

TECHNICAL DATA SHEET

DESCRIPTION

All Weather J51 AW is a two component, moisture tolerant, styrene free, acrylic anchoring gel that meets ASTM C881 and AASHTO M235 specification requirements. All Weather J51 AW is formulated to set up at room temperatures and down to temperatures of 15°F (-9°C).

USE

All Weather J51 AW is ideal for anchoring dowels, bolts, threaded rod, pins and reinforcement steel in concrete. All Weather J51 AW can also be used in cooler and freezer applications or anywhere low temperature installations are required.

FEATURES

- ASTM C881 / AASHTO M235 Type II* Grade 3 Class A & B. *With exception of linear shrinkage and gel time.
- Ideal for cold weather installations
- Moisture tolerant
- High structural strength adhesive
- Styrene free
- Non-sag gel consistency for horizontal and vertical installations
- Easy dispensing from dual cartridges

Estimating Guide Rebar

Bolt Diameter Rebar size	Hole Diameter	Hole Depth	Anchors per 28 oz Cartridge Rebar/Dowel
3/8"-#3 (1 cm)	1/2" (1.3 cm)	4" (10.2 cm)	104
1/2"-#4 (1.3 cm)	5/8" (1.6 cm)	5" (12.7 cm)	65
5/8"-#5 (1.6 cm)	3/4" (1.9 cm)	6" (15.2 cm)	45
3/4"-#6 (1.9 cm)	7/8" (2.2 cm)	7" (17.8 cm)	31
7/8"-#7 (2.2 cm)	1" (2.5 cm)	8" (20.3 cm)	23
1"-#8 (2.5 cm)	1-1/8" (2.8 cm)	9" (22.9 cm)	18
1-1/4"-#10 (3.2 cm)	1-1/2" (3.8 cm)	9" (22.9 cm)	9

Estimating Guide

Threaded Rod			
Bolt Diameter Rebar Size	Hole Diameter	Hole Depth	Anchors per 28 oz Cartridge Rebar/Dowel
3/8"-#3 (1 cm)	7/16" (1.2 cm)	4" (10.2 cm)	122
1/2"-#4 (1.3 cm)	9/16" (1.4 cm)	5" (12.7 cm)	70
5/8"-#5 (1.6 cm)	3/4" (1.9 cm)	6" (15.2 cm)	31
3/4"-#6 (1.9 cm)	7/8" (2.2 cm)	7" (17.8 cm)	20
7/8"-#7 (2.2 cm)	1" (2.5 cm)	8" (20.3 cm)	15
1"-#8 (2.5 cm)	1-1/8" (2.8 cm)	9" (22.9 cm)	11
1-1/4"-#10 (3.2 cm)	1-3/8" (3.2 cm)	9" (22.9 cm)	9

Packaging

PRODUCT CODE	PACKAGE	SIZE	
		Ounce	Milliliters
100913	Unicartridge	10.1 oz	300 ml
100914	Cartridge	28 oz	828 ml
101086	All Weather J51 AW Static Mixer (each)		

STORAGE

Store between 41 °F (5° C) and 77 °F (25 °C). 18 months when stored in unopened containers in dry conditions.

APPLICATION

All surfaces that All Weather J51 AW will be installed on must be free of frost and ice. Check the expiration date on the cartridge to ensure it is not expired. Do not use expired product!

Remove the protective cap from the adhesive cartridge and insert the cartridge into the recommended dispensing tool. Before attaching mixing nozzle to the 28 fl. oz. cartridge only, it is necessary to purge the cartridge by dispensing a small amount of material until both components are flowing evenly. This step is not recommended for the 10 fl. oz. cartridge. After the cartridge has been prepared, screw on the proper mixing nozzle to the cartridge. Do not modify mixing nozzle. Confirm that internal mixing element is in place prior to dispensing the adhesive. Take note of the air and base material temperatures and review Cure Schedule prior to starting the injection process.

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Dispense a small amount of material from the mixing nozzle onto a disposable surface prior to initial injection into the drill hole. The product should be a uniform gray color with no streaks. When changing cartridges, never re-use nozzles. A new nozzle should be used with each new cartridge.

Step 1: Drill hole in concrete using a rotary-percussion power drill (rotary-hammer drill) and a carbide-tipped SDS or SDS-Plus type drill bit complying with ANSI B212.15-1994, to the diameter and embedment depth adhering to minimum spacing, minimum edge distance, and minimum concrete member thickness.

Caution: Wear suitable eye and skin protection. Avoid inhalation of dust during drilling and debris removal.

Step 2: Blow out hole using oil-free compressed air at a minimum of 70 psi. While blowing air, insert the nozzle into the hole until in contact with the bottom for not less than one second, and then withdraw. Repeat.

Step 3: Insert a cleaning brush for the proper drill hole diameter. Thrust the brush to the bottom of the borehole while twisting. Once the brush is in contact with the bottom of the hole, turn the brush one-half revolution, and then quickly withdraw the brush with a vigorous, twisting pull. Repeat.

Step 4: Repeat blow out of hole with air as per Step 2 above. Repeat step 3 followed by step 2.

Step 5: When using cartridge insert the cartridge into the extrusion tool, and attach the supplied mixing nozzle to the cartridge. Do not modify mixing nozzle. Prior to injection, dispense some mixed epoxy through the mixing nozzle and discard until the color of the extruded material becomes uniform. After uniform color is achieved, insert the end of the mixing nozzle into the borehole until in contact with the bottom. Then, dispense the adhesive while slowly withdrawing the nozzle until borehole is approximately 1/2 - 2/3 full, and then withdraw the mixing nozzle. Keep the nozzle attached on partially used cartridges. A new mixing nozzle must be used if the gel time has been exceeded between injections.

Step 6: Mark the anchor rod with the required embedment depth. Insert the clean and oil-free anchor rod into the adhesive in the borehole, turning it slowly as it is pushed downward until contact with the bottom of the borehole. Make sure the hole is completely filled with adhesive and that no gaps appear between the anchor rod and borehole.

Step 7: Adjust the alignment of the anchor in the hole immediately. Do not disturb it between the Gel Time and the Minimum Cure Time. Do not torque or apply load to the anchor until the Recommended Cure Time has elapsed.

CLEAN UP

Clean up with full strength Dayton Citrus Cleaner J48 or Xylene. Cured, hardened All Weather J51 AW can only be removed mechanically.

LIMITATIONS**FOR PROFESSIONAL USE ONLY**

All surfaces that All Weather J51 AW will be installed on must be free of frost and ice. Do not thin or mix the All Weather J51 AW with any other material, solvent, thinner or other bonding agent or epoxy.

Do not use All Weather J51 AW that has exceeded its shelf life as physical properties will be adversely affected. Minimum age of concrete must be 21-28 days from date of placement depending on curing and drying conditions.

Not recommended for any application where there may be a sustained tensile load, including overhead applications

PRECAUTIONS**READ SDS PRIOR TO USING PRODUCT**

- Component A – Irritant
- Component B – Corrosive
- Product is a strong sensitizer
- Use with adequate ventilation
- Wear protective clothing, gloves and eye protection (goggles, safety glasses and/or face shield)
- Keep out of the reach of children
- Do not take internally
- In case of ingestion, seek medical help immediately

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- May cause skin irritation upon contact, especially prolonged or repeated. If skin contact occurs, wash immediately with soap and water and seek medical help as needed.
- If eye contact occurs, flush immediately with clean water and seek medical help as needed
- Dispose of waste material in accordance with federal, state and local requirements
- Cured epoxy resins are innocuous

MANUFACTURER

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WARRANTY

Dayton Superior Corporation ("Dayton") warrants for 12 months from the date of manufacture or for the duration of the published product shelf life, whichever is less, that at the time of shipment by Dayton, the product is free of manufacturing defects and conforms to Dayton's product properties in force on the date of acceptance by Dayton of the order. Dayton shall only be liable under this warranty if the product has been applied, used, and stored in accordance with Dayton's instructions, especially surface preparation and installation, in force on the date of acceptance by Dayton of the order. The purchaser must examine the product when received and promptly notify Dayton in writing of any non-conformity before the product is used and no later than 30 days after such non-conformity is first discovered. If Dayton, in its sole discretion, determines that the product breached the above warranty, it will, in its sole discretion, replace the non-conforming product, refund the purchase price or issue a credit in the amount of the purchase price. This is the sole and exclusive remedy for breach of this warranty. Only a Dayton officer is authorized to modify this warranty. The information in this data sheet supersedes all other sales information received by the customer during the sales process. THE FOREGOING WARRANTY SHALL BE EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER WARRANTIES OTHERWISE ARISING BY OPERATION OF LAW, COURSE OF DEALING, CUSTOM, TRADE OR OTHERWISE.

Dayton shall not be liable in contract or in tort (including, without limitation, negligence, strict liability or otherwise) for loss of sales, revenues or profits; cost of capital or funds; business interruption or cost of downtime, loss of use, damage to or loss of use of other property (real or personal); failure to realize expected savings; frustration of economic or business expectations; claims by third parties (other than for bodily injury), or economic losses of any kind; or for any special, incidental, indirect, consequential, punitive or exemplary damages arising in any way out of the performance of, or failure to perform, its obligations under any contract for sale of product, even if Dayton could foresee or has been advised of the possibility of such damages. The Parties expressly agree that these limitations on damages are allocations of risk constituting, in part, the consideration for this contract, and also that such limitations shall survive the determination of any court of competent jurisdiction that any remedy provided in these terms or available at law fails of its essential purpose.

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Appendix A

TABLE 1: All Weather J51AW Performance to ASTM C881-15^{1,2,3}

Property	Cure Time	ASTM Standard	Units	Sample Conditioning Temperature		
				Class A	Class B	Class C
				15 °F (-10 °C)	50 °F (10 °C)	95 °F (35 °C)
Gel Time – 60 Gram Mass ⁴	----	C881	Min	50	10	4
Compressive Yield Strength	7 day	D695	PSI (MPa)	5,930 (40.9)	5,630 (38.8)	3,450 (23.8)
Compressive Modulus			PSI (MPa)	357,300 (2,463)	273,000 (1,882)	274,200 (1,890)
Viscosity	----	C881	----	Non-Sag		
Bond Strength Hardened to Hardened Concrete	2 day	C882	PSI (MPa)	3,050 (21.0)	3,020 (20.8)	2,480 (17.1)
	14 Day		PSI (MPa)	3,210 (22.1)	3,040 (21.0)	3,090 (21.3)
Bond Strength Fresh to Hardened Concrete				PSI (MPa)	2,120 (14.6)	
Heat Deflection Temperature	7 days	D648	°F (°C)	145 (62.8)		
Water Absorption	24 Hours	D570	%	0.42		
Linear Coefficient of Shrinkage	----	D2566	%	0.014		

1. Results based on testing conducted on a representative lot(s) of product. Average results will vary according to the tolerances of the given property.

2. Full cure time is listed above to obtain the given properties for each product characteristic.

3. Results may vary due to environmental factors such as temperature, moisture and type of substrate.

4. Gel time may be lower than the minimum required for ASTM C881.

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TABLE 2: All Weather J51AW ultimate and allowable Tension and Shear loads for Threaded Rod^{1,2}

Threaded Rod Diameter in.	Nominal Drill Bit Diameter in.	Embedment Depth in. (mm)	Tension Load Based on Bond Strength/Concrete Capacity		Allowable Loads Based on Steel Strength ³					
			$f'_c \geq 4,000$ psi (27.5 MPa)		Tension			Shear		
			Ultimate lbs. (kN)	Allowable lbs. (kN)	ASTM F1554 Grade 36 lbs. (kN)	ASTM A193 Grade B7 lbs. (kN)	ASTM F593 304/316 SS lbs. (kN)	ASTM F1554 Grade 36 lbs. (kN)	ASTM A193 Grade B7 lbs. (kN)	ASTM F593 304/316 SS lbs. (kN)
3/8	7/16	3 3/8 (86)	7,127 (31.7)	1,782 (7.9)	2,114 (9.4)	4,556 (20.3)	3,645 (16.2)	1,089 (4.8)	2,347 (10.4)	1,878 (8.4)
1/2	9/16	4 1/2 (114)	13,273 (59.0)	3,318 (14.8)	3,758 (16.7)	8,099 (36.0)	6,480 (28.8)	1,936 (8.6)	4,172 (18.6)	3,338 (14.8)
5/8	3/4	5 5/8 (143)	16,800 (74.7)	4,200 (18.7)	5,872 (26.1)	12,655 (56.3)	10,124 (45.0)	3,025 (13.5)	6,519 (29.0)	5,216 (23.2)
3/4	7/8	6 3/4 (171)	22,231 (98.9)	5,558 (24.7)	8,456 (37.6)	18,224 (81.1)	12,392 (55.1)	4,356 (19.4)	9,388 (41.8)	6,384 (28.4)
7/8 ⁴	1	7 7/8 (200)	32,174 (143.1)	8,043 (35.8)	11,509 (51.2)	24,804 (110.3)	16,867 (75.0)	5,929 (26.4)	12,778 (56.8)	8,689 (38.7)
1	1 1/8	9 (229)	41,474 (184.5)	10,369 (46.1)	15,033 (66.9)	32,398 (144.1)	22,030 (98.0)	7,744 (34.4)	16,690 (74.2)	11,349 (50.5)

1. Allowable bond strength/concrete capacity calculated using a safety factor of 4.0.
2. The lower value of either the allowable bond strength/concrete capacity or steel strength should be used as the allowable tension value for design.
3. Allowable steel strengths calculated in accordance with AISC Manual of Steel Construction: Tensile = $0.33 \cdot F_u \cdot A_{nom}$, Shear = $0.17 \cdot F_u \cdot A_{nom}$
4. Values for bond strength of 7/8 in. threaded rod were linearly interpolated from 3/4 in. & 1 in. data.

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TABLE 3: All Weather J51AW ultimate and allowable Tension and Shear loads for Rebar^{1,2}

Rebar Size	Nominal Drill Bit Diameter in.	Embedment Depth in. (mm)	Tension Load Based on Bond Strength/Concrete Capacity		Allowable Loads Based on Steel Strength ³			
			f' _c ≥ 4,000 psi (27.5 MPa)		Tension		Shear	
			Ultimate lbs. (kN)	Allowable lbs. (kN)	ASTM A615 Grade 60 lbs. (kN)	ASTM A615 Grade 75 lbs. (kN)	ASTM A615 Grade 60 lbs. (kN)	ASTM A615 Grade 75 lbs. (kN)
#3	7/16	3 3/8 (86)	9,723 (43.3)	2,431 (10.8)	2,640 (11.7)	3,300 (14.7)	1,683 (7.5)	1,870 (8.3)
#4	9/16	4 1/2 (114)	14,830 (66.0)	3,708 (16.5)	4,800 (21.4)	6,000 (26.7)	3,060 (13.6)	3,400 (15.1)
#5	3/4	5 5/8 (143)	19,838 (88.2)	4,960 (22.1)	7,440 (33.1)	9,300 (41.4)	4,743 (21.1)	5,270 (23.4)
#6	7/8	6 3/4 (171)	28,762 (127.9)	7,191 (32.0)	10,560 (47.0)	13,200 (58.7)	6,732 (29.9)	7,480 (33.3)
#7 ⁴	1	7 7/8 (200)	33,598 (149.5)	8,400 (37.4)	14,400 (64.1)	18,000 (80.1)	9,180 (40.8)	10,200 (45.4)
#8	1 1/8	9 (229)	39,623 (176.3)	9,906 (44.1)	18,960 (84.3)	23,700 (105.4)	12,087 (53.8)	13,430 (59.7)

1. Allowable bond strength/concrete capacity was calculated using a safety factor of 4.0.
2. The lower value of either the adjusted allowable bond strength/concrete capacity or steel strength should be used as the allowable tension or shear value for design.
3. Allowable steel strengths calculated in accordance with AISC Manual of Steel Construction: Tensile = (F_y*A_{nom})/2.5, Shear = 0.17*F_u*A_{nom}
4. Values for bond strength of #7 rebar were linearly interpolated from #6 & #8 data.