

**Advanced Materials****Arathane<sup>®</sup> AW 5540 Resin  
Hardener HW 5541 or  
Hardener HW 5542 Adhesive****POLYURETHANE ADHESIVE**

- Varied work lives
- Sag resistance
- Flexible

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**DESCRIPTION :**

Arathane<sup>®</sup> AW 5540 Resin with Hardener HW 5541 or Hardener HW 5542 polyurethane adhesive is a versatile system designed for use with automatic mixing and dispensing equipment. Arathane<sup>®</sup> AW 5540 Resin with Hardener HW 5541 polyurethane adhesive produces a work life of 10 to 15 minutes.

Arathane<sup>®</sup> AW 5540 Resin with Hardener HW 5542 polyurethane adhesive has a 2 to 3-minute work life. Once cured, the adhesives exhibit identical physical properties and are well suited for use on SMC, fiberglass-reinforced plastics, cured plastics and metals.

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**APPLICATIONS :**

- SMC
- Fiberglass-reinforced plastics
- Cured plastics
- Metal

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**ADVANTAGES :**

- 1:1 mix ratio by volume
- Easy to pump
- Color coded
- Thixotropic and non sagging (1/4-in. (6mm) bead)
- Excellent adhesion
- Fast curing
- Good moisture resistance
- Formulated without asbestos, MOCA (44' methylene bis [2-chloroaniline]), or TDI (toluene diisocyanate)

**TYPICAL PROPERTIES :**

<u>Property</u>	<u>Test Method</u>	<u>Test Values<sup>(1)</sup></u>	
		<u>Resin</u>	<u>Hardener</u>
Color/Appearance	Visual	Dark Brown liquid	Red liquid
Specific Gravity @ 73 °F (25 °C)	ASTM D-792	1.4	1.3
Viscosity (cP) @ 77 °F (25 °C)	ASTM D-2393	60,000	20,000

**TYPICAL MIXED PROPERTIES :**

<u>Property</u>	<u>Test Method</u>	<u>Test Values<sup>(1)</sup></u>
		Color
Reaction Ratio (by weight)		100R/95H
Reaction Ratio (by volume)		100R/100H
Sag Resistance, in (mm),		
Horizontal,		1/4 (6)
Vertical	ASTM D-2471	1/8 (3)
Pot Life, minutes @ 77 °F (25 °C),		15
With HW 5542		3
With HW 5541		

<sup>(1)</sup> Tested @ 77 °F (25 °C)**RECOMMENDED CURE SCHEDULES :**

<u>Temperature</u>	<u>Minimum Cure Time</u>	
	<u>AW 5540 / HW 5541 System</u>	<u>AW 5540 / HW 5542 System</u>
68 °F (20 °C)	16 hours	6 hours
140 °F (60 °C)	2 hours	1 hour
212 °F (100 °C)	10 minutes	10 minutes

## TYPICAL CURED PROPERTIES :

<u>Property</u>	<u>Test Method</u>
<b>Lap Shear Strength</b> , psi (MPa)	ISO 4587
Bonds assembled from dispensed adhesives.	
Bond line overlap : 1 sp. In. (6.452 cm <sup>2</sup> )	
Bond line thickness : 0.035 in. (0.6 mm)	
Cure : 30 minutes at 275 °F (135 °C) simulated bake cycle treatment.	
Test speed; 0.5 in/mm (12.5 mm/min)	
D = Delamination of substrate	
C = Cohesive failure of adhesive and/or primer	

Effect of Test Temperature on various substrates

<u>Test Temperature</u>	<u>Substrate</u>			
	<b>General Purpose SMC to General Purpose SMC<sup>1</sup></b>	<b>Low Profile SMC to Low Profile SMC<sup>2</sup></b>	<b>Aluminum to Aluminum<sup>3</sup></b>	<b>Cold Rolled Steel to Steel<sup>4</sup></b>
-40 °F (-40 °C)	1,030 (7.1) – D	850 (5.8) – D	1,950 (13.4) – C	2,500 (17.2) – C
74 °F (23 °C)	1,050 (7.2) – D	700 (4.8) – D	2,340 (16.1) – C	2,300 (15.8) – C
180 °F (82 °C)	600 (4.1) – D	530 (3.6) – D	825 (5.7) – C	580 (4) – C
200 °F (93 °C)	510 (3.5) – D	--	540 (3.7) – C	--

Effect of Environmental Conditioning (Test at 74 °F/23 °C)

	<b>Low Profile SMC to Low Profile SMC<sup>2</sup></b>	<b>Aluminum to Aluminum<sup>3</sup></b>	<b>Cold Rolled Steel to Steel<sup>4</sup></b>
14 days @ 190 °F (88 °C)	780 (5.4) – D	2,350 (16.2) – C	2,280 (15.7) – C
14 days water immersion @ 74 °F (23 °C)	670 (4.6) – D	2,050 (14.1) – C	1,700 (11.7) – C
14 days @ 97 °F (37 °C), 98 % RH	840 (5.8) – D	1,780 (12.3) – C	2,000 (13.8) – C
14 days, 5 % salt spray @ 95 °F (35 °C)	720 (4.9) – D	1,870 (12.9) – C	--
24 hrs. Boiling water	690 (4.7) – D	1,820 (12.5) – C	--
24 hrs. Diesel fuel immersion @ 74 °F (23 °C)	730 (5) – D	2,010 (13.8) – C	--
24 hrs. Antifreeze immersion @ 74 °F (23 °C)	760 (5.2) – D	2,300 (15.8) – C	--

<sup>1</sup> Primed with RP-5550 wash primer

<sup>2</sup> NR 9462/0.100 in primed with RP 0005 wash primer

<sup>3</sup> 6061T6 Aluminum sanded and primed with RP-870

<sup>4</sup> Primed with Forbes Primer (PPG 600-261)

**Property****Lap Shear Strength vs. Time****Arathane® AW 5540 Resin/Hardener HW 5541 polyurethane adhesive**

At 77 °F (25 °C), psi (MPa)

Substrate : Alclad 2024 T-3 Aluminum, Etched per ASTM D-2651 (Methode A)

Bond line Overlap : 0.5 in. (12.5 mm)

Bond line Thickness : 0.030 in (0.8 mm)

<b><u>Time</u></b>	<b><u>Strength</u></b>
2 hours	14 (0.1)
4 hours	103 (0.7)
8 hours	146 (1)
24 hours (1 day)	1,035 (7.1)
48 hours (2 days)	1,266 (8.7)
120 hours (5 days)	1,286 (8.7)
168 hours (7 days)	1,300 (9)
240 hours (10 days)	1,338 (9.2)
336 hours (14 days)	1,312 (9)

**Property****Lap Shear Strength vs. Time****Arathane® AW 5540 Resin/Hardener HW 5542 polyurethane adhesive**

At 77 °F (25 °C), psi (MPa)

Substrate : Elpo Coated Steel

Bond line Overlap : 0.5 in. (12.5 mm)

Bond line Thickness : 0.030 in (0.8 mm)

<b><u>Time</u></b>	<b><u>Strength</u></b>
2 hours	320 (2.2)
4 hours	879 (6)
8 hours	894 (6.2)
24 hours (1 day)	1,820 (12.5)
48 hours (2 days)	1,347 (9.3)
72 hours (3 days)	1,466 (10.1)
168 hours (7 days)	1,424 (9.8)

**Property**

Elongation at break, %  
Tensile Strength @ 77 °F (25 °C), psi (MPa)  
Hardness (Shore D)

**Test Method**

ASTM D-638  
ASTM D-638  
ASTM D-2240

**Test Values<sup>(1)</sup>**

80  
2,500 (17.2)  
65

<sup>(1)</sup> Tested @ 77 °F (25 °C)

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**CAUTION :**

Huntsman Advances Materials Americas Inc. maintains up-to-date Material Safety Data Sheet (MSDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest MSDS to determine possible health hazards and appropriate precautions to implement prior to using this material. Copies of the latest MSDS may be requested by calling our customer service group at 800-367-8793 or emailing your request to [adhesives\\_group@huntsman.com](mailto:adhesives_group@huntsman.com)

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For detailed PPE recommendations and exposure control options consult the product MSDS or a Huntsman EHS representative.

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**FIRST AID :**

Eyes and skin : Flush eyes with water for 15 minutes. Contact a physician if irritation persists. Wash skin thoroughly with soap and water. Remove and wash contaminated clothing before reuse.

Inhalation : Remove subject to fresh air.

Swallowing : Dilute by giving water to drink and contact a physician promptly. Never give anything to drink to an unconscious person.

**KEEP OUT OF REACH OF CHILDREN**

**FOR PROFESSIONAL AND INDUSTRIAL USE ONLY**

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