Technical Data Sheet

PEarlene™ SiPP MB01 Silicone

Description

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

PEarlene silicone master batches are a family of functional master batches containing high levels of ultra high molecular weight polysiloxane which are melt compounded into a polymer carrier.

Typical usage levels are from 0.2% to 1.6% by weight.
The product line consists of several silicone master batches:

Polymer Modification:
PEarlene SiPP MB-01 silicone (PP: polypropylene carrier)
PEarlene SiEC MB-01 silicone (EMA: ethyl methacrylate carrier)
PEarlene SiPE MB-01 silicone (PE: polyethylene carrier)

These master batches 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 master batches are typically used at 0.2 to 1.25% by weight.

To improve the surface appearance of the fabricated part, higher levels of the master batches are generally recommended. This should result in a lower 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

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reduction in drive torque and head pressure, may allow for a 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

- Excellent curl memory, even in high humidity, for long lasting PEarlene silicone containing master batches:
- Improved lubricity of fabricated part
- Improved mar resistance
- Improved scratch resistance
- Improved impact resistance
- Increased fabrication line throughput
- Reduced extrusion drive load
- Reduced extruder head pressure
- Increased time between cleanup of extruder, die and mold
- Reduced energy usage in processing

Typical Physical Properties

Form	Uniform, free flowing pellets
Description	Off white, free from foreign materials
Nominal density (gm/cc) at 20°C	.94-.96
MFI (190°C @ 2.16 Kg)	18.0 g/10 min(PEarlene SiEC MB-01) 13.8 g/10 min(PEarlene SiPE MB-01) 9.64 g/10 min(PEarlene SiPP MB-01)
Typical Usage Levels, % by weight	0.2 to 1.6
Active Ingredients, %	50 typically (40 on EMA carrier)
Boiling Point, °C	>300
Odor	Essentially odorless
Solubility in water	Insoluble

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Flashpoint, °C	>200 (liquid component)
Melting Point, °C	70 (EMA carriers) 100 (PE carriers)

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

Potential Applications

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

These master bathes are believed to be effective in polyolefins (PP, PE and their copolymers, PVC, PS, SAN, Nylon, PC and ABS).

Generally, the PEarlene silicone 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 master batches may be available from your resin or compound supplier.

Compound manufactures 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 based master batches are free flowing, dry, pelleted materials which may be excellent candidates for consideration in formulating into a variety of resin based compounds. The product contains no 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

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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 master batches (PEarlene SiPE MB-01 silicone, PEarlene SiPP MB-01 silicone and PEarlene SiEC MB-01 silicone), between 0.2% to 1.25% by weight, the resin and/or compound will typically be rheologically 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 master batches 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 master batches (PEarlene SiPE MB-01 silicone, PEarlene SiPP MB-01 silicone and PEarlene SiEC MB-01 silicone) typically the COF of the final part will 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 master batches 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 based masterbatches are added to the formulation and typically processed on conventional equipment under the same processing conditions

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recommended for the base resins and/or compounds. No special conditions or process modifications are generally required. However, the PEarlene silicone 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 master batches 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 master batches. 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. Patent Status Nothing contained herein shall be construed to imply the non existence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent. Product Safety, Handling and Storage Customers

Limitations
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