Low Range Shortening Monitor

LRSM

Technical Data **TD 250**

Date : July 2003
Supersedes : December 2001
Author : EK/CQ

Introduction :
Shortening continually breaks down through normal use. This process is characterized by a modification of the structure of the constituent molecules (Triglycerides). The by-products that are formed are mainly Polar Compounds, among others are Free Fatty Acids (F.F.A.). The 3M Low Range Shortening Monitor utilizes the free fatty acid concentration as an indicator to the degree of shortening break-down.

Product Description :
A test is a stiff white paper strip (0,7 x 9.5 cm), having near one end of the strip, four blue bands across its width. A red line will differentiate the Low Range Shortening Monitor from Standard Shortening Monitor.

Packaging :

- *Per 800*

20 tests strips/**plastic tube**
4 plastic tubes/box
10 boxes/case
(i.e. 800 strips/case)

or

- *Per 200*

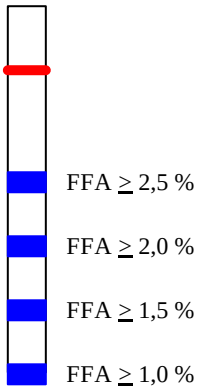
20 tests strips/**plastic tube**
1 plastic tube/box
10 boxes/case
(i.e. 200 strips/case)

or

- *Per 200*

50 tests strips/**plastic tube**
4 plastic tubes/case
(i.e. 200 strips/case)

Product Use :
The 3M LRSM strip is dipped into shortening at operating temperature. By simply counting the number of yellow bands, the stage of shortening break-down is indirectly determined.
As shortening breaks down, the free fatty acid concentration increases, causing a greater number of bands on the 3M LRSM strip to change color. A blue band will change completely to yellow at a specific free fatty acid concentration (see diagram).



Applications :
The product can be used in all types of shortening (animal, vegetable, and animal/vegetable blends) and fryers, provided the shortening to be tested is at operating temperature (between 160°C and 185°C).

Product advantages :

- *Easy to use* : no need for skilled people.
- *Quick* : immediate results. Determination is made within 30 seconds after dipping the test strip into shortening.

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- *Objective* : results are independent from people who are doing the test.
- *Hygienic* : the test strip will not contaminate the shortening.
- *Accurate* : the test provides a specific discard point and will minimize shortening underuse and optimize fried food quality (no overuse of shortening).
- *Safe* : once the discard point is set, the test will help the user make sure that local regulation is not infringed

Instructions for use :

1. Open the bottle and remove one test strip.
2. Tightly close the bottle with unused strips.
3. Hold test strip by longest white end (top, with red line)
4. Dip the test strip into the shortening so that all blue bands are submerged during 1-2 seconds.
5. Remove and allow excess shortening to drain back into the vat (5 seconds)
6. After 30 seconds, read the test strip by counting the number of bands that have completely or mostly changed from blue to yellow. The reading is even easier if the test strip is looked at when facing a light source.
7. Based on this count, continue to use or discard shortening according to predetermined discard point.
8. Discard used test strip after reading.
9. Use a new strip for each vat.

Storage conditions :
IMPORTANT : store the test strips in their closed bottle at 4° C or cooler. Cold storage can result in a light discoloration of the low side reactive bands (may turn to light blue color with light green shading). This discoloration is not detrimental to the product quality and the bands will turn back to the initial blue color after some time at room temperature.

Setting discard point :
Each customer should determine their own discard point depending on type of shortening, type of food, local regulations, habits…

Testing frequency :
Each vat should be tested daily. The rate of which F.F.A is produced will depend on many factors, including type and quantity of food fried, type of shortening used, frying temperature, seasonal weather change and amount of moisture of food. The rate will not be constant from day to day if any of these factors change.

Shelf life :
Low range Shortening Monitor strips should be used by expiration date (printed on bottles, cartons and case).

Caution :
Test strip will only measure F.F.A concentration. 3M H&CC Laboratory located in Beauchamp (France) should be consulted for the measurement of other products resulting from shortening breakdown.