

3M Advanced Materials Division

3M™ Dynamar™ Polymer Processing Additive FX 5911

Features and Benefits

- Reduces or eliminates die build-up
- Excellent thermal stability for high temperature processing
- Ideal for use in high viscosity, high molecular weight polyolefins
- Lowers apparent melt viscosity
- Speeds colorant change

Product Description

3M™ Dynamar™ Polymer Processing Additive FX 5911 is a free-flowing fluoropolymer processing aid designed for use at very low levels to improve processing of thermoplastics. At the very low use levels (typically 200–1000 ppm) necessary to improve processing, it does not alter or detract from the physical properties associated with high strength plastics.

Dynamar FX 5911 improves extrusion processing of polyolefins and other thermoplastic resins, and can offer performance and cost benefits in a wide range of polymers. It is particularly useful at low levels in reducing extruder die build-up.

Application

Dynamar FX 5911 lowers apparent melt viscosity and permits fabricators to use high viscosity, high molecular weight resins in many film, pipe and blow molding

Typical Physical Properties (Not for specification purposes.)

| Property | 3M™ Dynamar™ Polymer Processing Additive FX 5911 |
|--------------------|---|
| Form | Free-flowing Granular |
| Color | Clear to Off-White |
| Active ingredients | 100% |
| Melting point | 110 to 126°C |
| Melt flow index | 6 – 14 g/10 min (265°C/5 Kg) |
| Specific gravity | 1.90 to 1.96 g/cm ³ |
| Particle size | 98% less than 2400 µm |
| Typical use levels | 200-1000 ppm |

processes which otherwise could not be processed on available equipment. Now with the aid of FX 5911, fabricators can produce blow molded bottles, pipes and other HMW-HDPE articles with improved surface finish and quality.

As a polymer processing additive (PPA), Dynamar FX 5911 reduces or eliminates melt fracture and can reduce extruder torque. Through optimization of the extrusion process, the use of Dynamar FX 5911 may also

allow for an increase in output during extrusion.

Dynamar FX 5911 is effective at low use levels in reducing die build-up in many polymers including LLDPE, LDPE, HDPE, PP and other thermoplastic resins. This allows for longer defect-free run times and improved gauge uniformity in cast film (see Figures 1 and 2) and BOPP processes as well as reduced fiber breakage in monofilament and fiber processes.

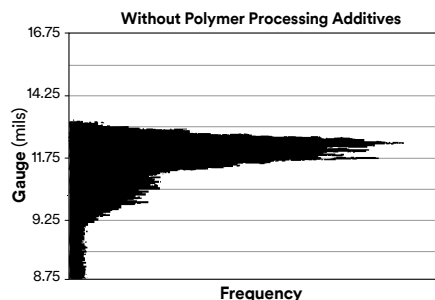


Figure 1

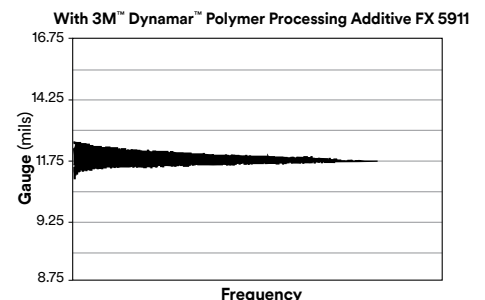


Figure 2

Incorporation Procedure

To be effective, 3M™ Dynamar™ Polymer Processing Additive FX 5911 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 5911 and let down at appropriate level
- Concentrate Producer
 - See 3M™ Dynamar™ PPA Concentrate Preparation Guidelines
- End User
 - Source resin containing FX 5911 from a resin producer
 - Source a concentrate containing 2–3% FX 5911 and let down at appropriate level

Food Contact/FDA Regulatory Status

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

Store Dynamar Polymer Processing Additive FX 5911 in a clean dry place. 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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