

Dry Film Lubricants



- **Highly Effective Lubrication**
- **Non-Migrating for Easy Handling**
- **Superior Materials Compatibility**
- **Nonflammable for Safety**
- **Compatible with Sterilization Procedures**
- **Very Economical**

General Information

MicroCare has developed a unique family of sophisticated chemistries specifically for the precision lubrication of metal, plastic and ceramic parts. These “dry film” lubricants are packaged for dip, spray or aerosol applications.

About the Technology

Based on proprietary “microdispersion” PTFE technology, these products deposit a thin, smooth film of dry lubricant over precision surfaces. This coverage is extremely uniform and without streaks or clumps. These coatings lubricate medical devices such as catheters, cutting tools, staplers, hypotubes and complex assemblies where metal or plastic surfaces slide against each other. Other applications include extrusion, rolling, drawing and sizing of metal parts; as a mold release for elastomers and plastics; and as a lubricant for machined parts and fittings.

The coatings are quick and easy to apply, even in high-volume production. Extra lubricity is provided by the smooth, uniform coating (see photo, page 2) which enables a 30% reduction in “breakaway” actuation forces. This performance minimizes the “stiction” problems common in low speed, light load applications which, in turn, improves the feel of the device, delivering a silky, almost effortless actuation that cannot be obtained any other way.

In addition, this lubrication makes it much easier to assemble individual parts into final assemblies. This is particularly true in robotic or semi-automatic systems with feeder trays and slides. The parts move more smoothly so technicians and machinery can assemble them with fewer problems.

Improved Performance

MicroCare dry film lubricants actually are “microdispersions” in which the insoluble PTFE solids are suspended in specialized carrier agents. Most competing products use large, heavy particles of PTFE micropowders which quickly fall out of solution. Dry films based on these micropowders require constant agitation and produce inconsistent, clumpy coatings, resulting in uneven actuations (see photo, page 2).

Technical Details

Chemical Family	Fluorotelomer Lubricant in a Nonflammable, Nonaqueous Carrier Agent
Appearance	Milky White Liquid
Aroma	Slight, Ethereal
Telomer Particle Size (mean)	3.7 microns
Telomer Particle Size (range)	1 - 15 microns
Boiling Point	>37° C / 99° F <i>(Varies slightly by Product)</i>

Health, Safety & Environmental Data

Toxicity Rating (ppm, 8-hr., TWA, PEL)	See MSDS
Flashpoint (TCC)	None
Safety Rating	Nonflammable
NFPA	Health: 1; Fire: 0; Reactivity: 1
Ozone Impact	Zero
Non-Exempt Organic Content (g/L)	0
REACH & ELINCS Compliant (See MSDS)	Yes
RoHS and WEEE Compliant	Yes

Packaging

VDX Aerosol	10 oz. / 284 g	MCC-VDX
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Other than the aerosol package, the dry film lubricants are available in one gallon (3.8 liter), five gallon (19 liter) and 55-gallon (200 liter) containers. The exact part numbers vary by blend, PTFE concentration and package size. The VDX spray is packaged in a 10 oz./284 gram aerosol. Contact MicroCare for packaging and shipping details.

The shelf life for all of these products is unlimited.

Related Products

A wide variety of nonflammable precision cleaners are available from MicroCare for the medical device market. These include specialty solvents, degreasers, swabs, optical cleaners and lint-free wipes.

Product Notes

PRODUCT PERFORMANCE. All MicroCare dry film lubricants are compatible with gamma radiation and gas sterilization procedures. All are generally safe on plastics and elastomers. All are nonflammable and ozone-safe.

GUARANTEE: All MicroCare products are covered by MicroCare’s unique, no-hassle, money-back guarantee of satisfaction. Contact MicroCare for details.

AVAILABILITY. The aerosol product is available from MicroCare distributors world-wide. Contact your local distributor at www.MicroCare.com for details. The bulk “dip” products are engineered materials and provided directly to end-users from MicroCare. Contact MicroCare for packaging, concentrations, weights and shipping information.

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MicroCare Technical Specification

MicroCare solves this dilemma in two ways. First, MicroCare uses a specific fluoropolymer which improves the “hang time” of the PTFE particles. No other company specifies their fluoropolymer in this manner. The result is better mixing, better coatings and therefore smoother movements.

In addition, MicroCare uses unique, nonflammable carrier agents which have densities similar to PTFE. Since the materials have similar molecular weights, they mix together better, providing better coatings and smoother actuations with less agitation.

While no secondary curing or treatment is required, the coatings can be made more durable with a brief heat treatment at 310°C/590°F for 3-4 minutes. The coating changes from a flat, white powder to a translucent glaze. This will increase the durability of the coating by several orders of magnitude.

The Products

The XF Dry Lubricant Series

This lubricant family features a nonflammable, fast-evaporating carrier agent with different concentrations of PTFE solids. It is optimized for high-volume applications where universal materials compatibility is essential. It is available up to 15% solids, for dilution by the customer, or in ready-to-use blends. Importantly, non-PTFE lubricants can be used in XF blends, which may offer unique capabilities for some customers.

All the XF mixtures are plastic-safe on all normal materials of construction. These blends are safe for people, safe for the environment, nonflammable and completely inert on all types of plastics. Select the XF series when the application requires the finest quality coating *and* the broadest materials compatibility.

The XC Dry Lubricant Series

The XC series of dry film lubricants use a different, nonflammable, proprietary carrier agent to lubricate at a lower cost than the XF series. The same range of concentrations of PTFE solids is available. Nonflammable and plastic-safe, these lubricants are easy to handle, but with a slightly reduced range of materials compatibility.

Less expensive than the XF series, the XC series products are solely used with PTFE-based coatings. Select the XC products when cost and compatibility are equally critical.

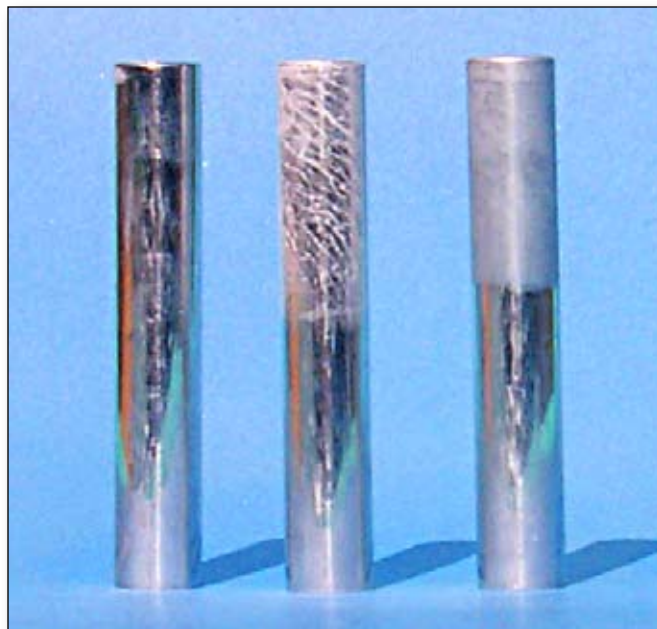
VDX Dry Lubricant Aerosol

The VDX Dry Lubricant (#MCC-VDX) is an aerosol containing a nonflammable carrier agent and PTFE lubricant. It is used for “pinpoint” applications. The aerosol package makes it very easy to spot treat small areas without drips, runs or puddles. Unique in the industry, it is most widely used in applications where oils and silicone lubricants fail due to their tendency to migrate.

The VDX spray is safe on metals, plastics, ceramics and other advanced materials. This product can also be used as a mold release in critical plastic injection molding applications.

The VDX Spray delivers the lubricant as an atomized spray. The non-toxic and nonflammable carrier evaporates instantly and leaves the PTFE lubricant as a residue film. While being sprayed onto the substrate, the lubricant can be removed easily. After 20 seconds the carrier evaporates, leaving a thin, uniform dispersion that is relatively long lasting.

Select the aerosol when dip-tank lubrication would deposit too much lubricant or deposit it in places where it is not desired.



This photo shows the performance of MicroCare dry film coatings. The eyelet on the left is uncoated. The center eyelet has been coated using an old-style powdered PTFE and shows streaks and runs. The smooth “haze” on the right was deposited by a modern MicroCare microdispersion. Both used the same concentration of solids.

Packaging and Support

It is important to note that MicroCare offers a wide variety of options for these products. Some customers prefer a concentrated blend which they dilute as required. Other clients prefer a ready-to-use product to minimize handling. Still other companies prefer a customized blend, optimized for their specific application. MicroCare can assist with any option, and engineers will save time and money with the proven performance of MicroCare lubricants.

Similarly, MicroCare provides users with exceptional technical guidance for these products. MicroCare’s experts can assist clients with the proper procedures and regulatory compliance for ordering, handling, shipping, storing and recycling these materials. Other engineering services involve dipping processes, engineering details related to high-volume application methods, cleaning processes prior to coating, agitation systems, and/or adapting these products to new environmental or safety challenges.

Other Benefits

- Superior stability (“hang time”) with minimal agitation
- Easy, nonflammable handling, storage and use
- A non-nutritive environment inimical to biologic growth
- Minimal capital investment
- Non-migrating deposition
- Compatible with most sterilization procedures
- Excellent environmentally, including “SNAP”-approved
- MicroCare is ISO 9001-2000 registered

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