

Rowan Resins 427 Plus Epoxy Grout High Strength Foundation Epoxy Grout

Revised March 08

Description

ROWAN RESINS 427 PLUS epoxy grout represents the continued evolution of grout technology building on over four decades of continuous improvement in polymer and aggregate technology.

ROWAN RESINS 427 PLUS epoxy grout combines high-temperature performance and crack resistance with outstanding flow characteristics and versatility of fill rates.

Features/Benefits

- High early and seven day strengths
- Superior physical properties at high temperatures
- Excellent bearing area and flow
- Variable fill ratio for the optimum mix of flowability, bearing area and economics on a project by project basis
- Good chemical resistance

Where to Use ROWAN RESINS 427 PLUS epoxy grout

- Precision alignment of machinery, compressors and prime movers in the gas transmission and other industries
- Foundations under crusher ball mills, slab tables and other equipment in the steel industry
- The pulp and paper, chemical processing, mining and power industries for a wide variety of applications
- Applications requiring fast turnaround with high early and seven day compressive strengths

How to Apply ROWAN RESINS 427 PLUS epoxy grout

Application

Consult the ROWAN RESINS 427 PLUS epoxy grout Installation Bulletin or the product bag for details on the installation of ROWAN RESINS 427 PLUS epoxy grout.

ROWAN RESINS 427 PLUS epoxy grout can be used for deep pours. When pour thickness exceeds 6

inches (152mm), use of steel rebar is recommended. See Installation Bulletin on expansion joint and reinforcement bar suggestions.

With ROWAN RESINS 427 PLUS epoxy grout's unique variable fill ratio, minimum pour thickness can be as low as ½ in. (13mm) in many applications. When utilizing only three bags of aggregate, ROWAN RESINS 427 PLUS epoxy grout achieves flow rates better than many hi-flow epoxy grouts while maintaining excellent bearing area.

Robt. L. Rowan & Assoc., Inc. recommends that the user request the services of the local representative for a pre-job conference to plan the installation.

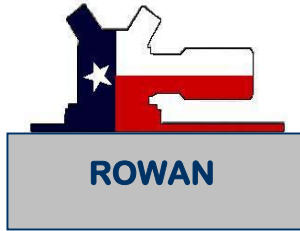
For Best Performance

- ROWAN RESINS 427 PLUS epoxy grout is a three-component epoxy grout formulated for industrial and professional use only and must be kept out of the reach of children. These products contain chemicals, which may be potentially HARMFUL to your health if not stored and used properly. Observing all precautions, which are found on material safety data sheets and product labels, can significantly reduce hazards. Please read this literature carefully before using
- Always use a head box when placing less than 1" (25mm) depths.
- Do not thin with solvents.
- Substrate temperature must be greater than 50°F (10°C).
- Cold material will exhibit decreased flowability, and reduced strength development.
- Do not alter the resin/hardener proportions.
- Make certain the most current version of this data guide is being used; call Customer Service (1-800-231-2908) to verify the most current version.

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- Proper application is the responsibility of the user. Field visits by Robt. L. Rowan & Assoc., Inc. personnel are for the purpose of making technical recommendations only, and are not to supervise or provide quality control on the job site.

Technical Data¹

Fill ratio

The fill ratio is the weight of aggregate to combined resin and hardener components. ROWAN RESINS 427 PLUS epoxy grout is designed to be utilized at a variable fill ratio from the standard 6.75:1 ratio to as low as 5.06:1 (hi-flow version).

The standard 1.73 ft³ (0.049m³) unit of ROWAN RESINS 427 PLUS epoxy grout includes 188 lb./85.2 kg (four 47 lb. Bags) of aggregate. This 6.75:1 fill ratio can be reduced to as low as three bags or a 5.06:1 fill ratio yielding 0.038m³. For projects requiring a fill ratio different than the standard four bag mix, simply determine how many bags of aggregate will be used (number of bags per unit x number of units) and purchase the components (resin-hardener-aggregate) separately.

Unlike most epoxy grouts, ROWAN RESINS 427 PLUS epoxy grout maintains high bearing area when fill ratios are decreased. In addition, physical properties including high temperature performance are maintained at high levels.

By determining the proper fill ratio for a particular project and purchasing accordingly, the cost per ft³, flow and physical properties are optimized. A guideline for suggested fill ratios is shown below. In using this guide the temperature of the foundation and plate is the critical concern, however, grout and ambient temperature are also important.

Fill Ratio Guideline

Temperature	1.73 ft. ³ Unit	
	Very thin Pours or Very Long Distances	Standard Pours
>90°F(>32°C)	-	-
70 to 90°F(21 to 32°C)	up to ½ bag	-
50 to 70°F(10 to 21°C)	½ to 1 bag	½ bag

The chart above provides guidelines showing the amount of the aggregate that can be removed from a 1.73ft.³ unit in order to optimize both flow and cost per ft.³

Chemical Resistance

ROWAN RESINS 427 PLUS epoxy grout resists non-oxidizing mineral acids and salts, caustics, dilute oxidizing acids and salts, plus some organic acids and solvents. For more specific information, contact your Robt. L. Rowan & Assoc., Inc. representative.

Cure Time vs. Temperature

Cure time of the grout will depend upon the temperature of the base and foundation rather than the ambient air temperature. Unless the ambient air temperature has been constant for several days the base/foundation temperature will generally be lower than air temperature. A surface thermometer and field judgment should be used to determine actual cure rates. Cured grout should have a solid almost metallic ring when struck close to the base with a hammer.

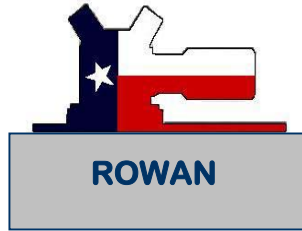
Working Time

The following chart is a guide for working time of ROWAN RESINS 427 PLUS epoxy grout at various ambient temperatures. The working time of ROWAN RESINS 427 PLUS epoxy grout begins when the hardener is added to the resin.

Temperature °F (°C)	Working Time – Minutes
90 (32)	50 to 60
70 (21)	90 to 120
50 (10)	120 to 150

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Compressive Strength

(ASTM C 579 Method B, Modified 2x2 in. Cubes)

Fill Ratio	7 day Ambient psi	(MPa)	Post Cured [†] psi	(MPa)
(standard)	14,000	(96)	16,000	(110)
(hi-flow)	11,500	(79)	12,500	(86)

Elevated Temperature – Compressive Strength* (ASTM C 580)

	73°F psi	(23°C) (MPa)	140°F psi	(60°C) (MPa)	170°F psi	(77°C) (MPa)
(standard)	15,000	(103)	12,300	(85)	10,000	(69)
(hi-flow)	12,500	(86)	9,000	(62)	7,000	(48)

Elevated Temperature – Flexural Modulus*

	73°F psi x 10 ⁶	(23°C) (GPa)	140°F psi x 10 ⁶	(60°C) (GPa)	170°F psi x 10 ⁶	(77°C) (GPa)
(standard)	2.1	(15.0)	1.7	(11.6)	.8	(6.0)
(hi-flow)	1.6	(11.0)	1.3	(8.9)	.5	(3.0)

Elevated Temperature – Flexural Strength*

	73°F psi	(23°C) (MPa)	140°F psi	(60°C) (MPa)	170°F psi	(77°C) (MPa)
(standard)	4,500	(31)	4,000	(28)	3,500	(24)
(hi-flow)	4,000	(28)	3,500	(24)	3,000	(21)

Creep

ASTM C 1181, 600 psi 140°F (4.4MPa, 60°C)

(standard)	4.0 x 10 ⁻³ in/in (cm/cm)
(hi-flow)	6.0 x 10 ⁻³ in/in (cm/cm)

*Cured 24 hrs. at room temperature, post cured 16 hrs. at 140°F and conditioned 24 hrs. at test temperature.

Cure Rates

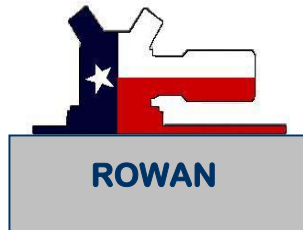
Hours	50°F psi	(10°C) (MPa)	75°F psi	(24°C) (MPa)	90°F psi	(32°C) (MPa)
8	-	-	-	-	-	-
16	-	-	9,500	(66)	10,000	(69)
24	-	-	10,000	(69)	13,000	(90)
48	4,500	(31)	13,000	(90)	14,000	(96)
72	6,500	(45)	13,500	(93)	15,000	(103)
96	8,000	(55)	14,000	(96)	15,000	(110)

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Tensile Strength (ASTM C 307)

(standard)	2,200psi (15 MPa)
(hi-flow)	2,000psi (14MPa)

Coefficient of Thermal Expansion (ASTM C 531) 73 to 210°F (23 to 99°

(standard)	19.0 x 10 ⁶ in/in/°F 34.0 x 10 ⁶ cm/cm/°C
(hi-flow)	23.0 x 10 ⁶ in/in/°F 41.0 x 10 ⁶ cm/cm/°C

Shrinkage Unrestrained – Linear (ASTM 531)

(standard)	.005%
(hi-flow)	.0065%

Bond Strength to Steel – Tension

	73°F (23°C)
	3,000psi (21MPa)

Bond Strength - Shear

	73°F (23°C)
	4,000psi (28MPa)

Density(ASTM C 905)

(standard)	124 lb./ft ³ (1.986 kg/m ³)
(hi-flow)	117 lb./ft ³ (1.874 kg/m ³)

Volume Per Unit

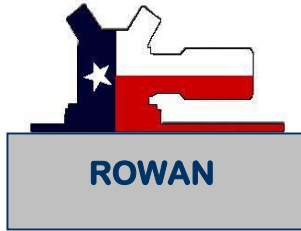
(standard)	1.73 ft ³ (0.049m ³)
(hi-flow)	1.35 ft ³ (0.038 m ³)
Impact Strength	Better Than Concrete
Abrasion Resistance	Better Than Concrete

Flash Points (Pensky-Martens Closed Cup)

ROWAN RESINS 427 PLUS Epoxy Grout Liquid	400°F (204°C)
ROWAN RESINS 427 PLUS Epoxy Grout Hardener	240°F (116°C)

¹Data is typical and representative of properties of actual production runs. Individual test results may vary by approximately 10% due to lab testing variations and batch to batch variations.

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Order Information

Packaging

- ROWAN RESINS 427 PLUS epoxy grout is available in two unitized package sizes for convenience. Due to installation variables, it is best to order an additional 10 to 20% as a safety precaution.

Shelf Life

- Shelf life is 18 months on the resin and hardener if stored in original, unopened containers under normal conditions.

Coverage

Grout Resin
Hardener
Grout Aggregate

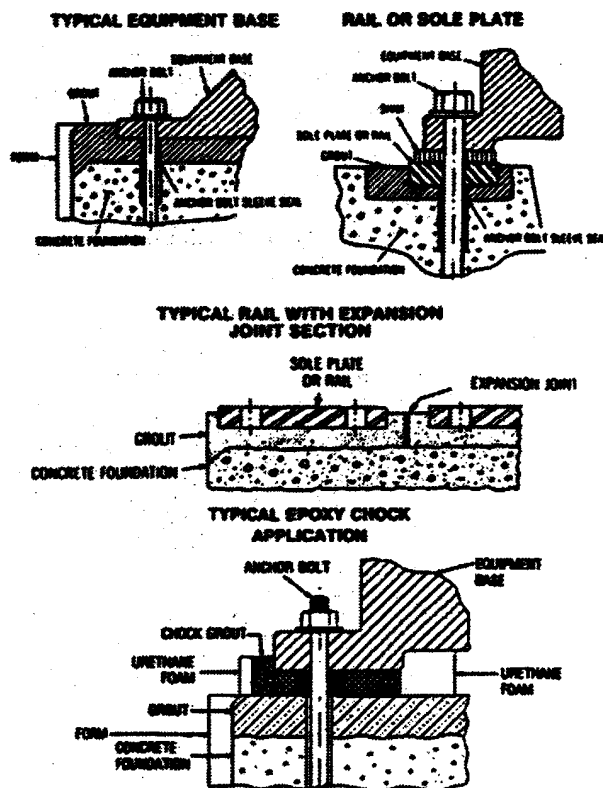
216 lb Full Unit (1.73 ft³, 0.05 m³)

One 20.2 lb pail (9.2 kg)
One 7.6 lb bottle (3.4 kg)
Four 47 lb bags (21.3 kg)

Color

- Dark Gray

Examples of Proper Epoxy Foundation Grout Installation



Caution

ROWAN RESINS 427 PLUS Part A

Risks

May cause eye irritation. May cause lung irritation and allergic respiratory reaction. May cause skin irritation. Skin sensitizer.

Precautions

KEEP OUT OF THE REACH OF CHILDREN. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel ill, seek medical advice.

First Aid

If breathing is difficult, move person to fresh air. If you feel ill, seek medical advice. In case of eye contact, flush immediately with plenty of water for 15 minutes and call a physician. For skin, wash thoroughly with soap. If affected by inhalation of vapor or spray mist, remove to fresh air. Ingestion: Drink two glasses of water, and then induce vomiting by taking Ipecac Syrup, salt water or by placing finger at back of throat DO NOT give anything by mouth to an unconscious person.

For additional information on personal protective equipment, first aid, and emergency procedures, refer to the product Material Safety Data Sheet (MSDS) on the job site or contact the company at the address or phone numbers given below.

Proposition 65

This product does not contain materials listed by the state of California as known to cause cancer, birth defects, or reproductive harm.

VOC Content

This product contains 0 g/L or 0 lbs./gallon.

Caution

ROWAN RESINS 427 PLUS Part B

Risks

Harmful if inhaled. Harmful if swallowed. Causes eye burns. Causes skin burns. Refer to Material Safety Data Sheet (MSDS) for effects of repeated exposure.

Precautions

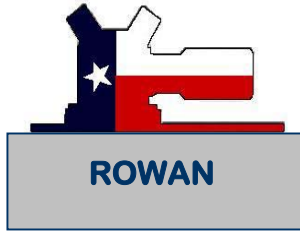
KEEP OUT OF THE REACH OF CHILDREN. Do not breathe vapor or spray mist. Avoid prolonged or repeated skin contact. Wear an appropriate, properly fitted

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respirator (NIOSH.MSHA approved) during and after application unless air monitoring demonstrates vapor/ mist levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Do not get in eyes, on skin or clothing. Wear suitable protective clothing. Wear suitable gloves. Wash soiled clothing before reuse.

First Aid

In case of eye contact, flush immediately with plenty of water for 15 minutes and call a physician. In case of skin contact, immediately wash skin with soap and plenty of water. If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Call a physician. Thoroughly clean contaminated shoes. Ingestion: Drink two glasses of water, then induce vomiting by taking Ipecac Syrup, salt water or by placing a finger at back of throat. DO NOT give anything by mouth to an unconscious person.

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VOC Content

This product contains 0 g/L or 0lbs./gallon.

Caution

ROWAN RESINS 427 PLUS Aggregate

Risks

Eye irritant. Skin irritant. Lung irritant. May cause delayed lung injury.

Precautions

KEEP OUT OF THE REACH OF CHILDREN. Avoid contact with eyes. Wear suitable protective eyewear. Wear suitable gloves. Wear suitable protective clothing. Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. Wash soiled clothing before reuse.

First Aid

Wash exposed skin with soap and water. Flush eyes with large quantities of water. If breathing is difficult, move person to fresh air.

Waste Disposal Method

This product when discarded or disposed of, is not listed as a hazardous waste in federal regulations. Dispose of in a landfill in accordance with local regulations.

For additional information on personal protective equipment, first aid, and emergency procedures, refer to the product Material Safety Data Sheet (MSDS) on the job site or contact the company at the address or phone numbers given below.

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