Product Information
Healthcare

DOW CORNING

Dow Corning® MDX4-4159 50% Medical Grade Dispersion

FEATURES & BENEFITS

- Excellent lubricating for cutting edges
- High adhesion to metal, providing durability
- Easy application from dilute solvent solutions
- Cures at room temperature upon exposure to atmospheric moisture

COMPOSITION

- 50 percent silicone dispersion in aliphatic and isopropanol solvents

Lubricant for cutting edges

APPLICATIONS

Dow Corning® 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

TYPICAL PROPERTIES

Specification Writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

CTM*	Property	Unit	Result
0176	Appearance		Colorless to slightly hazy
	Silicone content	%	50
0004	Viscosity at 25°C (77°F)	cSt	130
0002	Refractive index at 25°C (77°F)		1.4089
0001A	Specific gravity at 25°C (77°F)		0.861
	Solvents		Stoddard solvents and isopropanol
0021A	Flash point (closed cup), Pensky-Martin method	°C (°F)	13.3 (56)

*CTMs: (Corporate Test Methods) correspond to American Standard Test Methods (ASTM) in most instances. Copies of CTMs are available on request.

DESCRIPTION

Dow Corning MDX4-4159 50% Medical Grade Dispersion is a dispersion containing 50 percent active silicone ingredients in mixed 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.

IMPORTANT INFORMATION

Dow Corning 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 Dow Corning.

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, Dow Corning makes no end-use representation based on such testing. Nor does Dow Corning make any representation concerning the suitability of this product intended to be implanted for 30 or more days.

HOW TO USE

Coating

Dow Corning MDX4-4159 50% Medical Grade Dispersion may be applied to cutting edges by dipping or wiping. Spray application is not recommended.[1] 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

Dow Corning MDX4-4159 50% Medical Grade Dispersion is soluble in many organic solvents, including aliphatic and aromatic hydrocarbon solvents, isobutanol and lower alcohols.

[1]Recent toxicity studies conducted with compounds chemically similar to *Dow Corning* MDX4-4159 50% Medical Grade Dispersion showed unexpectedly high inhalation toxicity when they were exposed to rats as an aerosol (mist). It is unknown whether *Dow Corning* MDX4-4159 50% Medical Grade Dispersion possesses similar toxicity, but as a precautionary measure it is recommended that this product not be used in a manner that will generate respirable sized particles.

Dow Corning MDX4-4159 50% Medical Grade Dispersion is also soluble in *Dow Corning*® OS-10 and OS-20 Fluids, which are recently developed, ozone-safe volatile organic compound (VOC)-excempt 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, *Dow Corning* 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, *Dow Corning* 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, *Dow Corning* 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 (77°F), cure can be accelerated by mild temperature elevation, such as 70°C (158°F).

- Moisture - relative humidity of about 55 to 60% at 25°C (77°F) should be satisfactory. Although moisture is important for cure, as the relative humidity approaches 100%, cure inhibition and decreased lubricity result. Relative humidity below 55% merely extends cure time.

- Time - at 25°C (77°F) 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 (158°F).

Blending With Other Ingredients

Dow Corning MDX4-4159 50% Medical Grade Dispersion can be blended with *Dow Corning*® 360 Medical Fluid, if desired. *Dow Corning* 360 Medical Fluid does not cure at room temperature, nor does it react with *Dow Corning* MDX4-4159 50% Medical Grade Dispersion. The coating from this combination is somewhat softer and waxier than *Dow Corning* MDX4-4159 50% Medical Grade Dispersion alone. While the viscosity and amount of *Dow Corning* 360 Medical Fluid is best determined by testing, 2 to 10 parts by weight of *Dow Corning* 360 Medical Fluid (12,500 centistokes) to 100 parts *Dow Corning* MDX4-4159 50% Medical Grade Dispersion (as supplied) is suggested as a starting point.

Sterilization

After *Dow Corning* MDX4-4159 50% Medical Grade Dispersion has cured, coated articles have been sterilized with dry heat, ethylene oxide, steam autoclaving, or gamma radiation. If sterilization is performed before final lubricity properties are reached, or if radiation sterilization is desirable, testing should be performed to determine the effects of these on lubricity properties.

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

HANDLING PRECAUTIONS

Dow Corning MDX4-4159 50% Medical Grade Dispersion has a closed-cup flash point of less than 38°C (100°F). As such, it is classified as flammable material. Keep away from heat, sparks, and open flame. Sparking electric motors, open flames and other sources of heat, spark or flame should be turned off or removed from the work area. Always provide adequate ventilation.

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Additionally, the diluents suggested for use with *Dow Corning* MDX4-4159 50% Medical Grade Dispersion may be flammable. Avoid heat, sparks, and open flame. Always provide adequate ventilation. Follow instructions provided by the solvent supplier.

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. 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 ON THE DOW CORNING WEBSITE AT DOWCORNING.COM, OR FROM YOUR DOW CORNING SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CORNING CUSTOMER SERVICE.

USABLE LIFE AND STORAGE

When stored in the original unopened container at or below 32°C (90°F), this product has a usable life of 18 months from the date of production.

Because *Dow Corning* 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.

PACKAGING INFORMATION

This product is supplied in 0.47 liter/0.41kg (16fl oz/0.90 lb) bottles, 18.9 liter/16.3kg (5gal/36 lb) pails and 208 liter/179kg (55gal/395 lb) drums. All weights net.

SHIPPING LIMITATIONS

DOT Classification: Flammable.

HEALTH AND ENVIRONMENTAL INFORMATION

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, dowcorning.com or consult your local Dow Corning representative.

ORDERING

To receive product information and to order, contact your Dow Corning sales representative.

LIMITED 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 our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning's sole warranty is that our products will meet the 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.

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