

TECHNICAL DATASHEET

PPF290-G75

TPU Paint Protection Film can protect your car from damages caused by stone chips, scratches, splatters, and any minor abrasions preventing the paint from fading and prolonging its lifespan. In the meantime, it brings a significant increase in brightness, turning it into an outstanding finish.

Product Description

PPF290 is a high-performance aliphatic thermoplastic polyurethane film (TPU) that protects surfaces. Its characteristics of excellent mechanical properties, UV resistance, high transparency, and high gloss prevent vehicles from damage caused by stone chips and scratches.

Demonstrated Performance

PPF290 is developed from ESTANE®TPU, which The Lubrizol Corporation produces. Through a weathering test in a value equivalent to nine years, ESTANE®TPU remains excellent in its appearance and physical quality. This optical and aliphatic film is warranted in durability and performance.

PROPERTY	VALUE	UNIT	TEST METHOD
Hardness	90	ShoreA	ASTM D2240
Gauge	50-300 (2.0-12 mils)	Micron	
Width	≤1.6	Meter	
Length	≤800	Meter	
Tensile	45	MPa	ASTM D412
Elongation at Break	400	%	ASTM D412
Light Transmission	92	%	ASTM D1003
Gloss 60°	82		ASTM D1003
UV Resistance (A1 ¹)	ΔYI≤2		ASTM D1925

A1¹: UVA bulb is used in QUV, with 50°C UV exposure and 4 hours of 60°C condensation. The indicators above are for reference only and are not standard for the quality of this product.

TECHNICAL MANUAL FOR COATING MATERIAL

Instruction

The base material A is a curing PU solvent developed with thermal remediation technologies (TRT), showing excellent performance and is highly stain resistant. Signs marked with a marker pen can be easily wiped away.

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Usage

Including but not limited to vehicle wrap and phone case protection film.

Application

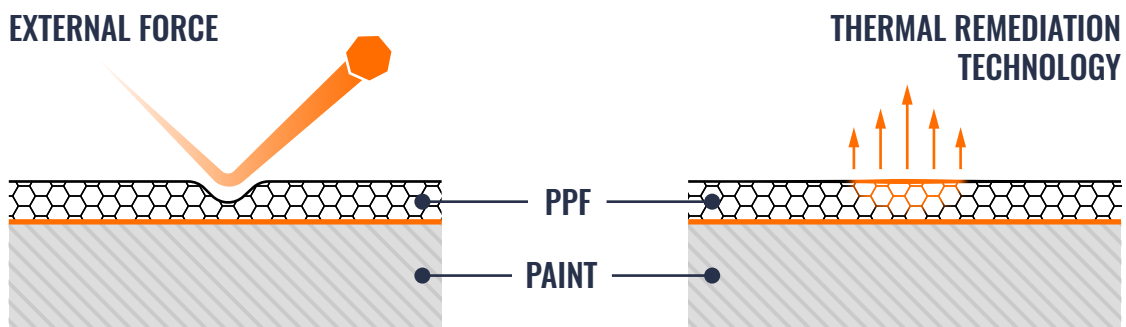
Thermoplastic polyurethanes.

Indicator

PERFORMANCE INDEX	VISCOSITY	SOLID CONTENT
Base Material A	45±5KU	34±2 %
Additives B	/	80±2 %
Additives C	/	100 %

Characteristic and Principle of Coating

TRT is activated to avoid tearing when slight damages caused by external forces occur.



Physical Property

PROPERTY/METHOD OF TEST	BENCHMARK	RESULT
Adhesion	ISO 2409	Grade: 0-1
Oil Resistance	Wiping away marks created with marker pen	No sign residual
Boiling	80°C/30min	Adhesion: Grade: 0-1, No blistering, shedding, nor apparent color-changing of the coating membrane
QUV	0.8W/CM2, 340nm, 1000hr	Adhesion: Grade: 0-1, ΔE<2

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ADHESIVE

Description

Adhesive A is a pressure-sensitive polymer made of one-part structural self-curing adhesive and acrylate, which will start curing at a proper temperature when the solvent volatilizes completely. It takes a week for it to become complete curing at room temperature. Adhesive A has superior cohesion with a plasticizer-resistant characteristic and excellent chemical properties, perfect for base materials like PVC or TPU.

Application

- Sign
- Decal and label
- Composite film
- Car paint protection film

Characteristic

- Self-curing
- One-part structural
- Safe for direct application to coating
- Superior cohesion
- Plasticizer resistance
- Repositionable technology

Solubility

Soluble in ketone, ester, arene, and aliphatic.

TYPICAL PHYSICAL PROPERTIES

Solid Content	39.0 - 43.0
Brookfield Viscosity @ 25°C, cps	5,000 - 10,000
Solvent	Ethyl acetate/ n-Heptane/ Isopropanol/ Methylbenzene/ Acetone
Proportion of Solvent	56/8/14/11/11
Density	7.3 ± 0.2 lbs/gal 0.93 ± 0.03 g/cm ³
Flash Point (SETA)	<-7°C (20°F)

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Installation stages

- Cleaning of a surface with soap liquid - hand cleaning of all organic and nonorganic contaminations - washing off soap liquid
- Cleaning of a surface using abrasive clay for cleaning contaminations
- Degreasing of all surfaces where the film will be bent
- Drying of a surface, checking the surface for impurities, measuring and marking of film on elements
- Cleaning of dust from surfaces using sticky dust wipes
- Applying of liquid on a surface, taking off the liner, watering the adhesive surface of the TPU film, installing of film on the surface
- Forming of film on the surface, rolling of the film using instruments, bending of film, heating the element
- Cleaning of liquid excesses, drying of the wrapped surface, polishing

Installation liquid

For the application of PPF film, several mixtures can be used. They have different characteristics and effects.

1. Water

Doesn't soften adhesive; the adhesive stays active. Water is not recommended when PPF is applied on large surfaces, because there is a risk of complete adhesion.

2. Soap mixture

Soap mixture is a mixture of liquid soap and water in the following proportion, 15 parts of soap with 100 parts of water. It's essential that soap's PH is 0 (zero). The soap mixture softens adhesive; the films slides on a surface. PPF is more comfortable to be applied and formed; air and water bubbles can be moved out easily. However, it takes more time to apply PPF using soap mixture.

3. Alcohol mixture

Alcohol mixture - a mixture of 95% alcohol and water in the following proportion, 3-4 parts of alcohol and 6-7 parts of water. This liquid activates adhesive and strengthens its adhesion with a surface. When used, there is a risk of early adherence with surface and signs from uneven stretching.

General recommendations

- It's recommended to use hard polyurethane squeegees for larger surfaces and softer Teflon squeegees for bending of vinyl edges. Any tool used for application must be with proper edges and must be kept clean. The edges on the toll must be sharp.
- The cleanliness and quality of water directly affect the quality of installation. The water sprayer should also be kept clean.
- One can damage any film with uneven stretching; PPF is not an exclusion. The film should be stretched evenly and properly. It should be stretched when it's already on the surface. It shouldn't be lifted when stretched. When lifted, the material absorbs heat faster, and there is a risk of uneven stretching. The failure of an application can be seen as broken reflections or lines on PPF.
- It's recommended to use alcohol mixture or clean water for small and simple elements (surface under door handles, protection of back wheel arches, doorways, etc.) and a combination of soap mixture and alcohol mixture for medium size elements of medium difficulty. The alcohol mixture can be used at edges to achieve stronger adhesion.
- The edges of PPF should be heated significantly. The temperature of PPF can be raised to more than 80 Celsius when edges are bent.
- The protective layer on of PPF should be pulled off right before installation.
- The surface of PPF should be moistened with liquid during application to prevent the film from scratching.