



Hysol® EA 9895 WPP

Composite Surfacing Media

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Description

Hysol EA 9895WPP is a pre-impregnated polyester peel ply product supplied in film form. It is a specially designed resin system capable of curing at 177°C (350°F). It is compatible with state-of-the-art composite prepreg resin systems and provides minimal residual peel ply fibers at the bond surface after curing and removal. No further processing steps are required prior to secondary bond operations, thus eliminating the need for sand and solvent wipe operations. See www.hysolpeelply.com for further info including MSDS's.

Features	Benefits
Generates a bonding surface that provides a more durable bond than dry peel ply fabrics	Greater durability over the life of the production article lowers repair costs
Minimal residual polyester fibers left on substrate after removal	Eliminates contamination of bonding surface by residual fibers
Promotes cohesive failure mode	Provides a consistent bonding surface
Compatible with third generation composites	Performs well with tough state of the art composites Broadens shop processing conditions
No sanding or solvent wiping required for bonding	Minimizes surface preparation time and is ergonomically friendly Reduces cost of use
Minimal force required to remove peel ply layer	Reduces shop time for fabric removal. Ideal for large parts. Fabric strips easily in one piece
Cures at 177°C (350°F)	Consistent with current composite cure parameters
Long Out-time – 14 days minimum at 23°C	Facilitates shop floor usage and repair applications Lowers handling and storage costs

Product Detail

Product Form	One-part film
Product Color	Neutral-off white
Areal Weight	161 g/m ² (0.033 PSF)
Support Carrier	Polyester peel ply
Roll Dimensions	Nominal 1 m wide by 50.9 m long (3' wide by 167 lineal feet)
Resin Content	48% nominal

Application

Storage Life - This product requires refrigerated storage. Store @ 0°F/-18°C or below for maximum storage life. Warranty life @ 0°F/-18°C is 12 months from date of shipment. Store only in sealed containers to prevent moisture contamination. Allow all moisture to evaporate before opening for use.

Open Assembly Time - This adhesive may be used within the following schedule after removing from cold storage:

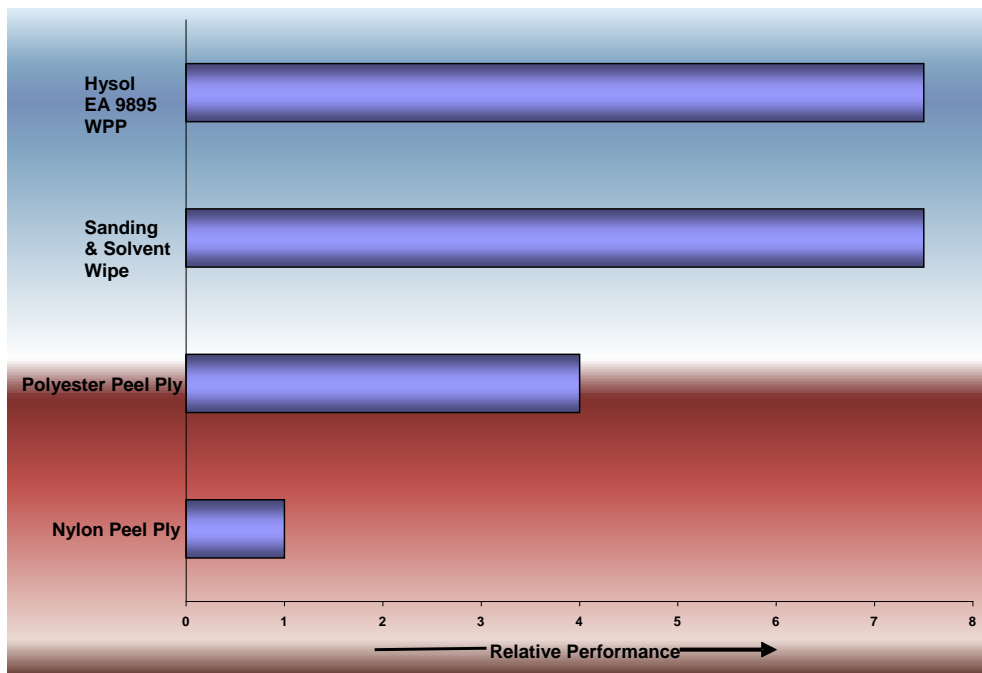
- @ 25°C / 77°F 14 days
- @ 32°C / 90°F 10 days

Applying - Tool surface should be clean, dry and properly prepared. Hysol EA 9895 Peel Ply, with one liner left on it, may be tacked to the tool. The liner should remain with the product until just before assembly of the composite prepreg. This will minimize contamination of the bond joint.

Curing - This product may be cured for 90 to 120 minutes at 177°C (350°F). Heat-up rate to the cure temperature is not critical, but should be between 0.6° and 5.6°C (1° and 10°F) per minute. Pressure should be applied before heating the parts to be bonded and maintained until cool down of the assembly.

Removal - Remove Hysol EA 9895WPP just prior to secondary bond operation of composite detail. Starting at one corner, slowly and consistently, peel the Hysol EA 9895WPP away from the part. Peeling in a diagonal (to peel ply yarn) direction seems to facilitate removal. After completely removing EA9895WPP, continue immediately with secondary bond operations.

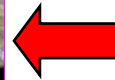
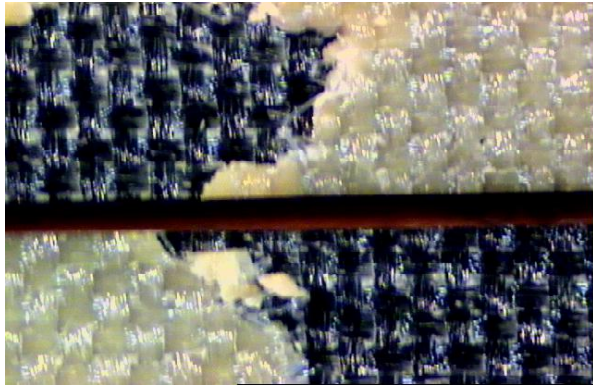
Bond Strength Performance - Relative bond strength is indicated below for the various surface preparations methods. Hysol EA 9895WPP prepared surfaces produce equivalent bond strengths to sanding and solvent surfaces without their additional processing steps.



G1c Performance

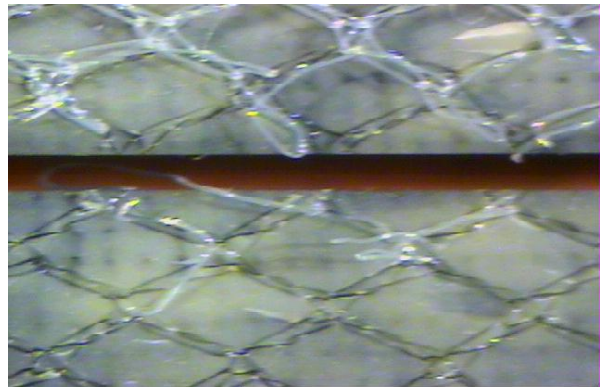
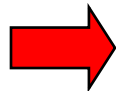
Failure Mode Examination - Failure modes are improved (from adhesive to cohesive) by the use of Hysol EA 9895WPP over a model system containing a “dry” peel ply fabric

Hysol EA 9895WPP vs. Dry Peel Ply



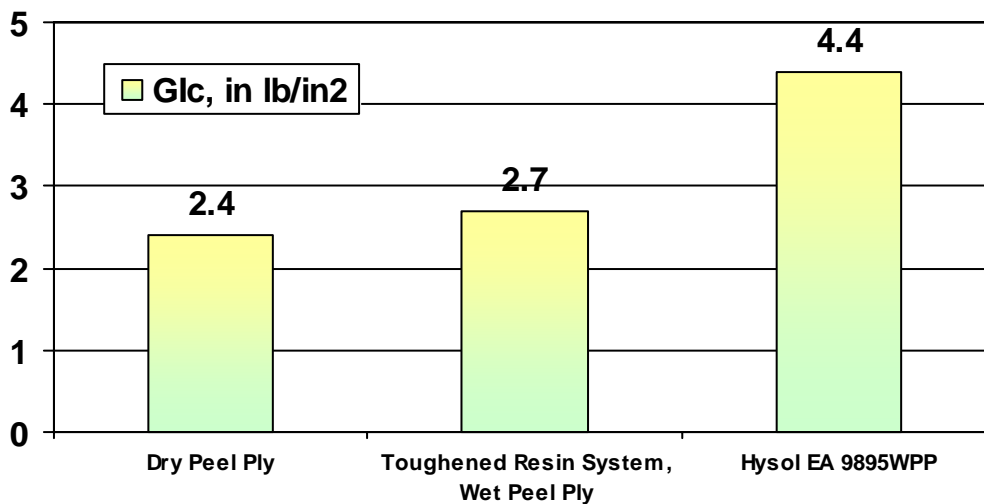
Polyester Dry Peel Ply,
Toughened Film Adhesive

Hysol EA 9895 WPP,
Toughened Film Adhesive



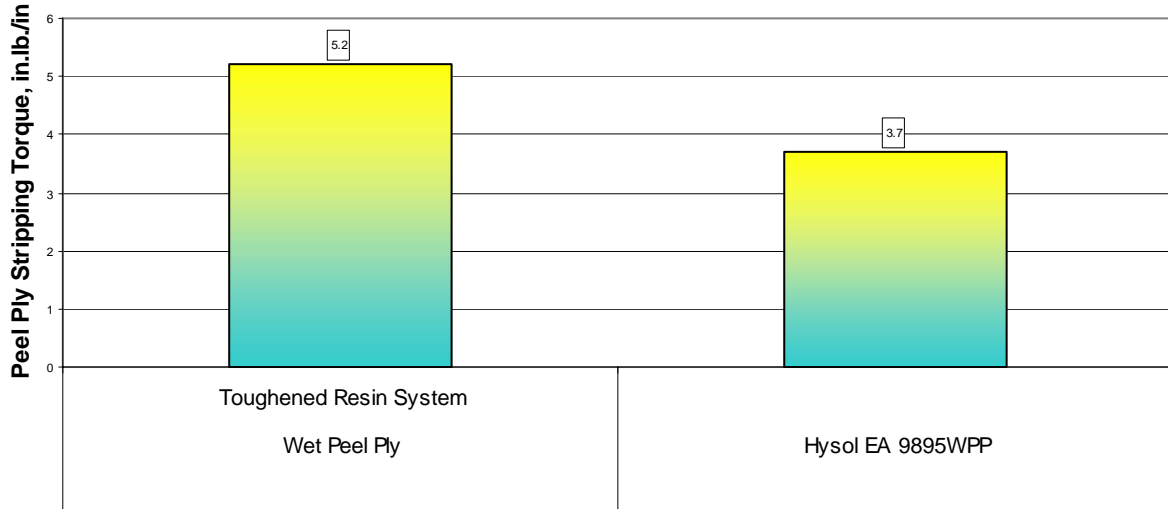
Bond Strength Performance - Hysol EA 9895WPP improves bonded joint durability of composite structures over model systems containing either a dry peel ply fabric or a peel ply fabric pre-impregnated with a resin system. Hysol EA 9695 0.05K is the composite film adhesive used in the secondary bond operation.

Surface Characterization



Stripping Force - Hysol EA 9895WPP has been formulated to require less stripping force for removal of the peel ply fabric over a model system containing a peel ply fabric pre-impregnated with a “toughened” resin system.

Cured Peel Ply Stripping Force



Dry Peel Ply-Warp Peel Direction



EA9895WPP-Diagonal Peel Direction



Mechanical Data:

The evaluation of Hysol® EA 9895WPP on Toray Composite F6273C-07M bonded to various selected Hysol® adhesive products EA 9696 (Film Adhesive), EA 9380 and EA 9360 (Paste Adhesive).

Single Slotted Lap Shear - Tested at -67°F

EA 9895 WPP			
SX #	EA 9696	EA 9380	EA 9360
	psi	psi	psi
1	2717	1482	1136
2	3067	1323	1593
3	2702	1380	1282
4	2538	1053	1074
5	3230	1165	1119
Avg.	2851	1281	1241
Std. Dev	287	172	212
Failure	Substrate and some adhesive to substrate	Adhesive to substrate and some cohesive within the substrate	Adhesive to substrate

Single Slotted Lap Shear - Tested at 75°F

EA 9895WPP				
SX #	EA 9696	EA 9380	EA 9360	EA 9360 Sanded
	psi	psi	psi	psi
1	2850	1763	1537	3367
2	2777	1902	1522	3803
3	2876	1934	1374	3224
4	3335*	1632	1535	3496
5	2759	1523	1475	3421
Avg.	2815	1751	1489	3462
Std. Dev.	56	175	69	215
Failure	Mainly adhesive to substrate	Substrate and some adhesive to substrate	Adhesive to substrate	Adhesive to substrate and some substrate

*Statistical outlier, not included in the average and standard deviation calculation.

Double Cantilever Beam Shear - Tested at 75°F

EA 9895WPP				
SX #	EA 9696	EA 9380	EA 9360	EA 9360 Sanded
	$\frac{\text{lb}}{\text{in}}$	$\frac{\text{lb}}{\text{in}}$	$\frac{\text{lb}}{\text{in}}$	$\frac{\text{lb}}{\text{in}}$
1	5.18*	0.94	0.65	1.48
2	6.41	0.93	1.15	1.49
3	6.57	0.88	0.62	1.51
4	6.57	0.90	0.67	1.67
5	6.33	0.78	0.80	1.55
Avg.	6.47	0.89	0.78	1.54
Std. Dev.	0.12	0.06	0.22	0.08
Failure	Mainly substrate failure	Adhesive to substrate and some substrate failure	Adhesive to substrate and some substrate failure	Adhesive to substrate failure

*Statistical outlier, not included in the average and standard deviation calculation.

Cleanup - It is important to remove excess material from the part and bonding tools prior to curing. Uncured product may be trimmed and removed with a sharp object. Residual resin may be removed with denatured alcohol or many common industrial solvents. Be careful to prevent any solvent from entering the uncured bondline, as solvent will degrade the final performance. Consult with your supplier's information pertaining to the safe and proper use of solvents.

Handling Precautions

Do not handle or use until the Material Safety Data Sheet has been read and understood.
 For industrial use only. See www.henkelna.com/aerospace or www.hysolpeelply.com for more info.

General:

As with most epoxy based systems, use this product with adequate ventilation. Do not get in eyes or on skin. Avoid breathing the vapors. Wash thoroughly with soap and water after handling. Empty containers retain product residue and vapors so obey all precautions when handling empty containers.
 ONE PART

CAUTION! This material may cause eye and skin irritation or allergic dermatitis. It contains epoxy resins.

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