



Zonyl[®] MP 1000

fluoroadditive

Description

Zonyl[®] MP 1000 fluoroadditive is a white free-flowing PTFE powder comprising loose agglomerates of submicron-sized particles. It is designed for use as an additive in other materials to impart low-surface energy and other fluoropolymer attributes. With plastics and elastomers, it provides improved lubricity or wear resistance. Added to lubricants, it can enhance performance under severe conditions. Zonyl[®] MP 1000 can be used at temperatures from -190 to 250°C (-310 to 480°F).

Zonyl[®] MP 1000 is generally intended to be used as an additive, although it can also be used alone as a dry lubricant. Its properties (see **Table 1**), including a relatively low molecular weight, make the material unsuitable as a molding or extrusion resin. Therefore, Zonyl[®] MP 1000 fluoroadditive is not a replacement for any of the Teflon[®] high molecular weight fluoropolymer resins.

Zonyl[®] MP 1000 tends to form clumps of particles, but it can be deagglomerated during mixing and blending operations. Agglomerates of the resin are friable—a characteristic that helps in producing an intimate mixture with host materials, which also means that the particle size distribution measured for the resin is dependent on the measuring method used. As made, the resin comprises of loose 150 µm agglomerates of 0.2 µm particles. As the resin is dispersed in a solvent for particle size measurement, the agglomerates break down and could eventually approach the 0.2 µm particle size. The individual resin particles can fibrillate to some degree—a characteristic that provides alternatives to those host product performance modifications provided by small particles alone.

Zonyl[®] MP 1000 is inert to nearly all industrial chemicals and solvents. It is a good electrical insulator, does not absorb water, and is highly resistant to weathering.

Table 1
Typical Property Data for
Zonyl[®] MP 1000 Fluoroadditive

Property	Test Method	Unit	Value
Average Bulk Density	ASTM D4894	g/L	500
Melting Peak Temperature	ASTM D4894	°C °F	325 ±5 617
Particle Size Distribution (Volume Basis)	Laser Microtrac	µm	10% <3 Avg. 12 90% <30
Specific Surface Area	Nitrogen Adsorption	m ² /g	5–10

Note: Meets ASTM D5675, Type I, Grade 2, Class A or B.

Typical Applications

Plastic and elastomeric parts containing Zonyl[®] MP 1000 have shown improved lubricity and reduced friction and wear, compared with similar parts made without this additive. Typical loadings of 5 to 20% by weight are used. Plastics that can benefit in this manner include polyacetals, polyamides, polycarbonates, polyesters, polyimides, polysulfides, and polysulfones; elastomers include acrylates, fluoroelastomers, neoprenes, nitriles, and silicones.

Added to high-viscosity specialty lubricants designed for use under high pressures, Zonyl[®] MP 1000 may increase lubricity and service life, especially at high temperatures or in corrosive environments. It has been used in silicone, fluorosilicone, and hydrocarbon lubricant bases. Smooth, uniform suspensions can be made using conventional blending methods.

Safety Precautions

WARNING!

VAPORS CAN BE LIBERATED THAT MAY BE HAZARDOUS IF INHALED.

Before using *Zonyl*[®] MP 1000, read the Material Safety Data Sheet and the detailed information in the "Guide to the Safe Handling of Fluoropolymer Resins," latest edition, published by the Fluoropolymers Division of The Society of the Plastics Industry—available from DuPont.

Open and use containers only in well-ventilated areas using local exhaust ventilation (LEV). Vapors and fumes liberated during hot processing, or from smoking tobacco or cigarettes contaminated with *Zonyl*[®] MP 1000, may cause flu-like symptoms (chills, fever, sore throat) that may not occur until several hours after exposure and typically pass within 24 hours. Vapors and fumes liberated during

hot processing should be exhausted completely from the work area; contamination of tobacco with polymers should be avoided.

Mixtures with some finely divided metals, such as magnesium or aluminum, can be flammable or explosive under some conditions.

Packaging

Zonyl[®] MP 1000 is packaged in 25-kg (55.1-lb) drums. Eight 25-kg drums are packaged on one pallet for ease of shipping, handling, and storage.

Freight Classification

Zonyl[®] MP 1000 when shipped by rail or express is classified "Plastic, Synthetic, O.T.L., NOIBN." Resin shipped by truck is classified "Plastics, Materials Granules."

For more information on *Zonyl*[®]:

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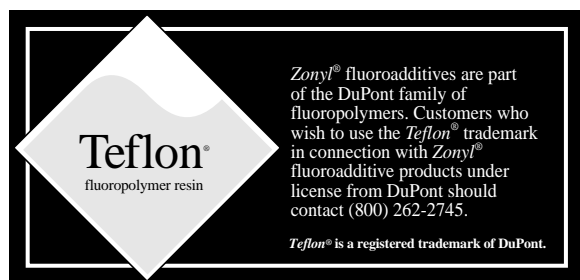
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CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement," H-50102.



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