TECHNICAL DATA SHEET

Technical Data Sheet (TDS) — Reference Typical Values

Product Model	TPU-18MF	Version	V1.1
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1. Product Description

Reference Typical Value Technical Data Sheet (TDS) for wholesale & OEM specification:

Paint Protection Film (PPF), hydrophobic topcoat, self-healing film; typical application: automotive paint protection

2. Product Identification

Base Material	TPU
Resin / Raw Material Supplier	Lubrizol
CAS No.	9009□54□5
Layer Construction	topcoat/TPUbase/adhesive
Color / Appearance	Transparent Matt
Hydrophobic Topcoat	Yes (hydrophobic)

3. Dimensional Specifications

Item	Specification	Typical Value	Unit
Width	1524 ± 2	1524	mm
Total Thickness	350 ± 10	357	μm
Functional Layer Thickness	208 ± 10	209	μm

4. Physical & Optical Properties

Item	Test Method	Specification	Typical Value	Unit
Light Transmittance	GB/T 2680	≥ 82	84	%
UV Blocking	GB/T 18830	≥ 95	97	%
Gloss (60°)	ASTM D523	12-22	17	GU
Haze	ASTM D1003	12-25	18	/
Water Contact Angle	GB/T 30693-2014	≥90	101.67	°

5. Mechanical Properties

Item	Test Method	Specification	Typical Value	Unit
Tensile Strength	ASTM D-882	≥ 16	22.43	MPa
Tear Strength	ASTM D-882	≥ 60	70.48	kN/m
Puncture Resistance	ASTM D-882	≥ 15	23.64	N
Elongation at Break	ASTM D-882	≥ 250	290	%

Item	Test Method	Specification	Typical Value	Unit
Repair Layer Elongation	ASTM D-882	≥ 90	103.39	%
Modulus	ASTM D-882	≤ 450	205.16	kgf/cm²

6. Surface & Self-Healing Properties

Item	Test Method	Specification	Typical Value	Unit
Self-Healing	Scrape with copper brush 200 g/cm² ×30; repair with hot water / hot air	≤ 50 ℃ - Repairable; Repair time ≤ 5 seconds	Reparable at 45 ℃, with no scratches within 5 seconds.	/
Scratch Resistance / Marker Test	Oil-based marker (MG-2110), dry 2 min, wipe with alcohol	Residual level 0~2	Level 2 residual	/
Chemical Resistance (Carburetor Cleaner)	Spray on repair layer for 2 min	No swelling / no matting	No swelling, no matting	/

7. Adhesion & Application Performance

Item	Test Method	Specification	Typical Value	Unit
Initial Tack	Steel plate, 20 min	15 ≤ F ≤ 25	16.13	N/in
Holding Power	Steel plate, 168 h	20 ≤ F ≤ 35	21.04	N/in
Adhesion (Cross-cut)	ASTM D3359	5B	5B	/
Re-application	Re-stick 3 times on painted panel	No residue / stable tack / no solvent odor	No abnormality	/

8. Environmental & Durability Performance

Item	Test Method	Specification	Typical Value	Unit
Temperature Resistance	Hot 80 ℃ / cold −30 ℃, alternating 4 h each	No abnormality	No abnormality	/
Chemical Resistance (Acid/Alkali)	Immerse 30 min in pH 5~7 (HCl) / pH 7~10 (NaOH)	No abnormality	No abnormality	/
Rain Spot Resistance	Outdoor on painted panel 15 days, rinse with water	No abnormality	No abnormality	/
QUV Aging Resistance （QUV）	QUV 0.5 W, 40 ℃, 340 nm, 120 min cycle, 18 min spray, 3200 h	No abnormality	No abnormality	/

9. Application Guidelines

Recommended Installation Temperature	15 – 35 °C（ideal 20 – 30 °C）. Avoid installation below 10 °C or in direct strong sunlight.

Surface Preparation	Wash and decontaminate the paint surface thoroughly; remove wax, oil, dust and fingerprints; ensure the surface is dry, clean and free of scratches before application.
Tools	Squeegee, heat gun (hot air blower), spray bottle (installation solution), trimming knife (blade), microfiber cloth, masking tape.
Notes / Precautions	- Keep the working environment clean and dust-free. - Use soap-water installation solution to enable repositioning; do not apply the film dry. - After positioning, squeeze out air bubbles and water from center to edge; heat and stretch around curved areas. - Self-healing: remove scratches with hot water (≥45 °C) or hot air within seconds. - Do not wash the vehicle for 72 hours after installation; wait at least 7 days before polishing/waxing. - Store and install within shelf life; keep film away from direct sunlight when not in use.

10. Storage & Shelf Life

Storage Condition	Store in a cool, dry and dark place; recommended 10 – 30 °C, relative humidity ≤ 60 %, away from direct sunlight, heat and moisture; keep film flat, do not fold or crush.
Shelf Life	8 – 10 years under recommended storage conditions. (Shelf-life for un-opened goods only, not outdoor service life.)
Packaging	Carton dimensions: 160*17*17 cm / 160*12*12 cm / 160*18*18 cm / 160*20*20 cm.

11. Disclaimer

Water contact-angle data represents performance of brand-new film; slight value shift may occur after long-term weathering exposure.

All data are typical values supplied by the manufacturer, for reference only, and are not a binding specification or guarantee. Actual product performance may vary from batch to batch. Please verify the latest factory batch data (COA) and conduct your own testing before use.