DuPont™ Teflon® PTFE DISP 30 Fluoropolymer Resin

PTFE AQUEOUS DISPERSION

Product Information

Product Description

DuPont™ Teflon® PTFE DISP 30 is a milky white aqueous PTFE dispersion stabilized with a non-ionic surfactant. It is a general-purpose product, often preferred for coating and impregnating woven goods and for some coating processes. It imparts properties unique to PTFE resin to porous structures, as well as to base materials when used as an additive. When properly processed, the PTFE resin in DISP 30 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 30 aqueous dispersion provides:

- 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
- Anti-drip additive for plastics
- Binder for battery anode or cathode matrixes

Food Contact Compliance

Properly processed products (sintered at high temperatures common to the industry) made from DISP 30 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 30. 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 30 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 can also improve flexibility and flex life in woven fabrics used in hot-gas filtration applications.

Other solid or liquid ingredients can be added to DISP 30 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 30 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 30 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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Material Safety Data Sheet

DISP 30

Version 2.3

Revision Date 09/15/2011 Ref. 130000101721

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	DISP 30
Tradename/Synonym	:	TE3970
MSDS Number	:	130000101721
Manufacturer	:	DuPont 1007 Market Street Wilmington, DE 19898
Product Information	:	1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency	:	1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency	:	CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Potential Health Effects

Before use:, Read the "Fluoropolymers Safe Handling Guide".

Skin

Polytetrafluoroethylene : Dust may cause: Discomfort, itching, redness, or swelling.

Eyes

Polytetrafluoroethylene : Dust may cause: tearing, Redness, Discomfort.

Polyoxyethylene alkylether : Causes eye irritation.

Inhalation

Polytetrafluoroethylene : Dust may cause: Respiratory tract irritation
The thermal decomposition vapours of fluorinated polymers may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.
Symptoms usually appear after several hours and resolve within 1 to 2 days.
Repeated episodes of polymer fume fever may result in persistent lung effects.
Polymer may extensively decompose if severely overheated or burned.
Inhalation of fluorinated decomposition products may cause lung irritation and pulmonary oedema.
Symptoms may be delayed for several hours.
Symptoms may be severe or life-threatening.

Carcinogenicity
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Polytetrafluoroethylene	9002-84-0	55 - 65 %
Polyoxyethylene alkylether	60828-78-6	1 - 5 %
Water	7732-18-5	35 - 40 %

SECTION 4. FIRST AID MEASURES

Skin contact : Take off contaminated clothing and shoes immediately. Wash off immediately with soap and plenty of water.

Eye contact	:	Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
Inhalation	:	Remove person to fresh air. If signs/symptoms continue, get medical attention. Move to fresh air in case of accidental inhalation of fumes from overheating or combustion.
Ingestion	:	If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Get medical attention.
General advice	:	Never give anything by mouth to an unconscious person. If breathing is irregular or stopped, administer artificial respiration. If symptoms persist, call a physician.

SECTION 5. FIREFIGHTING MEASURES

Flammable Properties

Flash point	:	does not flash
Ignition temperature	:	530 - 550 °C (986 - 1,022 °F)
Autoignition temperature	:	520 - 560 °C (968 - 1,040 °F)
Fire and Explosion Hazard	:	Difficult to ignite, and flame goes out when initiating source is removed. Hazardous thermal decomposition products: Hydrogen fluoride toxic or highly toxic fluorides Carbon monoxide
Suitable extinguishing media	:	Water spray, Carbon dioxide (CO2), Foam, Dry chemical
Firefighting Instructions	:	Wear self-contained breathing apparatus and protective suit. Wear neoprene gloves during cleaning up work after a fire. Protect from hydrogen fluoride fumes which react with water to form hydrofluoric acid.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	:	Refer to protective measures listed in sections 7 and 8. Material can create slippery conditions.
Spill Cleanup	:	Clean contaminated floors and objects thoroughly while observing environmental regulations. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Accidental Release Measures	:	Try to prevent the material from entering drains or water courses.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel)	:	Avoid contact with skin, eyes and clothing. Avoid inhalation of vapour or mist. General precaution for all plastics and elastomers: Provide appropriate exhaust ventilation at dryers, machinery and at places where dust or volatiles can be generated. Avoid contact with skin, eyes and clothing. Do not contaminate tobacco products. Wash hands before breaks and immediately after handling the product. Do not breathe vapours or spray mist.
Handling (Physical Aspects)	:	Provide appropriate exhaust ventilation at machinery.
Storage	:	Keep in a dry, cool place. No special restrictions on storage with other products. Keep away from tobacco products. Do not freeze.
Storage temperature	:	10 - 27 °C (50 - 81 °F)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls : Local exhaust ventilation should be employed to minimize airborne contamination.

Personal protective equipment

Respiratory protection : In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.

Hand protection : Additional protection: Impervious gloves, When handling hot material, use heat resistant gloves.

Eye protection : Safety glasses with side-shields Wear coverall chemical splash goggles and face shield when the possibility exists for eye and face contact due to splashing or spraying of material.

Skin and body protection : Wear as appropriate:
Apron
Boots
Chemical-resistant gloves

Exposure Guidelines

Exposure Limit Values

DISP 30

Dust (inhalable and respirable fraction)

TLV	(ACGIH)	10 mg/m3 TWA Inhalable particles. 3 mg/m3 TWA Respirable particles.
PEL:	(OSHA)	5 mg/m3 TWA Respirable fraction. Remarks All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3. 15 mg/m3 TWA Total dust.

Polytetrafluoroethylene				
AEL *	(DUPONT)	10 mg/m3	8 hr. TWA	Total dust.
AEL *	(DUPONT)	5 mg/m3	8 hr. TWA	Respirable dust.

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	dispersion
Color	:	milky
Odor	:	slight, ammoniacal
pH	:	9 - 11
Melting point/range	:	327 - 342 °C (621 - 648 °F)
Boiling point/boiling range	:	100 °C (212 °F) Water
% Volatile	:	35 - 40 % Water
Density	:	1.4 - 1.7 g/cm3
Water solubility	:	Solids are insoluble., Dispersion may be diluted.
Limiting oxygen index	:	> 95 %

SECTION 10. STABILITY AND REACTIVITY

Stability	:	Stable under recommended storage conditions.
Conditions to avoid	:	Avoid heating for prolonged periods above the recommended upper processing limit.
Incompatibility	:	Alkali metals Strong oxidizing agents, Halogenated compounds
Hazardous decomposition	:	Hazardous thermal decomposition products:, Fluorinated hydrocarbons,

products Carbonyl fluoride, Hydrogen fluoride

SECTION 11. TOXICOLOGICAL INFORMATION

DISP 30

Skin irritation : May cause skin irritation in susceptible persons.

Eye irritation : Mild eye irritation

Polytetrafluoroethylene

Oral LD50 : > 11,280 mg/kg , rat

Skin sensitization : Patch test on human volunteers did not demonstrate sensitization properties., human

Repeated dose toxicity : Oral - feed
rat
No toxicologically significant effects were found.

Further information : The substance is a polymer and is not expected to produce toxic effects.

Polyoxyethylene alkylether

Dermal LD50 : 8,684 mg/kg , rabbit

Oral LD50 : 7,639 mg/kg , rat

Repeated dose toxicity : Oral - feed
rat
Reduced body weight gain, Organ weight changes

Further information : The substance is a polymer and is not expected to produce toxic effects.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

Polytetrafluoroethylene

: The substance is a polymer and is not expected to produce toxic effects.

Polyoxyethylene alkylether

96 h LC50	:	Pimephales promelas (fathead minnow) 103 mg/l
48 h EC50	:	Daphnia magna (Water flea) 164.9 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal	:	Preferred option for disposal is to separate solids from liquid by precipitation and decanting or filtering. Dispose of dry solids in a landfill that is permitted, licensed or registered by a state to manage industrial solid waste. Discharge liquid filtrate to a wastewater treatment system. Incinerate only if incinerator is capable of scrubbing out hydrogen fluoride and other acidic combustion products.
Environmental Hazards	:	Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

SECTION 15. REGULATORY INFORMATION

TSCA Status	:	On the inventory, or in compliance with the inventory
SARA 313 Regulated Chemical(s)	:	SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
California Prop. 65	:	WARNING! This product contains a chemical known to the State of California to cause cancer.Tetrafluoroethylene

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PA Right to Know Regulated Chemical(s)	:	Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Polytetrafluoroethylene

SECTION 16. OTHER INFORMATION

Restrictions for use	:	Do not use DuPont materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract that is consistent with DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative. You may also request a copy of the DuPont POLICY Regarding Medical Applications H-50103-3 and DuPont CAUTION Regarding Medical Applications H-50102-3.

Before use also read the following bulletin(s):
Fluoropolymer Safe Handling Guide published by the Society of the Plastics Industry.

For further information contact the local DuPont office or DuPont's nominated distributors.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Significant change from previous version is denoted with a double bar.

Typical Property Data for DuPont™ Teflon® PTFE DISP 30 Fluoropolymer Resin

Property Test	Test Method		Unit	Typical Value
Solids Content (% PTFE by weight)	ASTM D 4441	ISO 12086	%	60
Density of Dispersion (at 60% solids)	ASTM D 4441	ISO 8962	g/cm^3	1.51
Surfactant Content on PTFE solids	ASTM D 4442	ISO 8963	%	6
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: PTFE DISP 30 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 30 is packaged in 30 and 114-L (8 and 30 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

CAUTION: Do not use DuPont materials in medical applications involving permanent implantation in the human body or contact with bodily fluids or tissues unless the material has been provided from DuPont under a written contract that is consistent with DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative. You may also visit **www.teflon.com/industrial** to download a copy of the "DuPont POLICY Regarding Medical Applications" H-50103-3 and "DuPont CAUTION Regarding Medical Applications" H-50102-3.

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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HOW TO USE THE DUPONT™ TEFLON® BRAND NAME WITH YOUR PRODUCT

Teflon® is a registered trademark of DuPont for its brand of fluoropolymer resins, coatings, films and dispersions. The Teflon® brand name is licensed by DuPont in association with approved applications. Without a trademark license, customers may not identify their product with the Teflon® brand name as DuPont does not sell such offerings with the Teflon® trademark. Unlicensed customers may refer to the DuPont product offering with only the DuPont name and product code number descriptor as DuPont sells its product offerings. There are no fair use rights or exhaustion of rights to use the Teflon® trademark from buying from DuPont, a DuPont customer or a distributor without a trademark license from DuPont.

If you are interested in applying for a trademark licensing agreement for the DuPont™ Teflon® brand, please contact DuPont at (800) 207-0756 in the U.S., or call (302) 996-7906 (outside of the U.S.).

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