

## DOW CORNING® MB50-002 Masterbatch

### FEATURES

- Imparts processing improvements and modified surface characteristics

### BENEFITS

- Improved throughput
- Reduced energy consumption
- Enhanced scratch resistance
- Improved slip properties
- Reduced waste
- Enhanced stability vs. traditional processing aids and lubricants

### COMPOSITION

- Free flowing solid pellets

**Ultra-high molecular weight siloxane polymer, dispersed in low density polyethylene**

### APPLICATIONS

- Additive in polyethylene compatible systems.

### TYPICAL PROPERTIES

Specification writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales representative prior to writing specifications on this product.

Property	Unit	Value
Appearance		Off-white pellets
Siloxane content	%	50
Organic resin		LDPE, MI 4
Suggested use level	%	0.2 to 10

### DESCRIPTION

DOW CORNING MB50-002 Masterbatch is a pelletized formulation containing 50% of an ultra-high molecular weight (UHMW) siloxane polymer dispersed in low-density polyethylene (LDPE). It is designed to be used as an additive in polyethylene compatible systems to impart benefits such as processing improvements and modification of surface characteristics.

Liquid siloxane plastic additives have been used for several years to improve the lubricity and flow of thermoplastics. They are effective in this role although some difficulties have been experienced in the incorporation of liquids into thermoplastic melts without the use of specialized equipment. It has also been difficult to produce masterbatches with greater than 20% liquid siloxane because of processing difficulty and bleed problems.

The DOW CORNING® MB Series Masterbatches address these problems by supplying a high concentration of

an ultra-high molecular weight (UHMW) siloxane as a dispersion in a dry pellet form in a variety of thermoplastics.

### BENEFITS

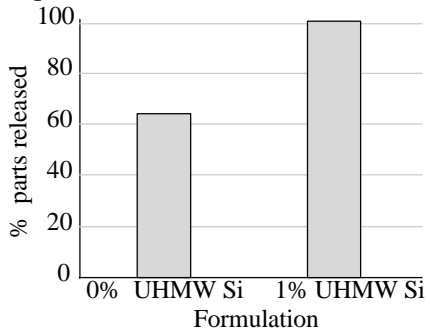
When added to polyethylene or similar thermoplastics at 0.2% to 2.0%, improved processing and flow of the resin is expected, including better mold filling, less extruder torque, internal lubrication, mold release and faster throughput. At higher addition levels, 2% to 10%, improved surface properties are expected, including lubricity, slip, lower coefficient of friction, and greater mar and abrasion resistance.

The DOW CORNING MB Series Masterbatches are expected to give improved benefits compared to conventional lower molecular weight siloxane additives, e.g., less screw slippage, improved release, a lower coefficient of friction, fewer paint and printing problems, and a broader range of performance capabilities.

Table 1 shows that an ultra-high molecular weight siloxane additive in polyethylene has a small effect on tensile and impact strengths; coefficient of friction values are lowered by the siloxane additive.

Figure 1 shows the improvement in mold release: 100% of injection molded parts released easily from the mold with 1% ultra-high molecular weight siloxane added versus only 63% without the siloxane.

**Figure 1: Mold release of LDPE.**



The scanning electron micrograph shown in Figure 2 demonstrates the particle size of the siloxane dispersed in low-density polyethylene carrier resin in DOW CORNING MB50-002 Masterbatch.

**Figure 2: Scanning electron micrograph.**

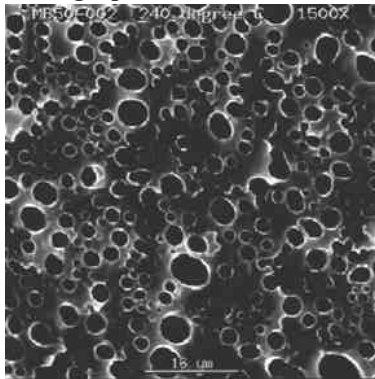
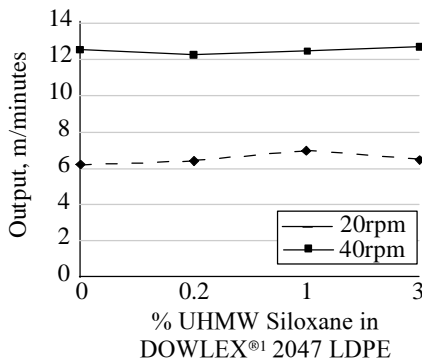
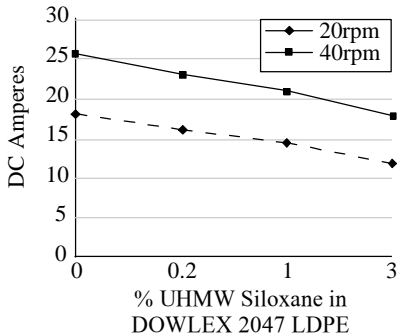


Figure 3 demonstrates the minimal screw slippage effected by the addition of up to 3% UHMW siloxane; Figure 4 demonstrates the amperage reduction in a single screw extruder by the addition of just 0.2% UHMW siloxane.

**Figure 3: Output effect in single screw extrusion.**



**Figure 4: Amperage effect in single screw extrusion.**



<sup>1</sup> DOWLEX is a registered trademark of the Dow Chemical Company

## LIMITATIONS

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

## FOOD CONTACT

DOW CORNING MB50-002 Masterbatch is suitable for use as a slip or release agent in the production of the basic polymer or finished food contact article in compliance with US FDA regulation 21 CFR 177.1520. The olefin polymer portion of DOW CORNING MB50-002 Masterbatch complies with 177.1520(c)2.1 and the siloxane portion complies with 181.28.

This product may comply with European requirements concerning its use in contact with foodstuffs. The specific regulation(s) this product is compliant with are stated in the 'Food Regulatory Profile'. This document is available from your local Dow Corning representative.

## HOW TO USE

DOW CORNING MB Series Masterbatches may be processed in the same way as the thermoplastics on which they are based. Sufficient DOW CORNING MB50-002 Masterbatch should be blended with virgin polymer pellets to give the desired siloxane level in the final product. DOW CORNING MB50-002 Masterbatch pellets can be added during compounding in a single screw extruder or added at the feed hopper during injection molding or extrusion.

## HANDLING PRECAUTIONS

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE FROM YOUR LOCAL DOW CORNING SALES REPRESENTATIVE.

## USABLE LIFE AND STORAGE

When stored at or below 35°C (95°F) in the original unopened containers DOW CORNING MB50-002 Masterbatch has a usable life of 48 months from the date of production.

## PACKAGING

This product is available in a variety of container sizes. Contact your local Dow Corning sales representative for information about container sizes available in your area.

## HEALTH AND ENVIRONMENTAL INFORMATION

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Health, Environment and Regulatory Affairs specialists available in each area.

For further information, please consult your local Dow Corning representative.

**WARRANTY  
INFORMATION - PLEASE  
READ CAREFULLY**

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that Dow Corning's products are safe, effective, and fully satisfactory for the intended end use. Dow Corning's sole warranty is that the product will meet the Dow Corning sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. Dow Corning specifically disclaims any other express or implied warranty of fitness for a particular purpose or merchantability. Unless Dow Corning provides you with a specific, duly signed endorsement of fitness for use, Dow Corning disclaims liability for any incidental or consequential damages. Suggestions of use shall not be taken as inducements to infringe any patent.

**Table 1: Physical properties of high-density polyethylene modified with an ultra-high molecular weight polydimethylsiloxane additive.**

Property	Siloxane content, %		
	0	1.0	5.0
Tensile strength, MPa	25	25	22
Elongation, %	76	79	105
Modulus, MPa	1364	1632	908
Izod, notch, J/m	957	811	721
Melt flow, g/10 minutes	0.1	0.1	0.1
Vicat softening, C	128	125	119
Coefficient of friction,			
Static	0.21	0.13	0.07
Kinetic	0.12	0.07	0.05