

### Product Description

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 formed are mainly Polar Compounds, which are Free Fatty Acids (F.F.A.).

3M™ Low Range Shortening Monitor utilizes the free fatty acid concentration as an indicator of the degree of shortening breakdown.

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 the Standard Shortening Monitor.

### Packaging

- **Per 200**

20 test strips/**plastic tube**

1 plastic tube/box

10 boxes/case

(i.e. 200 strips/case)

or

- **Per 200**

50 test strips/**plastic tube**

4 plastic tubes/case

(i.e. 200 strips/case)



F.F.A.  $\geq$  2.5%

F.F.A.  $\geq$  2.0%

F.F.A.  $\geq$  1.5%

F.F.A.  $\geq$  1.0%

### Product Use

3M™ LRSM strip is dipped into shortening at operating temperature. By simply counting the number of yellow bands, the stage of shortening breakdown 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.

The product can be used by unskilled users.

3M™ LRSM strip allows for immediate results. Determination is made 30 seconds after dipping the test strip into the shortening.

The test strip will not contaminate the shortening.

3M™ LRSM strip, as a material or article which is intended to be brought into contact with food (the frying oil), is considered a food contact article.

### Applications

The product can be used in all types of frying oils and fats (animal, vegetable, and blends) and fryers, provided the test is done at operating temperature (between 160°C and 185°C).

The volume of the frying oil tested should be minimum 3 liters.

### Instructions for Use

1. Open the tube and remove one test strip.
2. Tightly close the tube with unused strips.
3. Using tongs, hold the test strip by the longest white end (top, with red line).
4. Dip the test strip into the shortening (minimum 3 liters) so that all blue bands are submerged for 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 the predetermined discard point.
8. Every time discard the used test strip after reading the test result.
9. Always use a new strip for each vat.
10. 3M™ LRSM strips are recommended to be used 20 times maximum before the oil is replaced.

### **Testing Frequency**

Each vat should be tested daily.

Always use a new strip for each vat and replace the oil if you already tested the same oil after 20 times. The rate at which F.F.A is produced will depend on many factors, including type and quantity of food fried, type of shortening used, frying temperature (between 160°C and 185°C), 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.

### **Setting Discard Point**

Each customer should determine their discard point depending on the type of shortening, type of food, local regulations, and habits.

### **Storage Conditions**

Every day used tubes do not need to be stored in a refrigerator if they are at room temperature and away from high moisture and humidity areas.

Keep all other bottles not in use in refrigerator or freezer.

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.

Always keep test strip bottles tightly closed after each use.

### **Shelf Life**

Shelf life is 15 months starting from the manufacturing date.

The expiration date is printed on tubes, cases, and shippers.

3M™ Low Range Shortening Monitor strips should be used before the expiration date.

### **Important Note**

3M™ LRSM strips will only measure F.F.A. concentration and not Polar Compounds.

A correlation is needed to control the oil's polar compounds with PC measurement equipment.

### **Health and Safety**

When handling any chemical products, read the manufacturer's container labels and the Safety Data Sheets (SDS) for important health, safety and environmental information.

[Follow the link to obtain SDS sheets for 3M products on 3M.com/SDS.](https://www.3m.com/SDS)

[Follow the link to obtain information about substances of very high concern \(SVHC\).](#)

**IMPORTANT!** When using any equipment, always follow the manufacturer's instructions for safe operation.

## Warranty Information

3M warrants that each 3M product will be free from defects in material and manufacture for the length of the product warranty. 3M MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

### Limited Remedy

This bulletin provides technical information only.

3M recommended product end uses are listed in each 3M product bulletin. End uses not listed in the applicable 3M Product Bulletins are typically not eligible for 3M Warranties. For non-recommended and/or non-warranted end uses or applications, users must test and approve the end uses or applications, assume any associated risks, and acknowledge that 3M has no liability for such end uses or applications. Please contact your 3M representative with any questions about graphic applications, end uses, and warranties.

### Limitations of liability

All questions of warranty and liability relating to this product are governed by the terms and conditions of the sale, subject, where applicable, to the prevailing law.

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