



ICS Precision Grout

High Flow, High Strength, Non-Shrink, Non-Corrosive Grout

DESCRIPTION

ICS Precision Grout is a blend of portland cement, special admixtures and proprietary aggregates designed to provide high flexural and compressive strength performance from plastic to fluid consistencies. **ICS Precision Grout** is non-metallic, non-shrink, non-corrosive and contains no added chlorides.

USES

ICS Precision Grout is ideal for a wide variety of precision applications that include:

- Precision Grouting: Machinery bases, compressors, punch presses, generators
- Structural Grouting: Steel columns, precast columns, crane rails, beams
- Underwater Grouting: Form and pump applications
- Anchoring: Guard rails, sign posts, dowels, rods, bolts
- Pumping Applications: Excellent flowability

BENEFITS

- Versatile: Plastic or fluid consistency
- Cost effective: Extendable
- Strength: Attains high compressive strengths at specified water ratios
- Thixotropic: High flow restored by agitation
- Non-Corrosive: Will not rust
- Security: Maximum, uniform bearing support
- Performance: Joins, supports and anchors
- Hardens free of bleeding or segregation
- Consistent: Strict Quality Control testing and standards

STANDARDS

ICS Precision Grout meets and exceeds the requirements of ASTM C1107 and Corp of Engineers CRD C621. When tested in accordance with ASTM C827, **ICS Precision Grout** yields a controlled, positive expansion. City of LA Research Report #25526.

SURFACE PREPARATION

All surfaces in contact with **ICS Precision Grout** shall be free of dirt, oil, grease, laitance and other contaminants that may act as bondbreakers. All unsound concrete should be removed to ensure a good bond. Smooth, dense surfaces need to be mechanically abraded to provide necessary bonding requirements. Mechanically prepare the substrate to a minimum CSP 5 following ICRI Guideline 310.2R to allow proper bonding. ACI recommends that the area to be grouted should be saturated for 24 hours before placement. Remove any standing water. Substrate should be saturated, surface dry (SSD). Maintain contact areas between 40°F (4°C) and 90°F (32°C) prior to grouting and during initial curing period.

APPLICATION THICKNESS

1-3" Neat, Up to 8" Extended

COVERAGE/YIELD

50 lbs (22.7 kg) will fill approximately 0.43 ft³ (0.012 m³) when 4.5 quarts mixing water is used.

FORMING

Method of forming must provide for rapid, continuous grout placement. For pourable grout, construct forms to retain grout without leakage. Forms should be coated with a form release for easy removal.

MIXING

For larger batches, use a mortar mixer with rotating blades. For smaller batches, use a heavy duty 1/2" (15 mm) (or larger) low-speed, corded drill and mixing paddle #6 per ICRI Technical Guideline 320.5. Pre-wet mixer and empty excess water. Place 3/4 of the required cool, clean potable water in mixer, then add dry material. Mix on low RPM for a total of 3 to 5 minutes, adding the remaining water, until a homogeneous mixture is achieved. When using a mortar mixer higher RPMs may be necessary to achieve a homogeneous mixture. Mix only enough grout that can be placed within working time. For plastic consistency, use 3.0 quarts of water. For flowable consistency, use 4.0 quarts of water. For fluid consistency, use 4.5 quarts of water. These mix ratios provide a guideline. The actual water demand will depend on type of mixer used, water temperature and ambient temperature. Adjust the water to achieve the desired flow. Recommended flow is 20 to 30 seconds using the ASTM C939 Flow Cone Method. For placements greater than 3" depth, **ICS Precision Grout** must be extended 30% by weight of powder, with clean, washed and dried 3/8" (1 cm) pea gravel. Do not blend excess water as this will cause bleeding and segregation. Do not use any other admixtures or additives.

PLACING

Grout should be placed using established procedures according to American Concrete Institute recommendations. **ICS Precision Grout** can be placed by pumping, pouring, rodding or strapping. Mechanical vibration may cause segregation of aggregates. Place grout on one side of area. Let grout flow to opposite and adjacent sides to avoid entrapment of air and uneven bearing of the grouted surface. When necessary, provide vent holes. Grout should continue to be placed until it protrudes from the entire perimeter area. Grout "head" and excess grout may be removed after initial set. Recommended minimum placement depth is one inch.

FINISHING & CURING

Follow standard ACI curing practices. Do not disturb formwork or grout for 24 hours. Use wet rags or burlap to cure for 6 hours after placement. After 6 hours, remove rags from exposed surfaces and cure with a membrane forming curing compound. For best results, exposed grout should extend downward at a 45° angle from edge of base.

STORAGE

Normal cement storage and handling practices should be observed. Store in an interior, cool, dry place. Shelf life is one year in original, unopened container.

LIMITATIONS

In addition to limitations already mentioned, please note the following. Do not apply when the surface or ambient temperature is below 40°F (4°C) or expected to fall below 40°F (4°C) within 48 hours. When grouting at minimum temperatures, ensure surfaces in contact with grout do not fall below 40°F (4°C) until final set has been achieved and grout has reached 3,000 psi. Do not apply over surfaces that are frozen or contain frost. Do not apply over any active faults or cracks in the substrate without addressing any movement that may occur. Do not use as a patching or overlay mortar or in unconfined areas. Setting time will speed up in hot weather and slow in cold weather. For hot and cold weather applications, contact your ICS manufacturer's representative.

Packaging: 50 lb (22.7 kg) bag, 63 bags per pallet



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PHYSICAL PROPERTIES

All Physical Property testing performed in laboratory conditions of 73.5 ± 3.5°F (23 ± 2°C) and a relative humidity no less than 50% unless otherwise determined by the test method or specification. All results represent **ICS Precision Grout** with 4.5 quarts water unless listed otherwise. Tests are conducted under standardized conditions for comparative purposes, and results may not be representative of performance under field conditions.

Property and Test Method	Results			
Compressive Strength				
ASTM C109 via C1107	1 Day	3 Days	7 Days	28 Days
B - PLASTIC 3.0 qts	4,800 psi (33.09 MPa)	7,100 psi (48.95 MPa)	8,000 psi (55.16 MPa)	10,000 psi (68.95 MPa)
C - FLOWABLE 4.0 qts	4,500 psi (31.03 MPa)	6,600 psi (45.51 MPa)	7,300 psi (50.33 MPa)	9,000 psi (62.05 MPa)
D - FLUID 4.5 qts	3,700 psi (25.51 MPa)	5,300 psi (36.54 MPa)	6,400 psi (44.13 MPa)	8,000 psi (55.16 MPa)
Rate of Set				
ASTM C266	Working Time	Initial	Final	
B - PLASTIC - 3.0 qts	:40	1:09	2:15	
C - FLOWABLE - 4.0 qts	2:00	2:45	4:30	
D - FLUID - 4.5 qts	2:30	3:30	5:30	
B - 100% - 125% flow table (ASTM C230, 5 drops in 3 seconds) C - 125% - 145% flow table (ASTM C230, 5 drops in 3 seconds) D - 28 second flow cone method (ASTM C939)				
Flexural Strength				
ASTM C78	7 Days		28 Days	
	900 psi (6.20 MPa)		1,400 psi (9.65 MPa)	
Density				
ASTM C138	132 lb/ft ³ (2,114 kg/m ³)			
Modulus of Elasticity				
ASTM C469	3.42 x 10 ⁶ (23.60 GPa)			
Splitting Tensile				
ASTM C496	28 Days 800 psi (5.52 MPa)			
Scaling Resistance				
ASTM C672	Cycles	Scaled Material		
	25	.12 kg/m ²		
Early Height Change				
ASTM C827	Final Set (+)0.09%			
Bond Strength				
ASTM C882	1 Day	7 Days	28 Days	
	1,100 psi (7.58 MPa)	1,700 psi (11.72 MPa)	2,300 psi (15.85 MPa)	
Height Change				
ASTM C1090	1 Day	3 Days	7 Days	28 Days
	+0.01%	+0.02%	+0.03%	+0.03%
Freeze/Thaw Resistance				
ASTM C666	F/T Cycles	Durability		
	300	100%		
Effective Bearing Area				
ASTM C1339	>95%			
Corrosion Resistivity				
	ICS Precision Grout tested compatible with Vector Corrosion Technologies Galvashield embedded galvanic anodes.			
Pull-Out Strength				
ASTM E488*	Age	Tensile Strength		
	28 Days	21,670 lbs (9,829.51 kg)		

*Average of five tests. 4,000 psi concrete using #4 (1/2") Grade 60 rebar embedded 8" in 2" diameter core-drilled SSD holes. Rebar failed before ICS Precision Grout.

PHYSICAL PROPERTIES (continued)

Property and Test Method	Results
Coefficient of Thermal Expansion CRD C39	6.9 x 10 ⁻⁶ in/in°F (12.42 x 10 ⁻⁶ cm/cm°C)

DANGER

This product contains Crystalline Silica (CAS# 14808-60-7) and Portland Cement (CAS# 65997-15-1). Harmful if swallowed. Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May cause cancer. May cause respiratory irritation. Causes damage to organs through prolonged or repeated exposure. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Do not breathe dust. Keep away from children. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Dispose of contents/container in accordance with local/regional/national/international regulations.



WARNING: Cancer and Reproductive Harm -
www.P65Warnings.ca.gov

FIRST AID

If swallowed: Immediately call a poison center/doctor. Rinse mouth. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.

MANUFACTURER/TECHNICAL SERVICE

Contact your ICS representative for the most current product information. Always read and follow the warnings and instructions on the most current technical data sheets and safety data sheets (SDS), available online at www.usspec.com.

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Salt Lake City, UT 84115
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Web Site: www.ics50.com

LIMITED WARRANTY: The manufacturer warrants that this product is free from defects in material and workmanship, and will perform per the manufacturer product literature in effect at the time of purchase. This warranty is for one (1) year from the date of purchase. Any implied warranty of merchantability or fitness for a particular purpose is limited to the duration of this express warranty. This warranty applies only if the product is used, in strict accord with the manufacturer published instructions. The sole and exclusive remedy under this warranty is replacement of the defective product or refund of the purchase price, at the manufacturer's option. CONSEQUENTIAL, SPECIAL, AND INCIDENTAL DAMAGES ARE NOT RECOVERABLE UNDER THIS WARRANTY. All claims under this warranty must be submitted to the manufacturer by calling 303-778-7227. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.