

3M Advanced Materials Division

3M™ Dynamar™ Polymer Processing Additive FX 9614

Features and Benefits

- Improves extrusion processing of polyolefin resins
- Ideal for use in low melt index LLDPE and high molecular weight HDPE resins
- Reduces or eliminates melt fracture
- Reduces or eliminates die build-up
- Lowers apparent melt viscosity
- Excellent thermal stability for high temperature processing
- For use at very low levels

Product Description

3M™ Dynamar™ Polymer Processing Additive FX 9614 is a free-flowing granular form of a fluoropolymer processing aid designed for use at very low levels to improve the processing of thermoplastics. At the very low use levels (typically 200 – 800 ppm) necessary to improve processing, it does not alter or detract from the mechanical properties associated with high strength plastics.

Dynamar FX 9614 exhibits exceptional commercial utility in low melt index film grade polyolefins such as linear low-density

Typical Physical Properties (Not for specification purposes.)

| Property | 3M™ Dynamar™ Polymer Processing Additive FX 9614 |
|--------------------|---|
| Form | Granular |
| Partitioning agent | 10% Inorganic |
| Color | Off-White |
| Particle size | Approximately less than 10 Mesh |
| Bulk density | 41 lb/ft ³ (0.7 g/cm ³) |
| Typical use levels | 200 – 800 ppm |

polyethylene (LLDPE and mLLDPE) and higher molecular weight, high-density polyethylene (HMW-HDPE) resins. It can also be used at low levels to reduce extruder die build-up when processing low-density polyethylene (LDPE), ethylene vinyl acetate (EVA) and other polyolefin resins.

Dynamar FX 9614 lowers apparent melt viscosity and permits processors to use high strength resins which otherwise could not be processed on available equipment.

As a polymer processing additive (PPA) Dynamar FX 9614 reduces or eliminates melt fracture and can reduce extruder torque. Through optimization of the extrusion process, the use of Dynamar FX 9614 may also allow an increase in output and yield films with enhanced and balanced

bi-directional physical properties and improved clarity and gloss.

Incorporation Procedure

To be effective, Dynamar FX 9614 can be melt blended into the host resin at any of the following stages prior to conversion into extruded products:

- Resin Producer
 - Direct addition (See 3M™ Dynamar™ PPA Direct Addition During Resin Manufacture Guidelines)
 - Use a concentrate containing FX 9614 and let down to an appropriate level
- Concentrate Producer
 - See 3M™ Dynamar™ PPA Concentrate Preparation Guidelines

Incorporation Procedure (continued)

- End User
 - Source resin containing 3M™ Dynamar™ FX 9614 from a resin producer
 - Source a concentrate containing 2-3% FX 9614 and let down to an appropriate level

Food Contact/FDA Regulatory Status

This 3M product may be used at levels up to 2000 parts per million (ppm) as a polymer processing additive for all polymers intended for use in contact with all food types described in Table 1 of 21 C.F.R. 176.170(c) under Conditions of Use A through H described in Table 2 of 21 C.F.R. 176.170(c).

3M makes no recommendation about the suitability of these products in the user's intended application. It is user's responsibility to determine whether its use of 3M products in a particular application is suitable and will comply with applicable laws and regulations.

Storage and Handling

3M™ Dynamar™ FX 9614, when stored in a clean dry environment at temperatures below 27°C (80°F), has an extended shelf life of two years. Please refer to the Safety Data Sheet for details on handling.

Safety/Toxicology

To avoid potential hazards (including the evolution of toxic vapors) associated with processing this material, please read and follow the information provided in these documents available to you through your 3M sales representative:

- Product Label
- Safety Data Sheet
- 3M™ Dynamar™ PPA Concentrate Preparation Guidelines
- 3M™ Dynamar™ PPA Direct Addition During Resin Manufacture
- 3M™ Dynamar™ PPA Evaluation Guidelines

You should also read and follow all directions from suppliers of other ingredients that you intend to use in conjunction with 3M Dynamar PPA material.

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