocol for the FryTest.com zero trans fat restaurant cooking oil contest.

1. Testing Entity

- a. The "Testing Entity" is Texas A&M University. The testing will take place at the Food Protein R&D Center at College Station, Texas.

<http://foodprotein.tamu.edu/fatsoils>

- b. FryTest.com expects Texas A&M to remain the testing entity throughout the contest. If for any reason such as *force majeure* it becomes impossible for Texas A&M to continue as the testing entity, a replacement testing entity will be selected by FryTest.com that will implement this Protocol for all prospective testing.

2. Blind testing

- a. The Testing Entity will randomly assign a code to each oil. Official Contestants will not be told the codes until the contest results are announced.
- b. The Testing Entity will maintain the confidentiality of the codes until the results are posted on the FryTest.com website.
- c. Consumer and trained sensory panel participants will be given only the codes for each sample. They will not be told the identities or types of oils that they are testing.

3. Use of French fries in testing

- a. French fries will be the only food used in the tests. French fries represent the overwhelming majority of deep fried food in food service. Other commonly fried foods include chicken and fish. Due to their uniformity, French fries will be used to define the comparative performance of the oils submitted for testing. Comparison of frying performance with chicken products is complicated by the quantity and composition of various batter formulations. Fry testing with fish is also more complex due to the presence of fish oil. French fries produce fully valid and reliable data for other foods such as chicken and fish.
- b. No non-par fried French fries are available from the major suppliers. The overwhelming majority of French fries purchased by the restaurant industry are par-fried. Therefore, to ensure that the contest simulates real world conditions, the following non-hydrogenated par fried French fries will be used in the contest.

Lamb Weston 3/8" Straight Cut Fry, Cat. No. 36, par-fried in a blend of non-hydrogenated canola and palm oils. No coatings or seasonings. Lamb Weston has guaranteed that the oils and proportions used in the blend will not change in the next 12 months.

4. Frying Procedure

- a. French fries will be cooked in each oil until the earliest of the following occurs:

- i. 300 batches; or
- ii. 24% Total Polar Materials ("TPM") measured using AOCS column chromatography AOCS Official Method #Cd 20-91. Column chromatography will be performed once on each oil and the exact result recorded and published with the contest results.

A column chromatography TPM reading of between 23% and 26% will be deemed to be 24% for the purpose of determining whether 24% TPM has been reached. The exact column chromatography TPM measurement will be published with the contest results.

For any oil that reaches 300 batches, TPM % of batch #300 will be measured by column chromatography and the result will be recorded and will be published with the contest results.

Two digital measuring instruments will be used to monitor when TPM has reached approximately 24% TPM, within a margin or error of 24 batches, so that the Testing Entity can determine based on its best judgment when the column chromatography should be performed. The instruments will be an OptiFry from Miroil and an Ebro FOM310. The digital measurements will be recorded and may be published with the contest results.

www.miroil.com

www.ebro.de/en/products/handhelds/fom310.php

- b. 23 batches will be fried each day, except 24 on the final day if the batch # 300 is reached.
- c. There will be no fryings on weekends or holidays. Oil may be left for up to 4 days without frying.
- d. There is no requirement that all oils in the contest be tested simultaneously. For example, 4 oils may be tested simultaneously, and another 5 at a later time.
- e. Anvil Countertop Electric Fryers with 15lb tank and 1 basket.

<http://www.anvilworld.com/products/Products.asp?type=USA&prod=50&ID=151>
- f. Basket will be filled away from the fryer (reducing the introduction of ice crystals to the oil).
- g. Fry basket to be approximately half full.
- h. Deep fry temperature setting 350° F. Temperature will be set at 350°F for 8-10 hours each frying day. External digital thermometer will be used to ensure that fryers operating correctly. Fryers will be off at all other times.
- i. The time of frying will be 5 minutes 30 seconds.
- j. At least 2 minutes drain time between batches, except batches for consumer and trained panels which will have drain time of 1 minute to preserve more heat.
- k. The baskets containing cooked French fries will be shaken moderately after the drain time to increase the amount of oil

falling back into the fryer.

- l. Holding time of French fries will be no longer than 10 minutes before consumer and trained panel testing. Samples will be conveyed in pre-heated cups.
- m. Fresh make up oil will be added as appropriate to maintain same level of oil in fryer.
- n. Oils will be strained and filtered if necessary and appropriate as determined by the Testing Entity. Oils will be filtered before samples are taken. Oil will be allowed to cool to enable filtering. No filtering powder will be used.
- o. A 30 gram sample will be taken at end of frying days 2, 4, 6, 8, 10, 12 and 13, or the beginning of the following days.
- p. Frying may be terminated by the Testing Entity if continued frying produces bad odors, smoke, excessive foaming, or constitutes a potential health hazard. The Testing Entity will state the reason(s) for such termination which will be published with the contest results.

5. Data to be obtained

- a. **Fatty acid profile.** Trans, Saturated, Monounsaturated and Polyunsaturated fatty acids measured by the Testing Entity using gas chromatography AOCS Official Method Ce 1h-05. Fresh oil only will be tested.
- b. **Oil specifications.** Oxidative Stability Index; Peroxide Value; Lovibond Color; Flash Point; Smoke Point. No testing to determine these specifications will be performed.

Manufacturer's data will be accepted.

- c. **Food to oil ratio.** The Testing Entity will determine the weight of oil (initial oil in fryer plus make-up oil plus oil samples removed for testing) used to cook the weight of uncooked French fries placed in the fryer (assuming that 24% TPM is not reached first) at the following times:

Beginning of frying day 5

Beginning of frying day 7

Beginning of frying day 9

The weight of fries shall be presumed to be 5lbs per bag, as stated by the manufacturer Lamb Weston. Partial bags will be weighed.

- d. **Fry life.** Fry life shall be deemed to have been reached when 24% TPM occurs, as defined in paragraph 4(a)(ii).
- e. **Sensory changes.**

A trained sensory panel will test samples each frying day commencing on frying day 6. The panelists will make comparisons using a control batch cooked in a separate fryer to determine changes in the sample oil compared to fresh oil. For this purpose, fresh oil means oil that has been used to fry not more than 30 batches.

There will be the same number of trained panelists for each oil. The trained panelists will not necessarily be the same individuals for each oil.

Regardless of the comments or evaluations of the trained panel, frying will continue until the earlier of paragraph

4(a)(i) or (ii) occurs.

f. **Consumer Preferences.**

A target number of 49 consumer (non-trained) panelists will conduct sensory evaluations of each oil. The number 49 is selected because that was the actual number in the first round on November 30, 2006.

If the Testing Entity is unable to obtain 49 consumers after using its standard methods, 40 or more consumer panelists will be acceptable. A consumer panel consisting of 40 individuals is large enough to provide statistically reliable results under these conditions.

It will not be cause for objection that there are different numbers of consumer panelists in each round, as long as the target remains 49 and at least 40 actually participate in the testing.

The consumer panelists will not necessarily be the same individuals in each round of testing.

Demographic information which be requested from each consumer panelist as follows: sex, age, occupation, nationality (White, Hispanic, African American, Other). They will also be asked to indicate how many times they have eaten French fries in the last 30 days (none, 1-5 times, 6-10 times, more than 10 times).

Only non-smokers and persons over the age of 18 will qualify as consumer panelists.

Consumer testing will be once per oil and will be done on

frying day 2. Frying day 2 has been chosen because the par-fry oil will not substantially infiltrate the frying oil by that time.

At least 3 oils will be evaluated by each consumer. If necessary to ensure that each consumer is evaluating at least 3 samples, "control" samples will be given to the consumer panelists. The sensory results of the control batches will be retained by the Testing Entity but not published.

Fries will not be salted before consumer sensory testing.

Each consumer panelist will be asked to complete a questionnaire that will ask for evaluations of the following sensory attributes based on an hedonic scale:

Appearance, Color, Flavor, Crispiness, Greasiness, Overall Liking

Each consumer panelist will also be asked for written comments about the French fry samples.

6. Testing of partially hydrogenated oils

- a. Any partially hydrogenated oil ("PHO") may be tested as part of the contest, regardless of the trans fat content of such oil, if all 3 of the following conditions are satisfied:
 - (i) inclusion of the PHO in the contest is requested by the manufacturer or labeler; and
 - (ii) such inclusion is approved by FryTest.com, LLC; and
 - (iii) the same manufacturer or labeler also enters in the

contest a non-PHO that it manufactures or labels.

- b. The results of the testing of such PHO shall not be disclosed or published by FryTest.com, LLC unless both of the following conditions are satisfied:
 - (i) the manufacturer or labeler requests that the results be disclosed or published by FryTest.com; and
 - (ii) FryTest.com, LLC consents after consulting with all the other Official Contestants.
- c. The manufacturer or vendor that requests the testing of the PHO may publish such results as part of its own marketing.
- d. As stated in paragraph 5(f), each consumer will be given at least four French fry samples. One or more of those samples may be a PHO tested pursuant to paragraph 6(a).

7. Observers

- a. Official Contestants who had oils tested between November 29 and December 15, 2006 were entitled to observe all parts of the contest except consumer and trained panel testing. However, no Official Contestant sent any observers.
- b. Texas A&M has expressed concerns that observers may inadvertently interfere with testing. Moreover, if one Official Contestant sends an observer, other Official Contestants may feel compelled to send their own observers. This would hinder the testing operations.
- c. In view of the foregoing, Official Contestants who did not have oils in the contest between November 29 and December

15, 2006 will not be permitted to observe the contest. Official Contestants who had oils in the contest between November 29 and December 15, 2006 are requested not to send observers to any future testing.

8. Preservation of impartiality

- a. No Official Contestant or its agents or representatives may communicate with any Testing Entity personnel or sensory panel participants at any time regarding the contest.
- b. Official Contestants shall not take any action that could affect the impartiality or objectivity of the Testing Entity or participants on the sensory panels in any way.
- c. The Testing Entity shall advise FryTest.com of any issues that arise that may compromise or may be seen to compromise its impartiality.

9. Reservations and objections

- a. After testing commences, any reservations, objections or concerns regarding any aspect of testing must be communicated to FryTest.com immediately:

(i) by phone; and

(ii) email or fax.

Phone: 415-577-6660

Email: frytest@earthlink.net

Fax: (415) 869-5380

- b. No copy shall be sent to the Testing Entity. Stephen Joseph may designate an agent for this purpose by email notice to all Official Contestants.

10. Publication of results

- a. FryTest.com may begin publishing results after the first 4 non-partially hydrogenated oils have been tested.
- b. If an oil has been entered into the contest by an Official Contestant, FryTest.com will disclose the results for that oil to the Official Contestant at least 5 business days prior to publication.

11. Amendments

If necessary, the Final Testing Protocol may be amended from time to time by FryTest.com after notice to all Official Contestants and a reasonable opportunity for comments. Any and all changes to the Final Testing Protocol shall be published on the FryTest.com website and sent to the Official Contestants by email.

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