

COSMO FILMS LIMITED

Technical data sheet

BOPP-thermal film gloss

type: 24 PCT-2 (DL)

thickness: 24 micron

description : it is a plain co-extruded polypropylene film which is EVA-pretreated on one side. It is used for lamination of printed paper and carton. The other side is Corona-pretreated and therefore usable for different printing methods. The film is appreciated because of its gloss and its good mechanical properties.

property	test method	unit	value
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• physical data

thickness	-	micron	24 (12/12)
coefficient of friction	film/film	ASTM-D-1894	-
yield ²		m ² /kg	45,9
treatment printable side ¹	-	-	CORONA
wettability printable side	ASTM-D-2578	dyne/cm	38

• mechanical data

tensile strenght	MD	ASTM-D-882	kg/cm ²	630
	TD	ASTM-D-882	kg/cm ²	1500
elongation at break	MD	ASTM-D-882	%	165
	TD	ASTM-D-882	%	50

• thermal data

shrinkage (120 °C, 5 Min.)	MD	ASTM-D-1204	%	3,5
	TD	ASTM-D-1204	%	2,0 – 2,5
lamination temperature ³		-	°C	90 - 130

• optical data

gloss (45°)	ASTM-D-2457	Gardner	90
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• standard slitted rolls

core	-	mm	76
length	-	m/roll	3.000
side with adhesive	-	-	inside
glossy side	-	-	outside
printable side ¹	-	-	outside

1. possible printing methods after test and with suitable inks: hot foil stamping, silk-screen printing,
2. theoretical values (rounded of first decimal place).
3. measured temperature while laminating

The data contained herein is provided to the best knowledge and is based on our general experience and tests undertaken in our laminating film laboratories. But we cannot guarantee these data in respect of factors, which are out of our control and responsibility. Therefore compliance with all legal patents, copyrights and registered designs is responsibility of user.

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Technical data sheet

BOPP-thermal matt

Type : 27 PCT-2 (MDL)

thickness: 27 micron

description : it is a matt co-extruded polypropylene film which is EVA- pretreated on one side. It is used for lamination of printed paper and carton. The other side is Corona-pretreated and therefore usable for different printing methods. The film is appreciated because of its good mechanical properties

property	test method	unit	value
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• physical data

thickness		-	micron	27 (12/15)
coefficient of friction	film/film	ASTM-D-1894	-	0,3
yield ²			m ² /kg	41,1
treatment printable side ¹		-	-	CORONA
wettability printable side		ASTM-D-2578	dyne/cm	38

• mechanical data

tensile strenght	MD	ASTM-D-882	kg/cm ²	680
	TD	ASTM-D-882	kg/cm ²	1200
elongation	MD	ASTM-D-882	%	180
	TDr	ASTM-D-882	%	55

• thermal dat

shrinkage (120 °C, 5 min.)	MD	ASTM-D-1204	%	3,0
	TD	ASTM-D-1204	%	2,0
lamination temperature ³		-	°C	90 - 130

• optical data

gloss (45°) [base film]	ASTM-D-2457	Gardner	10
haze [base film]	ASTM-D-1003	%	70 - 75

• standard slitted rolls

core	-	mm	76
length	-	m/roll	3.000
side with adhesive	-	-	inside
matt side	-	-	outside
printable side ¹	-	-	outside

1. possible printing methods after test and with suitable inks: hot foil stamping, silk-screen printing, UV-spot varnishing with silk-screen and flexosystem.
2. theoretical values (rounded of first decimal place).
3. measured temperature while laminating

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Folien-Service-Deutschland GmbH

Im Bulloh 25
D-29331 Lachendorf
TEL: (0 51 45) 28 59 50
FAX: (0 51 45) 28 59 59
MAIL: info@folienservice.com

Sparkasse Celle
BLZ: 257 500 01
KONTO: 655 20 900
IBAN: DE54257500010065520900
SWIFT/BIC: NOLADE21CEL

Amtsgericht Lüneburg HRB 100496
Ust-Id-Nr.: DE115122510
Geschäftsführer: Patrick Schür

FSD-Folien-Service-Dtl. GmbH, Im Bulloh 25, 29331 Lachendorf

Gewichtsberechnung

FSD-TG-8-24

Breite Meter	Länge Meter	=	m² :	Ergiebigkeit 45,9	=	Netto Gewicht pro Rolle
0,435	3000	=	1305 :	45,9	=	<u>28,4 KG</u>

FSD-TM-8-27

Breite Meter	Länge Meter	=	m² :	Ergiebigkeit 41,1	=	Netto Gewicht pro Rolle
0,435	3000	=	1305 :	41,1	=	<u>31,7 KG</u>

TECHNISCHE RICHTWERTE – Strukturfolie 50 μ

Thermostrukturfolie fein 50 μ - embossed thermo film fine – film gaufré fin

Geprägtes Polypropylen
Embossed polypropylene
Polypropylène gaufré

PROPERTIES		TYPICAL VALUES	UNIT	TEST METHOD
Tensile strength	MD	1,5	[kg / cm ²]	ASTM-D-882
	TD	2,3		
Yield		19,30	[m ² / kg]	ASTM-D-882
Elongation at break	MD	70	[%]	ASTM-D-882
	TD	60		
Coefficient of friction (COF)		0,55	[-]	ASTM 1894-78 FILM / FILM
Gloss		29,2	[%]	60° BLACK ASTM-D-523
Thermal stability	160°C 5 min. MD	1,6-2,5	[%]	ASTM D1204
	160°C 5 min. TD	0,2-0,7		
Haze		16,9	[%]	ASTM 1003
Density		942	[kg / m ³]	ASTM 1505
Gauge		50-55	[micron]	NIKON DIGIMICRO
Unit weight			[g / m ²]	ASTM-D-882
Bond strength		51,82	[N / 15mm]	GBC 180°, 240mm/min
		4,6		
UV Stability		-	[DE]	CIELAB COLOR
Wetting tension		50 - 55	[dynes / cm]	ASTM 2578
Melting point resin		75	[°C]	ASTM-D-3415
Running temperature		85 - 90	[°C]	-
Melt index		7	[g / 10 min]	ASTM-D-1238
Thickness substrate		30-40	[micron]	NIKON DIGIMICRO
Thickness adhesive		20	[micron]	NIKON DIGIMICRO
Food contact approval		NO	[-]	FDA

Technical Specification Sheet

REV. 1

Spec.No. SP/PF/10/ I

Date 01/07/2004

PRODUCT TYPE : GARFILM HIGH SHRINK**THICKNESS : 40 , 50 MICRON****APPLICATION : SLEEVES / SHRINK WRAPPING**

Sr.No.	Property	Unit	Nominal	Minimum	Maximum	Test Method
1	Nominal Thickness	Micron	40,0 50,0	39,2 49,0	40,8 51,0	Internal
2	Yield	M ² /Kg	18,52 14,81	18,16 14,52	18,90 15,12	Internal
3	Tensile Strength MD TD	Kg/Cm ²	700 2800	400 1800	1000 3800	ASTM D 882
4	Elongation MD TD	%	700 200	500 70	900 330	ASTM D 882
5	Shrinkage @ 100°C For 5 Sec In Boiling Water MD TD	%	3,0 70,0	1,0 67,0	5,0 73,0	ASTM D 1204
6	Haze	%	4,0	2,0	6,0	ASTM D 1003
7	Coef. of Friction	-	0,4	0,2	0,6	ASTM D 1894
8	Std.length	Mtrs.	3000			Internal
9	Width Tolerance	MM	± 2 of Ordered Width in absence of spec. from customer			Internal

SPPFO50i

COSMO FILMS LIMITED

Polyester based Thermal Laminating Film

PROFILE : It is polyester based, both sides corona treated, uniformly extrusion coated with resin which enables lamination by heat and pressure with paper products.

FEATURES :

- 1) Excellent bursting on automatic machines
- 2) Fibre-tear bond strength with paper
- 3) Excellent optical properties.
- 4) Excellent resistance to elongation & tear.

TYPICAL PROPERTIES:

PROPERTY	UNIT	ASTM/ TEST #	22 PCT-2 (PDL)
PHYSICAL DATA			
Average Thickness	micron	D-374-C	22.0
Average GSM	(+/-) %	---	25.1
Yield	m ² /kg	--	39.84
Wettability (min)	dynes/cm	D-2578	38
Coefficient of friction (F-F)	-----	D-1894	0.25 - 0.3
OPTICAL DATA			
Gloss at 45 ° (min)	gardner	D-2457	95
Lamination temp.	°C		90 - 140

10 Pet+12 EVA

APPLICATIONS : Thermal lamination with all kinds of printed & unprinted paper and paper boards like maps, book covers, posters, magazines, boxes, brochures etc.

Note: The information provided above is to the best of knowledge of COSMO FILMS LTD. The values provided are CFL laboratory test results, which are indicative only and provided for guidelines.

COSMO FILMS LIMITED

Polyester based Metallised Thermal Laminating Film

PROFILE : It is polyester based, metallised, both sides corona treated, uniformly extrusion coated with resin which enables lamination by heat and pressure with paper products.

FEATURES :

- 1) Excellent adhesion of ink during printing
- 2) Fibre-tear bond strength with paper
- 3) Excellent aesthetic appeal
- 4) Excellent resistance to elongation & tear.

TYPICAL PROPERTIES:

PROPERTY	UNIT	ASTM/ TEST #	22 PCT-2 (PDL) MO
PHYSICAL DATA			
Average Thickness	micron	D-374-C	22.0
Average GSM	(+/-) %	---	25.6
Yield	m ² /kg	--	39
Wettability Printing side	dynes/cm	D-2578	50
Ex-coated side			42
Coefficient of friction (F-F) kinetic	-----	D-1894	0.30
OPTICAL DATA			
Optical Density	--	--	2.0
Lamination temp.	°C		90 - 140

10 Pet che+12

APPLICATIONS : For thermal lamination and off-set printing, carton of cosmetics, perfume, wines etc.

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COSMO FILMS LIMITED

Polyester based Thermal Laminating Matte Film

PROFILE : It is polyester based, Matte, both sides corona treated, uniformly extrusion coated with adhesive which enables lamination by heat and pressure with paper products.

FEATURES :

- 1) Natural look paper finishing
- 2) Fibre-tear bond strength with paper
- 3) Excellent optical properties.
- 4) Excellent resistance to elongation & tear.
- 5) Good stamping property

TYPICAL PROPERTIES:

PROPERTY	UNIT	ASTM/ TEST #	30 PCT-2 (PDL) M
PHYSICAL DATA			
Average Thickness	micron	D-374-C	30.0
Average GSM	(+/-) %	---	29.58
Yield	m ² /kg	--	33.8
Wettability (min)	dynes/cm	D-2578	40
Coefficient of friction (F-F)	-----	D-1894	0.25 - 0.3
OPTICAL DATA			
Gloss at 45 °(min)	gardner	D-2457	95
Lamination temp.	°C		90 - 150

APPLICATIONS : Thermal lamination with all kinds of printed & unprinted paper and paper boards like maps, book covers, posters, magazines, boxes, brochures etc.

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Im Bulloh 25
D-29331 Lachendorf
TEL: (0 51 45) 28 59 50
FAX: (0 51 45) 28 59 59
MAIL: info@folienservice.com

Sparkasse Celle
BLZ: 257 500 01
KONTO: 655 20 900
IBAN: DE54257500010065520900
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OPP based Metallised Thermal Laminating Film **Article: FSD TPP 8-MET-22**

PROFILE : It is OPP based, metallised, one side corona treated, uniformly extrusion coated with resin which enables lamination by heat and pressure with paper/thermocol products.

FEATURES : 1) Excellent optical properties
2) Excellent moisture barrier
3) Good oxygen barrier
4) Good bond with thermocol

TYPICAL PROPERTIES:

PROPERTY	UNIT	ASTM/ TEST #	22 PCT-1 (DL) MO
Average Thickness	micron	D-374-C	22.0
Average thickness (mil)	mil		0.9
Average GSM	---	---	20.35
Yield	m ² /kg	--	49.14
	msi/lb		34.55
Wettability (min)	dynes/cm	D-2578	36
Bond strength (co-coated)	g/25mm		575
Lamination temp. on m/c.	°C		90 – 110
MVTR at 38°C,90% RH	g/m ² /24 hr.	ASTM F 1249	0.67
OTR at 23°C,0% RH	cc/m ² /24 hr.	ASTM D 3985	80-90

10 met OPP+12 co.

APPLICATIONS : Thermal laminating with thermocol for rooftop insulation, all kinds of printed & unprinted papers.

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Im Bulloh 25
D-29331 Lachendorf
TEL: (0 51 45) 28 59 50
FAX: (0 51 45) 28 59 59
MAIL: info@folienservice.com

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PET-film metallised – 12Micron

Type: FSD-PET G-USL 12

Application: Packaging / Laminating

Sr.	Property	Unit	Nominal	Minimum	Maximum	Test Method
1	Nominal Thickness	Micron	11,9	11,7	12,1	ASTM E 252
2	Yield	M2/kg	59			
	MD		2000	1800	2200	ASTM D 882
	TD		2100	1800	2200	ASTM D 882
3	Elongation	%				
	MD		110	90	120	ASTM D 882
	TD		110	90	120	ASTM D 882
4a	Shrinkage at 150°C for	%				
	MD		1,6	1.0	2.0	ASTM D 1204
	TD		0.0	- 0.4	0.4	
5	Optical Density	--	1,8	1,9	2	Macbeth OD meter.
6	MVTR uncreased	gm/m2 at	1,5	- 5 % (of nominal value)	+ 5 %	IS :1060 (Part-II)
		24 hrs & 38°C ± 1 90% RH				ASTM-3985
7	O T R	cc/m2	2,0	- 5 % (of nominal value)	+ 5 %	
		24 hrs at 27°C & 1 atm pressure				
8	Standard Length	Mtrs	6000 / 12000 ± 2 mm of ordered width	--	--	--
9	Width Tolerance	MM				
10	Dyne Value Poly side	Dynes/cm	34 - 40	(Suitable for Printing)		

The data given herein has been obtained using standard test procedures, on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

15.01.2007



Folien-Service-Deutschland GmbH

Im Bulloh 25
D-29331 Lachendorf
TEL: (0 51 45) 28 59 50
FAX: (0 51 45) 28 59 59
MAIL:
info@folienservice.com

Sparkasse Celle
BLZ: 257 500 01
KONTO: 655 20 900
IBAN: DE54257500010065520900
SWIFT/BIC: NOLADE21CEL

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Geschäftsführer: Patrick Schür

PET-film gold – 12Micron

Type: FSD-PET G-CGL 12

(one side metallised&gold colour coated)

Application: Packaging / Laminating

Property	Test Method	Unit	Value	
	Micrometer / Dial			
Thickness	Gauge	Microns	12 +/- 5%	
YIELD			55 - 59	SQM
Optical Density	Internal / Macbeth	-----	1.8 to 2.4	
Creases / Wrinkles	Visual		ONLY NEAR CORE & JOINT	
Pin Holes	Visual		10 to 12 in 6000 Mtrs Length	
L.M.Bands	Visual		ABSENT	
Lacquer Deposition	Internal		1.5 - 1.8 (ONE SIDE)	
Coating Appearance	Visual		Even / Uniform	
Coating Adhesion	By using Cello Tape		Coating shall not come out.	
Shade	Visual		Match with standard	
Scratches	Visual		ABSENT (Slight Coating Scratches may be)	
No. of Joints / Roll		Nos.	Max 2 in a roll	of 6000 Mtrs.
Standard Length	Internal/Length Counter	Mtrs	6000 +/-	500
Maximum Width	Internal / Scale	MM	1010 / 790 (+/- 2)	

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15.01.2007



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Im Bulloh 25
D-29331 Lachendorf
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PET-film antiscratch – 10Micron **Type: FSD-PET G-SRM 10**

PROFILE

Antiscratch film is a specialty grade of bi-axially oriented PET Film, uniformly coated with a resin, along the film, so as to render its surface a 'Matte' finish. The 'Matte' surface of the film, enhances the appearance of the laminated product, giving it a natural look and good scuff resistance.

ADVANTAGES

- 'Matte' finish gives a natural look to the product.
- Excellent scuff resistance.
- Excellent adhesion to Inks & Varnishes.
- Fiber-tear bond strength with paper.
- Effective product presentation.
- Easy tear on automatic busting machines.

APPLICATIONS

Antiscratch film is an ideal choice for both wet & dry lamination processes. The film offers excellent support to all types of paper substrate. Key uses:

- Brochures
- Posters
- Cartons
- Maps
- Documents
- Book Covers
- Reviews & magazines
- POP Advert materials

APPLICATION PROCESS

The film can be laminated with printed, as well as unprinted paper products, using suitable adhesives. The commonly used adhesives are waterbased acrylic emulsions or solventless / solvent based PU adhesives.

TYPICAL VALUES OF THE FILM

SI Parameters	Test Method	Units	Specifications
1 Thickness	ASTM E252	micron	10 (± 10%)
2 Grammage	GPL Method	GSM	16
3 Yield	GPL Method	M2/kg	62,5
4 Surface Tension	ASTM D2578	Dynes/cm	Min, 40
5 Coefficient of friction	ASTM D1894	-	0.40
6 Haze	ASTM D1003	%	75—80
7 Gloss @ 60°C	ASTM D2457	%	15—20

The data given herein has been obtained using standard test procedures, on defined specimens. The results should therefore only be regarded as a general guide to material properties and not as design data.

STANDARD PACKING—Roll of 3000 meters, wound on a 3" core;