



Liveo™ MDX4-4159 50% Medical Grade Dispersion Silicone Coating Fluids

Liveo™ MDX4-4159 50% Medical Grade Dispersion is a dispersion containing 50 percent active silicone mixed in aliphatic and isopropanol solvents.

The active silicone used is an aminofunctional dimethylsiloxane copolymer. The polar nature of the aminofunctional groups and the ability of the fluid to cure cause films to deposit and adhere to metal cutting edges.

Applications:

Liveo™ MDX4-4159 50% Medical Grade Dispersion was developed for use as a lubricant for cutting edges, including razor blades, scissors and hypodermic needles.

However, it might also be used in other applications that would benefit from:

- A room-temperature curable coating,
- The chemical functionality that attracts the coating to polar surfaces (metals and some plastics),
- A more substantive coating than pure polydimethylsiloxane fluid.

Liveo™ MDX4-4159 50% Medical Grade Dispersion, previously coated onto stainless steel substrate (needle stock) has been fully evaluated to meet the requirements of "Biomedical Grade" materials produced by DuPont.

These tests are intended only to provide an initial biocompatibility screen for this material. It is the user's responsibility to ensure the safety and efficacy of this material for all intended uses. While this material has passed certain biocompatibility screening tests that are applicable to products intended to be implanted for fewer than 30 days, DuPont makes no end-use representation based on such testing. Nor does DuPont make any representation concerning the suitability of this product intended to be implanted for 30 or more days.

Packaging:

This product is supplied in 0.47 liter/0.41kg bottles, 18.9 liter/16.3kg pails and 208 liter/179kg drums. All weights net.

Product information

Colour
Basis

Clear
Aminosilicone

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Page: 1 of 5

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Rheological properties

Viscosity 110¹ mPa.s
1: equivalent to 130 cSt

Thermal properties

Flash point 13 °C ASTM D 92

Other properties

Density 860 kg/m³ ISO 1183
Refractive index 1.412 -
Drying rate similar to mineral spirits -

Storage and stability

Shelf life 18 months

Characteristics

Compatibility Metals

Processing

How to use

Storage:

To be stored in the original unopened container at or below 32°C.

Because Liveo™ MDX4-4159 50% Medical Grade Dispersion is a reactive polymer, moisture from the air or wet solvents will increase polymer viscosity and eventually cause the polymer to gel. Once opened, this fluid should be promptly used. If this is not possible, containers should be tightly resealed and marked for use within the next 30 days. As an extra precaution, the headspace of the open container should be purged with dry nitrogen before closing.

DOT Classification: Flammable.





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How to Use:

Coating:

Liveo™ MDX4-4159 50% Medical Grade Dispersion may be applied to cutting edges by dipping or wiping. Spray application is not recommended. Prior to use, the material should be diluted to the most desirable concentration for the specific application. Experimentation may be required to determine the optimum concentration; generally, a solution containing 2 to 5 percent of the active silicone is most desirable. Coating thicknesses can be varied to fit individual needs. The coating should be thin enough so as not to be visible to the unaided eye.

Solubility:

Liveo™ MDX4-4159 50% Medical Grade Dispersion is soluble in many organic solvents, including aliphatic and aromatic hydrocarbon solvents, isobutanol and lower alcohols. Liveo™ MDX4-4159 50% Medical Grade Dispersion is also soluble in Xiameter™ OS-10, and OS-20 Fluids, which are ozone-safe volatile organic compound (VOC)-exempt solvents. Generally, selection of a solvent will depend on its ability to wet-out the substrate to be coated. Hexane, heptane and mineral spirits have been used. In mineral spirits, Liveo™ MDX4-4159 50% Medical Grade Dispersion may show light precipitation or incomplete solubility; 10 to 15 percent of isopropyl alcohol, based on the weight of the silicone improves solubility. When diluted with alcohol, Liveo™ MDX4-4159 50% Medical Grade Dispersion may require mineral spirits to assure solubility. This fluid is not soluble in water. When placed in contact with water, it hydrolyzes rapidly to form an insoluble polymer.

Cure:

After the carrier solvent has evaporated, Liveo™ MDX4-4159 50% Medical Grade Dispersion cures at room temperature on exposure to moisture in the air. The following are recommended guidelines:

- Temperature - while this material cures at room temperature, 25°C, cure can be accelerated by mild temperature elevation, such as 70°C.
- Moisture - relative humidity of about 55 to 60% at 25°C should be satisfactory. Although moisture is important for cure, as the relative humidity approaches 100%, cure inhibition and decreased lubricity result. Relative humidity below





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55% merely extends cure time.

• Time - at 25°C and 55% relative humidity, the coating should cure enough in 24 hours to allow handling of coated articles. Lubricity properties may continue to improve for 7 to 10 days at room temperature, or 3 to 7 days at 70°C.

Blending:

Liveo™ MDX4-4159 50% Medical Grade Dispersion can be blended with Liveo™ 360 Medical Fluid, if desired. Liveo™ 360 Medical Fluid does not cure at room temperature, nor does it react with Liveo™ MDX4-4159 50% Medical Grade Dispersion.

The coating from this combination is somewhat softer and waxier than Liveo™ MDX4-4159 50% Medical Grade Dispersion alone. While the viscosity and amount of Liveo™ 360 Medical Fluid is best determined by testing, 2 to 10 parts by weight of Liveo™ 360 Medical Fluid (12,500 centistokes) to 100 parts Liveo™ MDX4-4159 50% Medical Grade Dispersion (as supplied) is suggested as a starting point.

Sterilisation

After Liveo™ MDX4-4159 50% Medical Grade Dispersion has cured, coated articles have been sterilised with dry heat, ethylene oxide, steam autoclaving, or gamma radiation.

If sterilisation is performed before final lubricity properties are reached, or if radiation sterilisation is desirable, testing should be performed to determine the effects of these on lubricity properties.

If ethylene oxide is used to sterilise, it is the user's responsibility to determine appropriate outgassing conditions.

Chemical Media Resistance

Alcohols

- ✓ Isopropyl alcohol, 23°C
- ✓ Methanol, 23°C
- ✓ Ethanol, 23°C





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Hydrocarbons

- ✓ n-Hexane, 23°C
- ✓ Toluene, 23°C
- ✓ iso-Octane, 23°C

Other

- ✗ Water, 23°C

Sterilisation methods

- ✓ Ethylene Oxide
- ✓ Autoclave Steam, 30min at 120°C
- ✓ Gamma Radiation, 50 kGy

Symbols used:

- ✓ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).
- ✗ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).



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