PTFE Release Agent/Dry Lubricant

MS-143H (Bulk Liquid) NSN 9150-01-571-1708

Miller-Stephenson Release Agent/Dry Lubricant contains suspension of low molecular weight polytetrafluoroethylene (PTFE) fluoropolymers – white, waxy particles of PTFE in an easy to apply form. The outstanding lubricity and low coefficient of friction of PTFE is perfect for use as a dry film lubricant and as a release agent in molding operations.

The MS-143H is a fast drying mold release agent for metallic and non-metallic molds. With its superior release action, it will yield up to three times the number of release cycle compared to the more economical Miller-Stephenson formulations. It is an excellent dry lubricant for all applications and surfaces.

Miller-Stephenson's Release Agent/Dry Lubricant is:

- Slippery, with outstanding lubricity (low coefficient of friction).
- Thermally stable (from cryogenic to 500ºF/260ºC).
- Nonflammable.
- Chemically inert.
- Insoluble.
- Non-migrating (contain no silicones).

Use MS-143H for application to molds up to 212ºF (100ºC). For preheated molds above 212ºF (100ºC), use water-based MS-136W or MS-145W.

Release Agent Applications

MS-143H can be used as a release agent to mold plastics, rubbers, resins, acrylics, epoxies, urethanes, nylons, phenolics, polycarbonates, polystyrene, and elastomers. Air dried coating typically provide 8 to 10 releases between applications. When the coating is fused, 25 or more releases are typical. The transfer of PTFE to molded parts is negligible, minimizing interference with post finishing operations.

Fused Coatings Procedure - After applying the release agent, heat the surface to 581ºF to 600ºF. Measure the surface temperature directly with a thermocouple. You may observe a change in coating appearance from an opaque white to a darker, translucent look and then to a clear and wet look. Maintain the temperature of the coated surface for 5 to 10 minutes. If a white residue is left on the metal surface, buff with a soft cloth.

Dry Lubricant Applications

Miller-Stephenson's Dry Lubricant can be used on many materials, including:

- Metal
- Glass
- Rubber
- Wood
- Ceramics
- Elastomers
- Paper
- Plastics

Miller-Stephenson's Dry Lubricant minimizes "slipstick" problems, and is most effective in low speed, light load applications.

Specific uses include:

- Gears, drive belts and gaskets.
- Wire and cable.
- Thread, cord and rope.
- Chain drives.
- Metalworking, including extrusion, rolling, drawing and sizing.
- Machine parts and tools, including nuts, bolts, thread connections, locks, power saw blades and machine mechanisms.
- Hardware, including hinges, locks and catches, window guides, and guides on cabinet drawers.

Surface Preparation

All surfaces should be clean and dry before applying a Miller-Stephenson Release Agent/Dry Lubricant. Use MS-782 along with Miller-Stephenson Hand-held Brushes to remove PTFE release material from molds.

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Application Methods

MS-143H is available in a range of dilutions from 1% to 15% PTFE for different applications. 3% PTFE is adequate for most uses. It should be agitated before use as the PTFE will settle during storage.

Properties of PTFE

Molecular Weight……3000
Particle size (microns)
mean……..…….3.7
range……....1 to 15
Melting Point……....581ºF (305ºC)

Thermal Stability

PTFE has excellent high temperature properties. It can be heated above its melting point before appreciable decomposition begins. PTFE contains a range of molecular weights. Prolonged heating can cause sublimation of the lower molecular weight fractions with accompanying weight loss. The actual sublimation rate is dependent on temperature, area, and airflow.

Chemical Stability

PTFE is completely resistant to attack by concentrated nitric acid, concentrated hydrochloric acid, 30% aqueous sodium hydroxide, and 30% alcoholic potassium hydroxide at temperatures of 212ºF. Concentrated sulfuric acid attacks the fluorotelomer at 212ºF but has no effect at room temperature.

Solubility

PTFE is insoluble in all non-fluorinated solvents. Approximately 10% of the lowest molecular weight fractions are soluble in fluorinated solvents.

Safety Data Sheet (SDS) is available upon request.

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