Technical Data Sheet

PEarlene™ SiPP MB05 Silicone

Description

PEarlene silicone gum containing masterbatches provide improved processability (extrusion rate, mold fill and power consumption) and performance (mar and scratch resistance) when used to compound or extrude certain plastics, copolymers or elastomeric formulations.

PEarlene silicone gum masterbatches are a family of functional masterbatches containing high levels of ultra- high- molecular- weight polysiloxane which are melt compounded into a thermoplastic polymer.

Typical usage levels are from 0.2% to 1.6% by weight of silicone gum.
The product line consists of several silicone gum masterbatches based on polyolefins (PE and PP) as well as PC.

Polymer Modification:
PEarlene SiPP MB-05 silicone (PP: polypropylene homopolymer)

These masterbatches modify the rheological characteristics of the resin or compound, which may allow for increased throughput in fabrication operations as well as reduction in drive torque and machine head pressure. These masterbatches are typically usedat 0.2 to 1.6 % by weight of silicone gum.

To improve the surface appearance of the fabricated part, higher levels of the masterbatches are generally recommended. This should result in a lower coefficient of friction (CoF) on finished parts. It should also noticeably improve fine molded details and mold release. In addition, typical benefits of increased throughput in fabrication operations, as well as reduction in drive torque and head pressure, may allow for

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savings in manufacturing variable costs.

Select the carrier compatible with your formulation or check with Momentive Performance Materials for detailed information.

Key Features and Benefits

- Improved lubricity of fabricated part
- Improved mar resistance
- Improved scratch resistance
- Increased fabrication line throughput
- Reduced extrusion drive load
- Reduced extruder head pressure
- Reduced energy usage in processing

Typical Physical Properties

Form	Uniform, free flowing micropellets
Description	Off- white, free from foreign materials
Nominal density (gm/cc) at 20°C	.94-.96
MFI (190°C @ 2.16 Kg)	13 g/10 min
Typical Usage Levels, % by weight	0.2 to 1.6
Active Ingredients, %	50
Odor	Essentially odorless
Solubility in water	Insoluble
Melting Point, °C	> 160 (PP carriers)

See MSDS (SDS) and final Technical Bulletin for additional details. Some physical properties may be estimated.

Potential Applications

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PEarlene silicone gum masterbatches may be excellent candidates for consideration in compounding operations and extrusion based fabrication processes including: injection and compression molding; blown and cast film; foaming operations (closed and open cell as well as structural); thermoforming; rotomolding etc.

These masterbathes are believed to be highly effective in polyolefins such as PP .

Generally, the PEarlene silicone gum masterbatches can be added to the resin or compound during the final melt extrusion or fabrication step. The additive must be homogeneously mixed with the resin or compound in the melt process to yield the full cost effective benefit of the additive. Compounds containing PEarlene silicone gum masterbatches may be available from your resin or compound supplier.

Compound manufacturers can add the masterbatches during continuous or batch melt compounding operations.
Improper mixing or the use of the wrong type or wrong level of additive will not result in the expected performance enhancements.

Product Usage
The PEarlene family of silicone gum based masterbatches are free-flowing, dry, pelleted materials which may be excellent candidates for consideration in formulating into a variety of resin based compounds. The product does not contain any halogens. The ultra- high- molecular- weight polysiloxanes have been shown to be effective in various applications. The product is used by blending and/or adding to resin or fully or partially formulated compounds and then melt processed. It is critical that the processing provides a homogenous distribution of the masterbatch in the final resin or compound. The melt processing typically can be accomplished employing the same fabrication conditions normally used for the base compound. Unmodified conventional handling and processing equipment has been used for this step.

The product is essentially odorless and colorless (though some grades are off- white). The product will not normally affect the odor or color of the material it is added to especially after final fabrication.

At low addition levels of PEarlene silicone masterbatches between 0.2% to 1.6 % by weight of silicone gum, the resin and/or compound will typically be rheologically

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modified which may result in an improvement in flow. This may allow for better mold flow and fill, replication of fine mold details with more precision and easier part release without the need for a separate mold release agent. Parts made with these masterbatches are generally less subject to warpage. The process should benefit from an increase in throughput and a reduction in machine torque and pressure, and may thereby lower manufacturing variable costs.

With addition of PEarlene silicone gum masterbatches the coefficient of friction (CoF) of the final part will typically be improved, the surface finish will be enhanced, and the abrasion resistance and the mar resistance of the fabricated part will be enhanced.

Generally, the tensile and elongation properties of the final products will only be slightly effected by the PEarlene silicone masterbatches even at the highest recommended level of addition and the impact resistance will be improved especially at low temperatures.

Patent Status
Standard copy to come

Product Safety, Handling and Storage
Standard copy to come

Processing Recommendations
The family of PEarlene silicone gum based masterbatches are added to the formulation and typically processed on conventional equipment under the same processing conditions recommended for the base resins and/or compounds. No special conditions or process modifications are generally required. However, the PEarlene silicone gum masterbatches must be melt processed under conditions which will assure a high level of homogeneity in the final product. These ultra-high-molecular-weight based polysiloxane based masterbatches may prevent screw slippage.

It should be noted that it might be necessary to increase the extrusion speed and reduce machine temperature settings to get the full benefit of the additional throughput which may be available when using these masterbatches. The process may also benefit from less frequent shut downs for screw, screen, die and tooling cleanup. In addition the cleaning of machine parts will generally require less time and effort.

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Limitations
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