

DryFilm 2000/IPA Dispersion

Coating and Release Systems

Product Information

DryFilm 2000/IPA dispersion is an extremely stable dry lubricant designed for specialized applications, such as blade coating and grease thickening. In addition, the dispersion can be added to liquids (oils) and semisolid formulations to enhance lubricity, promote thickening, and retard fouling. The superior performance of DryFilm 2000/IPA dispersion in these applications is a result of the small size and uniformity of its particles and the fact that it has a higher molecular weight than DryFilm formulations. DryFilm 2000/IPA dispersion is listed in **Table 1**.

Table 1. DryFilm 2000/IPA Dispersion

Product	Solvent
2000/IPA	Isopropyl Alcohol (IPA)

Dilution

The extendability of DryFilm 2000/IPA is a major asset, because it allows the user to customize the dispersion for ease of application and adequacy of coverage. DryFilm 2000/IPA dispersion can be extended with additional amounts of the base solvents.

DryFilm 2000/IPA is furnished as a dispersion at 20% solids by weight. **Table 2** is a dilution table showing the total parts DryFilm 2000/IPA dispersion and solvent required to achieve a range of final concentrations by weight.

Table 2. DryFilm 2000/IPA Dispersion

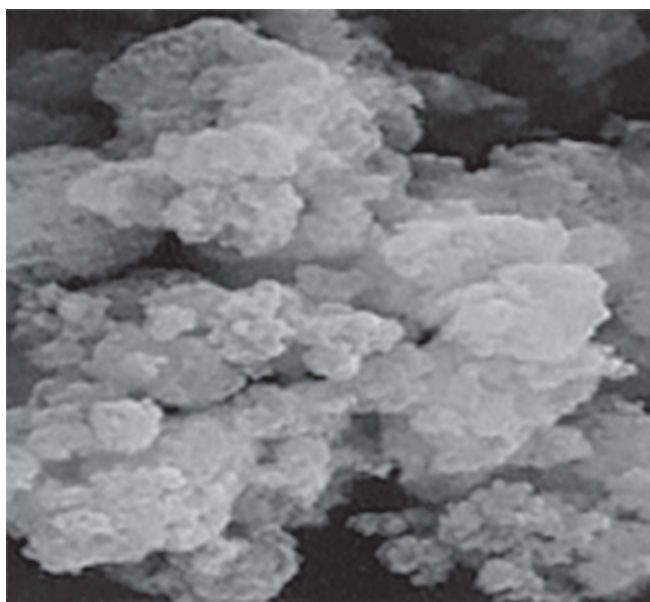
DryFilm 2000/IPA Dispersion	Solvent	Solids wt%	Dilution Table		
			Final Conc. wt%	Parts DryFilm 2000/IPA Dispersion	Parts Solvent
2000/IPA	IPA	20	10.0	1	1
			5.0	1	3
			2.5	1	8
			1.0	1	20

Properties of Solvents

Table 3 shows the properties of DryFilm 2000/IPA dispersion. Additional details are contained in the product's Safety Data Sheet (SDS).

Table 3. Properties of Solvent

Solvent	Isopropyl Alcohol (IPA)
Composition	$\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$
CAS#	67-63-0
Boiling Point	82 °C (179.6 °F)
Freezing Point	-89 °C (-128.2 °F)
Density, g/cc (lb/gal)	0.84 (25 °C [77 °F])
Vapor Pressure (20 °C [68 °F])	33 mmHg
Odor	Alcohol
Color	Colorless
Flash Point	11 °C (52 °F) TCC
Flammability—LEL	2.0%
Flammability—UEL	12.7%
Exposure Limits—AEL	400 ppm, 8- and 12-hr TWA
Exposure Limits—PEL	400 ppm, 8-hr TWA
Exposure Limits—TLV	400 ppm, 8-hr TWA, 500 ppm STEL
Exposure Limits—WEEL	—
TSCA Status	Listed
DOT	Flammable Liquid



The unique size and shape of the PTFE particles in DryFilm 2000/IPA dispersion produce greases that result in less wear, lower friction, and smaller temperature rises in use.

Application

DryFilm 2000/IPA dispersion is applied by any of several methods, including dipping, spraying, or brushing onto a prepared surface. After application, DryFilm 2000/IPA dispersion can be air dried or melt coated.

For melt coating, the heated surface should be heated to a temperature of 340–360 °C (644–680 °F); the temperature should be held for 5–10 min. A soft cloth should be used to remove residual solids from the metal surface.

Melt Coating for Improved Adhesion

Adhesion of DryFilm dispersion coatings can be improved by melting the deposited solids. After the dilute dispersions are applied and the solvent is allowed to evaporate at room temperature, the surface can be heated to cure.

The proper fusion temperature for DryFilm 2000/IPA is 340–360 °C (644–680 °F). Note that these are the recommended temperatures for the coated surface itself.

- Measure the surface temperature directly with a thermocouple. You may observe a change in coating appearance, which may alter initially from an opaque white to a darker, translucent look and then appear clear and wet.
- Maintain the temperature of the coated surfaces (not the temperature of the ambient air) at the correct temperature for 5–10 min.
- If a white residue is left on the metal surface, buff with a soft cloth.
- In melt coating DryFilm dispersions, provide adequate ventilation and observe all the precautions outlined in the section titled “Safe Handling and Storage.”

Product Description

DryFilm 2000/IPA dispersion is a fluorotelomer, a highly fluorinated substance with a low molecular weight. The functional ingredient is polytetrafluoroethylene, or PTFE, which has an extremely low coefficient of friction and, thus, imparts high lubricity and excellent nonstick properties.

Because of the chemical stability of PTFE, DryFilm 2000/IPA dispersion is resistant to attack by nitric acid, hydrochloric acid, sodium hydroxide, and alcoholic potassium hydroxide in most applications. It is also extremely stable thermally and can be heated above its melting point before appreciable decomposition begins. DryFilm 2000/IPA dispersion is essentially insoluble in all nonfluorinated solvents. Typical properties of DryFilm 2000/IPA dispersion are shown in **Table 4**.

Table 4. DryFilm 2000/IPA Dispersion Typical Properties

Dry Film 2000/IPA Dispersion	
Solids, wt%	20
Melting Point	323 °C (613.4 °F)
Telomer Solids	
Molecular Weight	40,000
Density, g/cc	2.16
Particle Size, µm	
Average Bulk	4–12
Primary Particle	<0.2
Dispersion	
Volatiles, %	80
Odor	Alcohol
Form	Fluid Dispersion
Color	Translucent
Density, lb/gal	8.3
Solvent	IPA
Shelf Life	2 years

Safe Handling and Storage

General Practices

Mix DryFilm 2000/IPA well before use. Overheating polymers, including those in the PTFE polymer in DryFilm 2000/IPA fluorotelomer dispersion, may liberate potentially hazardous vapors and particulate material. Heating DryFilm 2000/IPA dispersion above 290 °C (554 °F) may produce a fine particulate material upon condensation. When heated above its thermal decomposition temperature (400 °C [752 °F]), oxidation of the polymer may occur—producing acid gases, such as carbon fluoride, hydrogen fluoride, and fine particulate decomposition products. Further precautions are contained in the Safety Data Sheets (SDS) for DryFilm 2000/IPA, and the appropriate solvents can be consulted for more detailed information.

Medical Applications

For medical application and development, consult Chemours.

Food Contact Compliance

DryFilm 2000/IPA is not approved for food contact applications.

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