



TESLIN®

Enabling Substrate Technology from PPG

Teslin® TS (Thermally Stabilized) Substrate Technical Data

Teslin® TS substrate features the same unique characteristics of standard *Teslin* substrate (high-printability, durable) with an added emphasis on heat stability. *Teslin* TS substrate is thermally stabilized, making it more resistant to shrinkage when exposed to elevated temperatures.

Typical Applications

- Variable printed data
- Security cards and drivers' licenses
- Travel documents
- Tags & labels
- Manuals
- In-mold graphics

Physical Properties¹

	TS 600	TS 700	TS 800	TS 1000	TS 1200	TS 1400	Reference
Gauge (mils)	5.9	7.0	8.0	10.0	12.1	13.8	ASTM D-374
Tolerance (+/- mils)	0.5	0.7	0.7	0.7	0.8	0.9	
Gauge (microns)	150	178	203	254	307	351	ASTM D-374
Tolerance (+/- microns)	13.0	17.8	17.8	17.8	20.3	22.9	
Yield (in.²/lb.)	7,354	6,292	5,338	4,115	3,408	2,896	ASTM D-3776
Grammage (g/m²)	96	112	132	171	206	243	
Basis Weight (oz/sq yd ²)	2.85	3.40	3.96	4.93	6.07	7.18	
(lb./500 shts 25x38)	65	77	90	108	138	163	
Master Roll Configuration							
Mill Roll Length (ft.)	7,000	6,000	5,250	5,000	3,750	3,300	
Roll Weight (lb.)	651	652	673	831	753	779	
Mill Roll Length (m)	2,135	1,829	1,600	1,524	1,143	1,006	
Roll Weight (kg)	295	296	305	377	341	354	

¹Specifications are based on English units of measurement. Metric values are provided for convenience and are not to be considered precise values.

Mechanical & Thermal Properties

	TS 600	TS 700	TS 800	TS 1000	TS 1200	TS 1400	Reference
MD¹ Tensile Strength							ASTM D-882
lb./in.	11	14	16	19	22	24	
N/cm	20.0	24.0	27.7	33.1	38.9	42.6	
CD² Tensile Strength							ASTM D-882
lb./in.	5.2	5.8	6.9	8.4	9.7	11.1	
N/cm	9.1	10.2	12.1	14.7	17.0	19.4	
Elmendorf Tear (g)							ASTM D-1922
MD	114	113	140	194	243	307	
CD	tore to MD	tore to MD	tore to MD	tore to MD	tore to MD	tore to MD	
Shrinkage Factor³ MD (%)	2.4	1.7	1.6	1.5	1.4	1.3	
Brittleness Temperature	<-70°C	<-70°C	<-70°C	<-70°C	<-70°C	<-70°C	ASTM D-746

Notes:

¹ Machine Direction MD

² Cross Direction CD

³ Measured at 135°C for 15 minutes in a forced air oven.



Optical & Surface Properties

	TS 600	TS 700	TS 800	TS 1000	TS 1200	TS 1400	Reference
Brightness (%)	89	89	90	91	92	92	ISO-2470
Whiteness Index	87	89	87	91	87	92	ASTM E-313
Opacity (%)	90	92	94	96	98	98	ISO-2471
Transmission (%)	17	15	11	8	6	5	ASTM D-1003
Sheffield Smoothness							
Top	42	48	46	43	49	41	ASTM T-538
Bottom	69	72	70	72	69	70	

Samples

Samples are available upon request by emailing hemminger@ppg.com.

Availability

Standard master roll width is 57"/1447mm and 28"/711mm outside diameter (OD). 40"/1016mm OD rolls available upon request. Custom widths up to 60"/1524mm are also available upon request. Master rolls are put up on 6"/152mm inside diameter (ID) cores.

Storage

Avoid high humidity, which can cause moisture pick up by *Teslin* substrate that can affect the print quality. *Teslin* substrate performs well when stored and used in 50%-70% relative humidity (RH) and 20°-23°C or 68°F-74°F. *Teslin* substrate is a porous, compressible material, so care must be taken to store cut sheets on a solid, flat surface and protect them from potentially contaminated surroundings, which could lead to discoloration of the sheet edges. Sheets should be kept in the original coated shipping boxes when not in use. Rolls should be kept in the original shipping package and protected with stretch wrap when not in use.

Handling

Sheets should be fanned before use. Corners of stacked sheets should be protected by cardboard. Take care to avoid damaging sheets by banding when securing stacks to pallets. Rolls should be suspended prior to use. Since the material is compressible, a roll can suffer damage if placed on the floor. Mechanical roll handling equipment is recommended to rotate and mount rolls.

Recommended Print Technology*

Teslin TS substrate can be printed using web or sheet-fed offset, flexography, inkjet, screen and digital print technologies. With handling, it is also possible to use laser printers (those not using fuser oil), copiers, and thermal transfer print technology

Ink Compatibility*

Offset—Use slow-setting inks with <4% VOC and tack of 12 @ 1200 rpm
Flexo—Both solvent-based and water-based inks work well.
Inkjet—Pigment-based inks offer better image density and color gamut as opposed to the dye-based inkjet inks.

Finishing*

Thermal laminating films can be used to protect prints on *Teslin* TS substrate. For added lightfastness, a UV blocking film is recommended. Self-adhesive films (cold-laminating films) also may be used. For maximum lamination strength, an unprinted border should be left around the image or information to be protected.

*Reference the *Teslin*® Substrate Technical Manual for more information.



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Film East: Tyngsboro, MA | 978-226-0021
Film Central: Naperville, IL | 630-428-4350
Film West: Fresno, CA | 559-383-3456
Film Canada: Brampton, ON | 905-789-3100
Film Mexico: Apodaca, Nuevo León | 52-81-8369-4688



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