

ULTRAFLOW[®] 4000/8

Non-Shrink Precision Grout



PRODUCT DATASHEET

DESCRIPTION: Rapid Set[®] ULTRAFLOW[®] 4000/8 is a high-performance, non-shrink precision grout with rapid strength gain. ULTRAFLOW 4000/8 is a high quality blend of Rapid Set cement, non-shrink additives, and specially graded sand that can be mixed to any consistency from damp pack to fluid. ULTRAFLOW 4000/8 is non-metallic and no chlorides are added. ULTRAFLOW 4000/8 is ideal for grouting under base plates and large machinery installations where rapid strength gain and high durability are desired.

USES: ULTRAFLOW 4000/8 is used for structural and non-structural applications, including precision grouting under base plates, precast components, machinery and equipment bases, keyway joints, load bearing pads, and other indoor/outdoor non-shrink applications.

SURFACE PREPARATION: Concrete substrate must be clean, sound, have a rough texture with exposed aggregate, and be free from oil, dirt, asphalt, sealing compounds, acids, wax, and loose debris. Bolt holes must be cleaned out and grouted in advance to prevent sagging. Remove rust and scale from metal surfaces. Equipment must be secured in place to prevent movement during the grouting procedure. Concrete must be SSD (Saturated, Surface Dry). Saturate the substrate with clean water for a minimum of 4 hours and preferably 24 hours before grout placement. Remove any standing water or puddles before placement of the material. Protect baseplate and concrete base from temperature extremes, such as direct sunlight for 24 hours prior to and following grouting.

FORMS: Forms must be watertight and non-absorbent. Use polyurethane foam, putty, or caulk to seal the joints. Forms must be coated or lined with bond breaker or form release. Provide adequate vent holes to avoid air entrapment. Provide a head placement of 45 degree angle to facilitate placement for grout pour. Build forms 1" higher than bottom of plate and 1" to 3" between side of plate and form.

MIXING: Mix with a mechanical mortar mixer or an electric drill with a paddle device if possible. Add potable water to bucket and mechanical mixer first, then add dry grout material while mixing. Adjust water temperature to maintain mixed grout temperature from 45°F to 90°F (7°C to 32°C). Mix for a minimum of 3 to 5 minutes. ULTRAFLOW is fluid for 30 minutes and remains workable for 1 hour.

Consistency of the grout is dependent on jobsite variables such as ambient temperature, water temperature, product temperature and mixing method. Use the following mix water guidelines:

Plastic consistency – quarts

Flowable consistency – quarts

Fluid consistency – 4.5 quarts

Adjust the water to achieve the desired flow consistency. Do not exceed 4.5 quarts of water per 55-lb bag. Adding too much water may induce bleeding and segregation. Gauge fluid consistency within 25 to 35 seconds with ASTM C939 Flow Cone Method.

For deep pours over 2", 3/8" pea gravel may be added but only after consulting with the CTS Cement Technical Service Department. Do not add any additional dry materials such as cement, sand, additives or admixtures.

PLACEMENT: The concrete, plate, and ambient temperatures must be from 45° F to 90° F and remain in that range until the grout has reached final set. Place grout continuously onto the 45 degree headbox from one side of the plate to minimize air entrapment. ULTRAFLOW must fill the entire space being grouted and remain in contact with the plate. Use multiple mixers if required to ensure continuous placement. It is important for the grout to extend at least 1/2-in up the edges of the plate to provide a small head pressure that will keep the grout in contact with the plate bottom. Do not vibrate the grout. The grout shoulder may be cut back as soon as the strength is sufficient to maintain its formed shape. Immediately after cut back and finishing, cover with clean wet rags until final set. Have all required tools, equipment and materials as close to the grouting area as possible.

HIGHLIGHTS

RAPID RETURN TO SERVICE

Exceeds 4000 psi in 8 hours

LONG FLOW LIFE & EXTENDED WORKING TIME

Fluid for 30 minutes

CONFORMS TO:

ASTM C1107

CRD C621

MANUFACTURER:

CTS Cement Manufacturing Corp.

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Cypress, CA 90630

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ULTRAFLOW® 4000/8 Non-Shrink Precision Grout

CURING: Apply a curing compound in accordance with ASTM C309 immediately after initial set. Once forms are removed, apply curing compound to the exposed grout surfaces. Grouted equipment may be put into service as soon as desired grout strengths are achieved.

SHELF LIFE: Rapid Set® ULTRAFLOW® 4000/8 has a shelf life of 12 months when stored properly in a dry location, protected from moisture, out of direct sunlight, and in an undamaged package.

WARNING: DO NOT BREATHE DUST. AVOID CONTACT WITH SKIN AND EYES. Use material in well-ventilated areas only. Exposure to cement dust may irritate eyes, nose, throat, and the upper respiratory system/lungs. Silica exposure by inhalation may result in the development of lung injuries and pulmonary diseases, including silicosis and lung cancer. Seek medical treatment if you experience difficulty breathing while using this product. The use of a NIOSH/MSHA-approved respirator (P-, N- or R-95) is recommended to minimize inhalation of cement dust. Eat and drink only in dust-free areas to avoid ingesting cement dust. Skin contact with dry material or wet mixtures may result in bodily injury ranging from moderate irritation and thickening/cracking of skin to severe skin damage from chemical burns. If irritation or burning occurs, seek medical treatment. Protect eyes with goggles or safety glasses with side shields. Cover skin with protective clothing. Use chemical resistant gloves and waterproof boots. In case of skin contact with cement dust, immediately wash off dust with soap and water to avoid skin damage. In case of skin contact with wet concrete, wash exposed skin areas with cold running water as soon as possible. In case of eye contact with cement dust, flush immediately and repeatedly with clean water, and consult a physician. If wet concrete splashes into eyes, rinse eyes with clean water for at least 15 minutes and go to the hospital for further treatment.

PROPOSITION 65 WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Please refer to the SDS and www.CTScement.com for additional safety information regarding this material.

LIMITED WARRANTY: CTS CEMENT MANUFACTURING CORP. (CTS) warrants its materials to be of good quality and, at its option, will replace or refund the purchase price of any material proven to be defective within one (1) year from date of purchase. The above remedies shall be the limit of CTS's responsibility. Except for the foregoing, all warranties expressed or implied, including merchantability and fitness for a particular purpose, are excluded. CTS shall not be liable for any consequential, incidental, or special damages arising directly or indirectly from the use of the materials.

PHYSICAL DATA

Set Time, ASTM C191 Mod.**

Initial set	95 minutes
Final set	150 minutes

Compressive Strength, ASTM C109 Mod.**

8 hours	4000 psi (27.6 MPa)
1 day	6500 psi (44.8 MPa)
3 days	7500 psi (51.7 MPa)
7 days	8000 psi (55.2 MPa)
28 days	8500 psi (58.6 MPa)

Slant Shear Bond, ASTM C882 Mod.**

28 days	2000 psi (13.8 MPa)
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Freeze-Thaw Resistance, ASTM C666

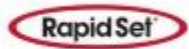
Durability Factor of < 90 after 300 cycles

*After final set

**Data obtained at flow consistency 102 by ASTM C1437
All data produced at 70°F (21°C)



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SAFETY DATA SHEET

1. Identification

Product identifier Rapid Set Ultraflow 4000/8

Other means of identification
Product code 185010055, 185013000

Recommended use Industrial use.

Recommended restrictions Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

Manufacturer/Importer/Supplier/Distributor information

Company name CTS Cement Manufacturing Corporation
Address 11065 Knott Ave Suite A
 Cypress, CA 90630
 United States

Telephone 1-800-929-3030
E-mail info@ctscement.com
Contact person Safety Officer
Emergency telephone number 1-800-929-3030 (8 AM - 5 PM)

2. Hazard(s) identification

Physical hazards Not classified.

Health Hazards

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 1A
Specific Target Organ Toxicity, Single Exposure	Category 3 respiratory tract irritation
Specific Target Organ Toxicity, Repeated Exposure	Category 2 (Lungs)

OSHA defined hazards Not classified.

Label elements



Signal word Danger

Hazard statement Causes skin irritation. Causes serious eye damage. May cause cancer. May cause respiratory irritation. May cause damage to organs (Lungs) through prolonged or repeated exposure.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wash thoroughly after handling. Use in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.

Response If exposed or concerned: Get medical advice/attention. 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. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.

Storage Store in dry location. Store away from incompatible materials.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Calcium Sulfoaluminate Cement	960375-09-1	40-60
Silica, quartz	14808-60-7	40-60

Composition comments

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation

If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.

Skin contact

Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact

Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion

Immediately rinse mouth and drink plenty of water. Call an ambulance and take these instructions. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Upper respiratory tract irritation. Coughing. Discomfort in the chest. Shortness of breath. Wheezing. Skin irritation.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information

If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions

Move containers from fire area if you can do so without risk.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards

No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe dust. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Stop the flow of material, if this is without risk. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Collect dust using a vacuum cleaner. Minimize dust generation and accumulation. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains or water courses.

7. Handling and storage

Precautions for safe handling

Provide appropriate exhaust ventilation at places where dust is formed. Minimize dust generation and accumulation. Do not breathe dust. Do not get this material in contact with eyes. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store in original tightly closed container. Store in dry location. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Silica, quartz (CAS 14808-60-7)	TWA	20 mppcf	Total dust.
		0.3 mg/m ³	
		0.1 mg/m ³	Respirable.
		2.4 mppcf	Respirable.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Silica, quartz (CAS 14808-60-7)	TWA	0.025 mg/m ³	Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Silica, quartz (CAS 14808-60-7)	TWA	6 mg/m ³	Respirable dust.
	TWA	0.05 mg/m ³	

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses or safety goggles unless full face respirator is in use.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Observe any medical surveillance requirements.

9. Physical and chemical properties

Appearance

Physical state Solid.

Form Powder.

Color Tan.

Odor Low.

Odor threshold Not available.

pH 11 – 12 when wet

Melting point/freezing point Not applicable.

Initial boiling point and boiling range Not applicable.

Flash point Not applicable.

Evaporation rate Not applicable.

Flammability (solid, gas) Non combustible.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not applicable.

Flammability limit - upper (%) Not applicable.

Vapor pressure Not applicable.

Vapor density Not applicable.

Relative density 2.7-3.1 @ 20°C

Solubility(ies)

Solubility (water) Not available.

Partition coefficient (n-octanol/water) Not applicable.

Auto-ignition temperature Not applicable.

Decomposition temperature 2460 °F (1350 °C)

Viscosity Not applicable.

Other information

Bulk density	60 lb/ft ³
Partition coefficient (oil/water)	Not applicable.
VOC (Weight %)	0 g/L when mixed with water

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.

Conditions to avoid	Avoid temperatures exceeding the decomposition temperature. Contact with incompatible materials. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
Incompatible materials	Powerful oxidizers.
Hazardous decomposition products	Carbon oxides. Sulfur oxides. Silicium oxide.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause damage to organs through prolonged or repeated exposure by inhalation. Inhalation of dusts may cause respiratory irritation. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation. Prolonged contact with wet cement/mixture may cause burns.
Eye contact	Causes serious eye damage. Prolonged contact with wet cement/mixture may cause burns.
Ingestion	Swallowing may cause gastrointestinal irritation.

Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Upper respiratory tract irritation. Coughing. Discomfort in the chest. Shortness of breath. Wheezing. Skin irritation.
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Information on toxicological effects

Acute toxicity	May cause respiratory irritation.
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Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization	No data available.
Skin sensitization	No data available.

Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
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Carcinogenicity	May cause cancer. In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.
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IARC Monographs. Overall Evaluation of Carcinogenicity

Silica, quartz (CAS 14808-60-7)

1 Carcinogenic to humans.

NTP Report on Carcinogens

Silica, quartz (CAS 14808-60-7)

Known To Be Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	May damage fertility or the unborn child.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	May cause damage to organs (Lungs) through prolonged or repeated exposure.
Aspiration hazard	Due to the physical form of the product it is not an aspiration hazard.
Chronic effects	Prolonged or repeated exposure may cause lung injury, including silicosis. May cause skin disorders if contact is repeated or prolonged.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986

(SARA) Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Silica, quartz (CAS 14808-60-7)

US. New Jersey Worker and Community Right-to-Know Act

Silica, quartz (CAS 14808-60-7)

US. Pennsylvania Worker and Community Right-to-Know Law

Silica, quartz (CAS 14808-60-7)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Silica, quartz (CAS 14808-60-7)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 30-September-2014

Revision date -

Version # 01

HMIS® ratings Health: 3*
Flammability: 0
Physical hazard: 0

Disclaimer CTS Cement Manufacturing Corporation cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.



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Test Report—December 1, 2009

ASTM C 827 Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures

The Following are the Results from the Testing per Above ASTM Test Procedure as to be Reported per Section 12

- 12.1 Maximum Change in Height During Test Period: +0.10%
- 12.2
- 12.2.1 Number of Specimens Tested: 2. Mold Configuration: Cylindrical, 100 mm (4 in. mold). Test Date: 11-30-09
- 12.2.2 Rapid Set Ultraflow 4000/8, Anaheim, CA
- 12.2.3 Consistency: Fluid, 30 sec. +/- 2 sec. by flow cone method
- 12.2.4 Magnification: 94 x
- 12.2.5 Temperature of Test Specimen: 71 deg. F. Ambient Temperature at Time of Specimen Molding:
- 12.2.6 Time Interval from Addition of the Dry Materials to the Mixing Water in the Mixer to the Time of the Start of Test: 7 min, 35 sec.
- 12.2.7 Maximum Increase in Height (initial): +0.10% at 85 min.
Change in Height at Hardening of Mixture: +0.10% at 100 min.
Change in Height at Conclusion of Test:: +0.10% at 170 min.
- 12.2.8 At No Time was Bleed Water Visible on Surface During Test