

PEarlene* Silane Masterbatches



MARKETING BULLETIN

PEarlene silicone containing masterbatches 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.

Key Features and Typical Benefits

- Improved mar resistance
- Improved scratch resistance
- Improved lubricity of fabricated part
- Non-migrating and non-blooming/non-fogging behavior
- Improved impact resistance
- Increased fabrication line throughput
- Reduced extruder head pressure
- Reduced energy usage in processing. Improve mechanical properties like impact etc.
- Non-halogenated flame retardant additive



Typical Physical Properties

Form	Uniform, free flowing pellets
Pellet Size	Standard & micro pellets
Availability	25Kg bags
Description	Off white, free from foreign materials
Nominal density (gm/cc) at 20 °C	.94-.96
Typical Usage Levels, % by weight	0.5 to 5
Active Ingredients, %	50 typically on PP/PE (30 on PC carrier)
Odor	Essentially odorless
Solubility in water	Insoluble

See MSDS (SDS) and final Technical Bulletin for additional details.
 Some physical properties may be estimated.
 Typical properties are average data and are not to be used as or to develop specifications.

Introduction

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

Product Line

The product line consists of several silicone masterbatches:

- PEarlene SiPP MB-01 (PP: polypropylene carrier)
- PEarlene SiPP MB-02 (PP: polypropylene carrier)
- PEarlene Y-19220 (PP: polypropylene carrier)
- PEarlene SiPE MB-01 (PE: polyethylene carrier)
- PEarlene SiPE MB-02 (PE: polyethylene carrier)
- PEarlene SiPC MB-01 (PC: polycarbonate carrier)

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.

To improve the surface appearance of the fabricated part, higher levels of the masterbatches 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 reduction in drive torque and head pressure, may allow for a savings in manufacturing variable costs.

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; (closed and open cell as well as structural).

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

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 masterbatches may be available from your resin or compound supplier.

Compounders 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. These ultra high molecular weight based polysiloxane based masterbatches may prevent screw slippage.

Product Usage

The PEArlene family of silicone 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 contains no halogens. The ultra high molecular weight polysiloxanes have been shown to be effective in various applications. It is critical that 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 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 (PEArlene SiPE MB-01, PEArlene SiPP MB-01 and PEArlene SiPC MB-01), between 0.5 to 2% 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 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 masterbatches (PEArlene SiPE MB-01, PEArlene SiPP MB-01 and PEArlene SiPC MB-01) 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. These ultra high molecular weight based polysiloxane based masterbatches may prevent screw slippage.

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 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.

It should be noted that it might be advantageous 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.

Patent Status

Nothing contained herein shall be construed to imply the nonexistence 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 should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at www.momentive.com or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

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