

DuPont™ Teflon®

Industrial Coatings

Teflon® S Coatings 958-303 and 958-313

Description

Teflon® S 958-303 and *Teflon® S 958-313* are one-coat, solvent-based coatings specially formulated to provide a tough, durable film for dry lubrication, with excellent salt spray resistance. In addition, *Teflon® S 958-313* has exceptionally good abrasion resistance. They can be cured at temperatures as low as 177°C (350°F). Refer to **Table 1** for physical property data.

FDA Status

Teflon® S 958-303 and *Teflon® S 958-313* do not comply with FDA regulations governing components of coatings for direct food contact.

Table 1
Typical Properties
Teflon® S Resin-Bonded Lubricant

Code	958-303	958-313
Color	Black	Black
Weight Solids, %	26.3	24.2
Volume Solids, %	19.4	18.0
Density, kg/L (lb/gal)	1.04 (8.7)	1.04 (8.6)
Coverage, m ² /L (ft ² /gal)*	7.8 (311)	7.2 (289)
Viscosity, cP	200–800	200–800
Maximum Use Temperature**, °C (°F)	260 (500)	260 (500)

Note: These figures are averages and may vary.

* Theoretical coverage at 25 µm (1 mil) assuming 100% efficiency.

** Abrasion resistance is reduced at temperatures above 205°C (400°F).

Surface Preparation

For aluminum, stainless steel, and carbon steel:

1. Clean (vapor degrease, prebake, or other).

2. Lightly grit-blast with aluminum oxide.

For **carbon steel**, a zinc or manganese phosphate conversion coating should be applied after grit-blast. These products also adhere well to most hard anodized aluminum surfaces.

Application

1. Bring coating to room temperature. Shake or agitate to reincorporate any settled material.
2. Product is supplied ready-to-spray. If thinning is desired, add a small amount of TN-8718 (n-methyl pyrrolidone NMP) with steady mixing. If faster evaporation is needed use TN-8595 or a 50:50 mixture of NMP:MIBK with care. This thinner must be added slowly with constant stirring.
3. Use conventional industrial spray equipment.
4. Recommended film thickness is 15–20 µm (0.6–0.8 mil). The heavier film build will improve salt spray corrosion resistance.

Baking

Note: All temperatures refer to metal temperature.

1. Flash or force dry for 5 min.
2. Recommended bake for 15 min at 343°C (650°F).

These products can be cured at temperatures as low as 177°C (350°F) by extending the cure time. However, the toughness and durability of the coating decreases as the cure temperature is reduced below 343°C (650°F).

The color will change at the higher bakes to a brown cast, but performance will not be affected.

Storage and Stability

Teflon[®] S 958-303 is stable for at least 18 months when stored at normal room temperature of 18–24°C (65–75°F).

Teflon[®] S 958-313 is stable for at least 12 months when stored at normal room temperature of 18–24°C (65–75°F).

Safety

Follow normal industrial safety practices for handling and applying *Teflon*[®] products. Industrial experience has clearly shown *Teflon*[®] materials can be processed and used at elevated temperatures without hazard providing adequate ventilation is

used. Ventilation should be available at baking temperatures 275°C (525°F) and above. Before using *Teflon*[®] S, read the Material Safety Data Sheet (MSDS) and the detailed information in the “Guide to the Safe Handling of Fluoropolymer Resins,” latest edition, published by the Fluoro-polymers Division of The Society of the Plastics Industry.

When grit-blasting *Teflon*[®] finishes off aluminum or magnesium surfaces, the possibility of explosion exists if the fines are allowed to become heated. Good housekeeping practices, keeping the residue wet, and keeping the ventilation and dust collection systems in good working order reduces this risk.

**Table 2
Typical Test Data**

Test	Method	Value Teflon® S958-303 (Black)	Value Teflon® S958-313 (Black)
Dry Film Thickness (DFT)	Electromagnetic method ASTM D1400-87	25 µm (1 mil)	25 µm (1 mil)
Film Appearance	Eye and power magnification microscope	OK	OK
Adhesion			
Post Water Cross-Hatch Adhesion	Adhesive tape after boiling ASTM D335	OK(A)	OK(A)
Impact	ASTM D4145	OK(A)	OK(A)
Abrasion			
Taber Abrasion	Weight loss after wear of two abrasive wheels DFT loss ASTM D4060-95 Load: 1,000 g Number of cycles: 1,000 Set of abrasive wheels: CS17	80 mg 19 µm (0.8 mil)	24 mg 9 µm (0.4 mil)
Pencil Hardness	ASTM D3363	2B	
Corrosion			
Atlas Cell (hours)	Chemical resistance of coating ASTM B117-73 Temperature: 98°C (208°F) Test solution: 0.05 N HCl	<168 hr	<168 hr
Salt Spray	ASTM B117-73 Test solution: 5% salt in water Temperature: 35°C (95°F)	168 hr <x <336 hr	168 hr <x <336 hr
Gloss	ASTM 523		
	20°	0.2	0
	60°	4.5	3.0
	85°	18.4	13.0

For more information on Teflon® coatings:

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CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement," H-50102.

