



Product Name MPM® 1112

Introduction:

BNX MPM 1112 is a pelletized masterbatch containing a high performance proprietary beta nucleant formulation in a polypropylene homopolymer resin. This masterbatch can be added to non-nucleated polypropylene polymers including homopolymers, random copolymers, and impact copolymers, in order to produce high levels of beta phase crystallinity in extruded sheets, films, and injection molded parts. When extruded sheets are stretched in the solid state to produce oriented films, these films will develop microvoids causing them to become white/opaque in appearance and undergo a reduction in density. In thermoforming applications beta nucleation broadens the processing window and produces final parts that have improved material distribution and higher strength and rigidity, thereby allowing the parts to be down-weighted.

Material Description: Solid

Chemical Name: Polypropylene homopolymer carrier resin plus proprietary additives

Empirical Formula: NA

CAS#: 9003-07-0(Polypropylene)

Chemical Structure: Proprietary

Physical Properties:

Melt Flow Rate: 12g/10 min.

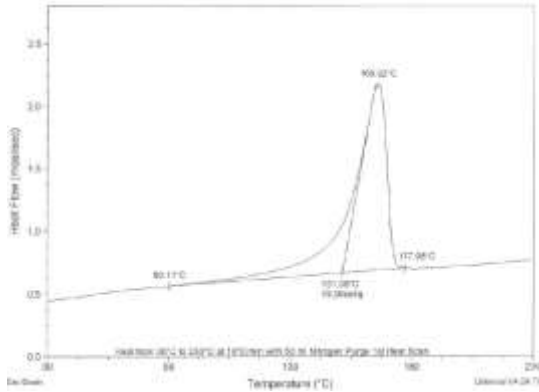
Melting Range: Dual melting peaks:
150 - 155°C for the beta crystal phase
162 - 167°C for the alpha crystal phase

Specific Gravity (20°C): 0.90 g/cm³

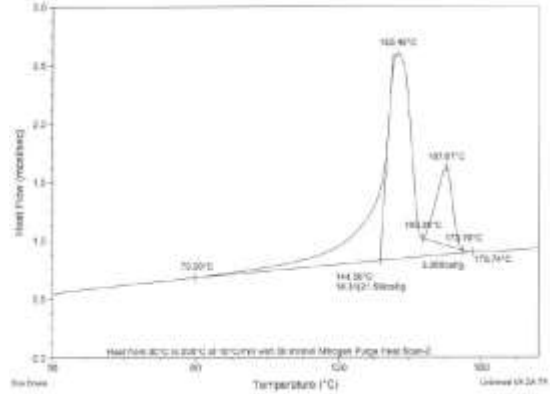
(1). As measured on a 2% let-down of the masterbatch in polypropylene homopolymer resin on the second heat using Differential Scanning Calorimetry (DSC) (after cooling from the melt at 10°C/min., and re-heating at 10°C/min.).

Typical DSC Curves for Non-nucleated PP vs a PP resin containing BNX® MPM 1112:

Non-Nucleated PP Resin



PP + BNX® MPM 1112



Applications: BNX MPM 1112 is specifically designed to beta nucleate a non-nucleated polypropylene resin when used at addition levels in the range of 1.0% to 2.0%. The major application areas for beta nucleated polypropylene include opaque and matte finish oriented film, breathable, microporous film, opaque thermoformed parts, and opaque or translucent injection molded parts. Beta nucleated polypropylene is not suitable for applications requiring high clarity.

Advantages:

- Can be added at the extruder hopper to produce sheet with high levels of beta crystallinity.
- Stretching the sheet either monoaxially or biaxially produces opaque, microporous film with lowered density, high strength, and enhanced printability. Under the proper conditions the stretched sheet can exhibit high levels of vapor transmission or “breathability”.
- Broadens the processing window for thin gauge thermoforming, and produces thermoformed containers with more uniform material distribution and improved crush strength and rigidity, with lower sidewall density. The microvoiding effect can reduce the need for TiO₂ pigment in order to produce white containers.
- Beta nucleation improves the impact strength and ductility of injection molded polypropylene without leading to a significant decrease in modulus.
- All of the components of the masterbatch are FDA approved for food contact applications.
- The MPM 1112 does not impart color into the final film or part that is made.

Loading

Instructions: The loading data and results are based on laboratory work (and field-testing) under controlled conditions and do not necessarily indicate the result that the buyer or user will attain. For this reason, we strongly recommend testing of your own system under the actual conditions of

processing and end-use prior to full scale testing. The generally recommended loading concentration range is between 1.0% and 2.0% depending on the base polypropylene resin and the processing conditions used.

Storage: This product may be stored up to two years in a sealed container. Containers should be stored in a cool, dry area. Extended storage at elevated temperatures or exposure to direct heat or sunlight could reduce product life. Keep containers sealed when not in use.

Toxicity &

Safety: This material is not intended for use in products for which prolonged contact with mucous membranes or abraded skin, or implantation within the human body is specially intended, unless the finished product has been tested in accordance with the Food and Drug Administration and/or other applicable safety testing requirements. Because of wide range of such potential uses, Mayzo, Inc. is not able to recommend this material as safe and effective for such uses and assumes no liability for any such uses. Read and understand the Material Safety Data Sheet before using or handling this product.

FDA: The components of this product fall under one or more of the following categories for use in contact with food:

- Colorants listed in 21 CFR 178.3297 “Colorants for Polymers”.
- Components that are exempt from regulation under 21 CFR 170.39 “Threshold of Regulation for Substances Used in Food Contact Articles”.
- Polymers and/or additives listed in the appropriate parts of 21 CFR (174, 175, 176, 177, 178, 181, 184, and 186).
- Substances that, based on legal opinion, supplier certification, and/or extraction results from food-simulating solvents, are not food additives and are acceptable for this application in full compliance with the Federal Food, Drug, and Cosmetic Act and all applicable food additive regulations.
- Substances that are GRAS (Generally Recognized as Safe) for direct addition to food or for use in contact with food.
- Substances that are “Prior Sanctioned” for use in this application.

Processing: In order to maximize the beta crystal content of extruded sheet, the cast roll should be heated to at least 80°C, and should preferably be in the range of 90 – 130°C. Mayzo will provide technical assistance to customers in order to help them optimize the processing conditions for their particular application.

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