



Request for Drawing Question / Interpretation No. 14

of

**AC Class Rule** Version 1.4: December 8<sup>th</sup> 2015

---

**Rule References:**

- 20.3 Soft aerodynamic surfaces of the **wing** shall be covered with CorTuff® 300 gauge film as detailed in Appendix E. Alternative materials that match stiffness and weight may be approved by the **Measurement Committee** via an **interpretation**
- 

**Questions:**

Could the alternative wing skin material "WINGLAR PWC075" from PROtect, be approved for use in accordance with AC Class rule 20.3?

The specification sheet for these materials is below.

# Properties

CorTuff® Properties	ASTM Test Method	Typical Values		Typical Values	
Gauge		200		300	
Instrumented Impact Strength (lbs)	D 3763-95a	44		63	
Haze (%)		4.5		6.5	
Yield (sq. in per pound)		15,000		10,000	
Water Vapor Transmission Rate (gms/100sq. In/24hrs.); 100% RH, 100° F	F 1249-90	0.5		0.3	
Oxygen Transmission Rate (cc/m2/24hrs. @ 73° F, 1atm)	D 3985-95	2847		1400	
Tear Propagation (gms) $\frac{LD}{TD^{**}}$	D 1938	$\frac{34}{29}$		$\frac{80}{75}$	
Elongation at Break (%) $\frac{LD}{TD^{**}}$	D 882-95	$\frac{160}{150}$		$\frac{180}{190}$	
Minimum Use Temperature		-60° F		-60° F	
Maximum Storage Temperature		90° F		90° F	
		<b>LD*</b>	<b>TD**</b>	<b>LD*</b>	<b>TD**</b>
Tensile Strength (psi)	D 882-95	14,500	16,500	12,000	14,000
Modulus of Elasticity (psi @ 73° F)	D 882-95	43,400	49,500	35,000	37,000
Free Shrink (%)	D 2732-83				
	@ 200° F	11	17	10	17
	@ 220° F	21	30	17	28
	@ 240° F	54	59	42	52
	@ 260° F	74	74	65	66
	@ 280° F	76	74	70	70
Shrink Tension (psi)	D 2838-95				
	@ 200° F	246	408	217	316
	@ 220° F	315	476	283	360
	@ 240° F	374	487	307	367
	@ 260° F	355	462	307	365
	@ 280° F	360	433	309	376

Note: These are typical values and are not intended for use as limiting specifications.

\* Longitudinal Direction \*\* Transverse Direction

This information represents our best judgement based on the work done, but the Company assumes no liability whatsoever in connection with the use of information or findings contained herein. CorTuff® complies with the requirements of the Federal Food, Drug and Cosmetics Act, as amended, for the packaging of all foods, with the exception of high alcoholic, at temperatures of 65° C and below.

**PROtect tapes<sup>®</sup> WINGLAR<sup>™</sup> PWC075 (75micron = 3 mil)**

Multilayered polyolefin shrink film for wing membrane and cross beams

20150721 Rev.0

**Product Description** Multilayered polyolefin shrink film designed for wing membranes and cross beams

Film data	Unit	Typical values	Unit
Thickness	µm	75	3 mil
Density	g/cm <sup>3</sup>	0,919	57320 lb/ft <sup>3</sup>
Yield	m <sup>2</sup> /kg	14,5	10210 in <sup>2</sup> /lb
Width (single wound)	m	3300	130 inches
Width (centre folded)	m	1650	65 inches
Length	m	335	1100 ft
Core diameter	mm	76	3 inches

**Typical Physical Properties** The following technical information and data should be considered representative or typically only and should not be used for specifications purposes.

ASTM test method	Unit	75		3		Unit		
		LD	TD	LD	TD			
Tensile strenght	D882-95	kg/cm <sup>2</sup>	880,2	1017	12508	14458	psi	
Elongation at break	D882-95	%	230	220	230	220	%	
Modulus of elasticity	D882-95	kg/cm <sup>2</sup>	2572	2744	36554	38998	psi 73°F	
Tear propagation	D1938	gr	80	75	80	75	gr	
Free shrink	D2732-83	93.3°C	%	10,5	17,9	10,5	17,9	% 200°F
		104.4°C	%	17,9	29,4	17,9	29,4	% 220°F
		115°C	%	44,1	54,6	44,1	54,6	% 240°F
		125°C	%	68,3	69,3	68,3	69,3	% 260°F
		135°C	%	73,5	73,5	73,5	73,5	% 280°F
Max shrink tension	D2732-95	90°C	kg/cm <sup>2</sup>	16,0	23,3	227,6	327,1	psi 200°F
		100°C	kg/cm <sup>2</sup>	20,9	26,6	284,5	369,8	psi 220°F
		115°C	kg/cm <sup>2</sup>	22,7	27,1	312,9	384,0	psi 240°F
		125°C	kg/cm <sup>2</sup>	22,7	27,0	312,9	384,0	psi 260°F
		135°C	kg/cm <sup>2</sup>	22,8	27,8	312,9	395,6	psi 280°F
Haze	D1003-95	%	6,5		6,5	6,5	%	
Gloss	D2475-90	i=60 gloss units	130		130	130	i=60 gloss units	
Kinetic coefficient of friction	D1894	film/film	0,23		0,23	0,23	film/film	

LD = Longitudinal Direction / TD = Transverse Direction

**Features**

- Extremely tough, multilayer, cross linked polyolefin
- Excellent transparency and superior clarity, gloss
- Flexibility in sealing options: the film can be sealed using impulse, constante heat or electrostatic devices
- Best abuse and punture resistance
- Lighter than any other product on the market

**Applications**

- film membrane designed for wing frames
- suitable for wing and cross beam of AC classes, C-Class and equivalent.
- fully compatible with double sided tapes PWD09234, available in 25 and 50mm rolls (other widths on demand)
- finishing tape PWS01328 is high recommended, available in 100mm rolls (other widths on demand)
- other gauges available 50, 38, 32, 19, 15, 13 micron suitable for cross beam and other areas

**Storage**

Store under normal conditions of 60° to 80°F (16° to 27°C) and 40 to 60% RH in the original packaging.

**Shelf Life**

To guarantee the best performance, use this tape within 12 months from the manufacturing date. Recyclable.

**Product use**

All statements, technical information and recommendations contained in this document are based upon tests or experiments that we believe reliable. However, many factors beyond our control can affect the use and performance of the product in a particular application, including under which the products is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

**Warranty and limited remedy**

Unless stated otherwise in the product literature or packaging insert, the manufacturer warrants that each product meets the applicable specifications at the shipping time. Individual products may have additional or different warranties as stated in the product literature or package inserts. We make no other warranties, express or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose or any implied warranty arising out of a course of dealing, custom or usage of trade. User is responsible for determining whether the product is fit for a particular purpose and suitable for user's application. If the product is defective within the warranty period, your exclusive remedy and our and seller's sole obligation will be, at our option, to replace the product or refund the purchase price.

**Limitation of liability**

Except where prohibited by law, we and seller will not be liable for any loss or damage arising from the product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.



▷▷ Pietro Parmeggiani S.r.l.  
Via S. Giovenale, 86  
47922 Rimini  
Italy

T +39 0541 1646823  
F +39 0541 1642195  
E info@protect-tapes.com  
W www.protect-tapes.com

PROtect tapes<sup>®</sup> is a registered trademark of Pietro Parmeggiani S.r.l.

© Pietro Parmeggiani S.r.l. 2015. All rights reserved.

**Interpretation:**

The measurement committee understands that the industry standard for these LDPE materials is a tolerance of 5% in mechanical properties.

Rule 20.3 requires that any alternative material is to match the weight and stiffness of Cortuff 300.

ASTM 882-95 paragraph 4.3 states “The tensile modulus of elasticity is an index of the stiffness of thin plastic sheeting”

In this particular case the industry standard tolerance is applied. That is “match” is interpreted to mean within 5% of the Cortuff 300 weight and stiffness.

Both these materials have a thickness of 3mil (0.075mm). The density of the Cortuff is specified as 0.937 and the PROtect WINGLAR PWC075 is 0.919, a difference of 2.0%. On this basis the weight of the material is deemed to match.

The mean of the transverse and longitudinal modulus of elasticity of the Cortuff 300 is 36000psi and the PROtect WINGLAR PWC075 is 37800 psi (3 significant figures as per ASTM standard), a difference of 5.0%. On this basis the stiffness of the material is deemed to match.

PROtect WINGLAR PWC075 is approved for use as a “soft aerodynamic surfaces of the **wing**”

END

Issued by the America's Cup Measurement Committee on February 28 2016.