

DuPont™ Teflon® PTFE DISP 33 Fluoropolymer Resin

PTFE AQUEOUS DISPERSION

Product Information

Product Description

DuPont™ Teflon® PTFE DISP 33 is a milky white aqueous PTFE dispersion stabilized with a non-ionic surfactant. DISP 33 is typically used to coat woven glass cloth and has been especially formulated to provide void-free coatings with enhanced surface smoothness, adhesion, gloss and weldability. When properly processed, the PTFE resin in DISP 33 exhibits the superior properties typical of the fluoropolymer resin: retention of properties after service at 260 °C (500 °F), and useful properties at -240 °C (-400 °F).

DISP 33 aqueous dispersion provides:

- enhanced surface smoothness, adhesion, gloss and weldability
- inertness to nearly all industrial chemicals and solvents
- stability at high temperatures
- excellent dielectric properties
- lowest coefficient of friction of any solid material
- excellent weatherability
- non-stick characteristics

Typical Applications

- Coated woven fiber-glass fabric used in architectural, high-performance industrial, food processing and electronics applications
- Impregnated packing made from braided fibers for severe chemical and thermal service
- Cast film for capacitor dielectrics or chemical barriers
- Surface coatings for metallic or other high-temperature substrates

Food Contact Compliance

Properly processed products (sintered at high temperatures common to the industry) made from DISP 33 resin can qualify for use in contact with food in compliance with FDA 21 CFR 177.1550 and European Regulation (EU) No 10/2011. For details and information, please contact your DuPont representative.

Processing

Conventional dip or flow techniques can be used for coating or impregnating high temperature fabrics, fibers and other products with DISP 33. A continuous PTFE resin coating on woven fabrics made of fiberglass, Nomex® aramid fiber, Kevlar® aramid fiber, or other high-temperature resistant fibers can be made by dip coating. Multiple passes may be used to build the desired thickness to produce a smooth, crack-free coating. DISP 33 is

formulated to provide good rewetting on each pass. Each coating layer is usually dried to remove water (typically at 120 °C [250 °F]), baked to remove the wetting agent (typically at 270 °C [518 °F]), sometimes calendered, and finally heated above the crystalline melting point of the resin particles (approximately 337 °C [639 °F]).

Products utilizing entrained PTFE resin particles only for their lubricating or hydrophobic properties are dried and baked, but not heated above the crystalline melting point of the particles. For example, rope-like products, such as shaft packings, can be made from braided yarn in a variety of cross sections. The dispersion wets internal surfaces and promotes penetration of the small PTFE particles. The unmelted particles are sheared and retained as an impregnant, even when compressed in service and exposed to steam or chemicals. Unmelted particles also can improve flexibility and flex life in woven fabrics used in hot-gas filtration applications.

Other solid or liquid ingredients can be added to DISP 33 to provide specific processing or finished product behavior.

Safety Precautions

Before processing any fluoropolymers, read the Material Safety Data Sheet, available upon request from our Customer Care Group at (800) 207-0756 in the US or (302) 996-7906 (outside of the US). Also read the detailed information in the latest edition of the "Guide to the Safe Handling of Fluoropolymer Resins," published by the Fluoropolymers Division of The Society of the Plastics Industry (www.fluoropolymers.org) or by PlasticsEurope (www.plasticseurope.org).

Storage and Handling

DISP 33 must be properly stored to maximize the stability of the dispersion. The PTFE particles will settle on prolonged standing and/or on prolonged heating - temperatures above 40 °C (104 °F) should be avoided. The dispersion must be protected from freezing, which will cause irreversible settling. The optimum storage temperature range is 7–24 °C (45–75 °F). If dispersions are to be stored for extended periods, lower-temperature storage is desirable. For optimal performance, DISP 33 should be gently mixed or rolled monthly and prior to use.

Ammonium hydroxide is used by DuPont to set the pH to 9.5-11.0 at the time of shipment. High ambient temperatures can deplete the ammonium hydroxide level and reduce the pH. Declining pH eventually favors bacterial growth, which causes odor and scum. The pH of opened containers should be measured and maintained between 9.5 and 11.0.



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Typical Property Data for DuPont™ Teflon® PTFE DISP 33 Aqueous Fluoropolymer Resin

Property Test	Test Method		Unit	Typical Value
Solids Content (% PTFE by weight)	ASTM D 4441	ISO 12086	%	61
Density of Dispersion (at 60% solids)	ASTM D 4441	ISO 8962	g/cm ³	1.52
Surfactant Content on PTFE Solids	ASTM D 4441	ISO 8962	%	6.5
Dispersion Particle Size, average diameter		DuPont	µm	0.220
pH of Dispersion	ASTM E 70	ISO 1148		10
Standard Specific Gravity of Sintered Resin	ASTM D 4895	ISO 12086		2.220
Brookfield Viscosity (at 25°C)	ASTM D 2196	ISO 2555	mPa·s	25

Note: Teflon® PTFE DISP 33 meets the requirements of ASTM D 4441-04, type II, grade 6, class A. Typical properties are not suitable for specification purposes.

High-speed stirring, pumping, or any other violent agitation must be avoided to minimize sheared particles or coagulation and to minimize foaming. Ideally, the dispersion should be conveyed by gravity from storage to processing stations.

Storage and handling areas should be clean. Keep dispersion drums closed and clean to avoid both contamination and coagulation by drying at the liquid surface. High processing temperatures will cause even very small foreign particles to become visible or to make defects in finished products. Good housekeeping and careful handling are essential.

Packaging

DISP 33 is packaged in 30-L (8 gal) non-returnable drums and 1000-L (264 gal) recyclable containers. Contact the local DuPont sales office for package sizes available in your specific geographic area.

This product is manufactured with technology that meets the goals of the U.S. Environmental Protection Agency (EPA) 2010/15 PFOA stewardship program. See www.fluoropolymers.dupont.com for more details.

for more information, visit
www.teflon.com/industrial

for sales and technical support contacts, visit
www.teflon.com/industrialglobalsupport

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For medical emergencies, spills, or other critical situations, call 1.800.441.7515 within the United States. For those outside of the United States, call 1.302.774.1000.

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