



9A-XF

SOLID FILM LUBRICANT: HEAT CURE

SERIES E753

EXTRA FINE PIGMENT PARTICLE MAKEUP



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DESCRIPTION

Sandstrom 9A-XF Dry Film Lubricant is a paint-like coating containing molybdenum disulfide and corrosion inhibiting pigments. This heat curing material prevents corrosion, galling, seizing, and fretting. It is a low-friction coating which exhibits long wear life when operated at -320°F to +500°F under loads exceeding 100,000 psi. 9A-XF should be applied where maximum wear life and corrosion protection from a dry film lubricant are required.

9A-XF can be applied to a wide variety of surfaces by spraying or dipping. Once Sandstrom 9A-XF has been heat cured, it is virtually unaffected by atmospheric and fretting corrosion, solvents, acids, oils, degreasers, and is not re-softened at elevated temperatures.

Sandstrom 9A-XF offers similar performance properties as 9A but features extra fine pigment particles with a higher viscosity.

Use Sandstrom #099 as an alternative to 9A-XF where low VOC and no lead are preferred. Sandstrom #099's performance is comparable to 9A-XF.

OUTSTANDING FEATURES/BENEFITS

- Excellent Corrosion Protection
- Chemical Resistance
- Long Wear Life
- **CONTAINS NO GRAPHITE**

NOTICE

Before using this product, read all warnings, limitations and safety information printed on the product label, Safety Data Sheet (MSDS), and Technical Data Sheet.

TYPICAL USES

Sandstrom 9A-XF is an excellent solution to the problem of lubricating parts:

- That will be operated in corrosive atmospheres.
- That may be stored for long periods.
- That are seldom lubricated once they leave the factory and where permanent lubrication is desired.
- Where operating pressures exceed the load-bearing capacities of ordinary oils and greases.
- Where parts may be subjected to frequent disassembly.
- Where "clean operation" is desired (9A-XF will not collect dirt and debris like grease and oils).
- Where a protective coating and sacrificial break-in lubricant is needed.
- Where fretting and galling is a problem (such as splines, universal joints, and keyed bearings).
- Where easy release is desired (such as fasteners and PVC molds).

COMPOSITION AND PHYSICAL PROPERTIES

Net Weight per gallon[^] <i>ASTM D1475</i>	9.5 lbs. ± 0.2 lb.	Vehicle	Epoxy-Phenolic
Weight Solids[^]	39% ± 2%	Lubricating Pigment	Molybdenum Disulfide
VOC – water	5.6748 lbs./gallon	Color	Flat Dark Gray, Black
Viscosity[^]	46 - 50 seconds, #1 EZ Zahn cup @ 77°F	Cleanup	See CLEANUP
Shelf Life	1 year from date of shipment	Thinner	See THINNING
Storage Conditions	Below 100°F	Coverage Rate * <i>ASTM D1400</i>	660 sq. ft./gal @ 0.5 mil
Flash Point	23° ± 2°F Setaflash	Dry Film Thickness	0.5 mil

*Actual figures do not include spray loss. Also allow for surface irregularities and porosity, as well as material loss when mixing.

[^]Property tested with each production batch.

PERFORMANCE AND FUNCTIONAL PROPERTIES

Corrosion Protection:	Operating Temperature Range	-320°F to +500°F
<i>ASTM B117: Steel</i> <i>MIL-DTL-16232 Type M Class 3</i>	> 1500 hours * (at 0.5 mil)	*Tests halted before failure.

IMPORTANT NOTICE TO BUYER / WARRANTY AND LIMITATIONS ON OUR LIABILITY

We warrant our products to be free of manufacturing defects and that they meet our current published physical properties and specifications. All information and suggestions presented are rendered gratis and are accurate to the best of our knowledge. They are based on technical data we believe to be reliable and are intended for use by persons having skill and "know-how" at their own discretion and risk. Prior to use, customers are cautioned to determine the suitability of our products for any given application through their own testing. NO WARRANTY IS MADE, EXPRESS OR IMPLIED, REGARDING SUCH INFORMATION, THE DATA ON WHICH IT IS BASED OR THE RESULTS OBTAINED FROM ITS USE OR THAT OUR PRODUCT SHALL BE MERCHANTABLE OR FIT FOR ANY PARTICULAR PURPOSE. SUCH STATEMENTS ARE NOT INTENDED TO SUGGEST INFRINGEMENT OF ANY PATENT. Since conditions of use of our products are beyond our control, all suggestions and statements are made without guarantee, warranty or other responsibility, express or implied, on our part. We assume no responsibility for results obtained, or damages incurred, from their use beyond replacing material proved to be defective or refunding the purchase price of such material at our option. Acceptance of delivery of our product means you have accepted the terms of this warranty, whether or not purchase orders of other documents state terms that vary from this warning. No seller is authorized to make any representations or warranty or assume any other liability on our behalf with any sales of our products. SANDSTROM PRODUCTS COMPANY

GENERAL

Sandstrom 9A-XF is a paint-like material consisting of lubricative pigments dispersed in a thermosetting resin system thinned with appropriate solvents. For maximum service, the APPLICATION INSTRUCTIONS MUST BE FOLLOWED CLOSELY.

FILM THICKNESS & ENGINEERING TOLERANCE

As supplied, Sandstrom 9A-XF will yield a film thickness of about 0.0005 inches per dip coat. Usually engineering tolerances will permit necessary minimum film buildup of 0.0002 to 0.0003 inches without interference. If excess buildup does occur and a force fit is necessary, burnishing lightly will assist in mating the parts. The remaining excess will be worn away in the first few cycles of operation. Whenever possible, the proper tolerances should be designed into the part.

COVERAGE

One gallon of this material will cover 660 sq. ft. with a dry film thickness of 0.0005 inches. Coverage depends upon method of application and other variables such as overspray and type of surface to be coated. Above coverage rates are based on 100% efficiency.

SURFACE PREPARATION

Please contact Sandstrom Products Company for substitute surface preparations if recommended steps cannot be followed.

Application on steel. Pre-clean surface with aliphatic naphtha or any other EPA compliant cleaner that sufficiently cleans surface to pass ASTM F22. Abrasive blast surface with 180-220 grit aluminum oxide (25-50 RMS optimum). Phosphate IAW MIL-DTL-16232 (weight should be 11-22 g/m²), type M, class 3 (optimal performance) or type Z, class 3.

Application on stainless steels. Pre-clean surface with aliphatic naphtha or any other EPA compliant cleaner that sufficiently cleans surface to pass ASTM F22. Abrasive blast surface with 180-220 grit aluminum oxide (25-50 RMS optimum). Passivate surface with ASTM A967, types nitric 1, nitric 2 or nitric 3, as applicable.

Application on aluminum and aluminum alloys. Pre-clean surface with aliphatic naphtha or any other EPA compliant cleaner that sufficiently cleans surface to pass ASTM F22. Sulfuric acid anodize IAW MIL-A-8625 and seal surface with hot deionized water (>180°F for 30 minutes).

Application on titanium and titanium alloys. Degrease surface to be coated with aliphatic naphtha or any other EPA compliant cleaner that sufficiently cleans surface to pass ASTM F22. Abrasive blast surface with 180-220 grit aluminum oxide (25-50 RMS optimum) and alkaline anodize.

Application on copper and copper alloys. Pre-clean surface with aliphatic naphtha or any other EPA compliant cleaner that sufficiently cleans surface to pass ASTM F22. Abrasive blast surface with 180-220 grit aluminum oxide (25-50 RMS optimum). Form a black oxide finish on surface.

IMPORTANT! DO NOT TOUCH CLEAN SURFACE WITH FINGERS - OIL FROM THE HANDS WILL INTERFERE WITH PROPER COATING ADHESION. Whenever possible, treat both contact surfaces (i.e., the shaft and the bearing).

STIRRING

IMPORTANT! THIS LUBRICANT CONTAINS HEAVY PIGMENTS WHICH SETTLE RAPIDLY. THEREFORE, IT SHOULD BE STIRRED THOROUGHLY BEFORE USE AND CONTINUOUSLY DURING APPLICATION.

THINNING

For spraying * - Use 2 parts 9A-XF to 1 part PM solvent.

For dipping * - Use slow-drying thinner mixture of PM and PMA, blended 1:1 (Sandstrom D122 Thinner), as to provide proper run-off characteristics. The suggested starting point is 4 parts 9A-XF to 1 part thinner mixture.

* By volume.

APPLICATION

Sandstrom 9A-XF should be sprayed or dipped to the desired film thickness (usually 0.0003 to 0.0007 inches). Allow parts to flash off **at least** 30 minutes at 77°F ± 5°F and ≤ 70% relative humidity. Lower temperatures and/or higher humidity may require a longer dry time to prevent film defects.

BAKING

Bake for 1 hour @ 400°F in a forced draft oven to yield optimum corrosion protection and wear life.

IMPORTANT! The hour begins when **the part** has reached 400°F, NOT when it is placed in the Class A oven. In cases of very thick metals, an extra hour may be required to bring the part up to the proper temperature. Thermocouples may be used to determine the true temperature of the metal. However, if the metallurgical properties are adversely affected by baking at this temperature (i.e., ALUMINUM, in some cases), we recommend use of Sandstrom LC-300, which cures for one hour at 300°F (149°C). Sandstrom #099 could also be used, as it cures in temperatures ranging from 300°F to 400°F.

IT IS IMPERATIVE TO USE A PROPERLY VENTED OVEN (DIRECT VENT TO THE OUTSIDE).

CLEANUP

Use the same solvents for cleaning tools as are recommended for thinning.

REMOVAL

In the event it is necessary to remove Sandstrom 9A-XF, physical removal is best (such as grit blasting, sanding, or grinding).

WARNINGS: Constant stirring is imperative for best results.

DANGER! USE WITH ADEQUATE VENTILATION.

Strict compliance to the instructions given in Surface Preparation, Thinning, Application, and Baking is very essential for obtaining optimum results.