# REMR MATERIAL DATA SHEET CM-LA-1.3

# LATEX ADMIXTURE FOR PORTLAND-CEMENT CONCRETE AND MORTAR: ACRYL 60

## 1. NAME

Acryl 60
Latex Admixture

## 2. MANUFACTURER

Thoro Systems Products, Inc.
7800 Northwest 38th St
Miami, FL 33166
Tel 305-592-2081

## 3. DESCRIPTION

Special formulation of acrylic polymers and modifiers.

## 4. USES & LIMITATIONS

Uses: Designed as a latex admixture for portland-cement concrete and mortar, Acryl 60 can be used in mixtures and toppings for patching or resurfacing concrete floors, sidewalks, driveways, and ramps. It improves adhesion and mechanical properties, and mixtures prepared with it are suitable for exterior and interior use; are hard, tough, and fast curing; and have good resistance to most common chemicals. Acryl 60 film displays excellent flexibility, excellent resistance to ultraviolet light and heat, excellent scrub resistance, and high adhesion to a range of surfaces. Acryl 60 is a milky white liquid; has a viscosity slightly thicker than water; and possesses freeze-thaw stability through 6 cycles. The resins are directly related to those used in tough "Plexiglas." Acryl 60 is also used as a bonding agent admixture for Thoroseal and Thoroseal Plaster Mix (two other products of the manufacturer); to add extra bonding qualities when application is to be made over dense concrete or masonry; with pointing mortars such as D-J Mortar or Dryjoint to improve adhesion and curing; and with portland-cement plaster to increase bonding and reduce cracking.

Limitations: Acryl 60 modified concrete and mortar should not be placed at temperatures below 45°F (7°C) or when temperatures are expected to fall below 45°F within 48 hr. High humidity and excessive moisture will retard the curing time of Acryl 60 modified mixtures. Acryl 60 should not be used with air-entrained cement or where air circulation is limited; e.g., enclosed reservoirs. Cisterns, tanks, etc., should not be filled with water for at least 7 to 8 days when coated with Thoroseal mixed with Acryl 60. For pools, allow at least 72 hr and preferably 96 hr for the surface to dry prior to adding water. Acryl 60 must be protected from freezing; prolonged freezing may damage the formulation. Frozen containers should immediately be placed in a warm spot to thaw, but direct heat should not be applied. If Acryl 60 can be stirred after thawing, its bonding qualities have not been impaired.

## 5. MANUFACTURER'S TECHNICAL DATA

Packaging: 1-qt, 1-gal, and 5-gal pails and 30- and 55-gal drums

Shelf Life: Not listed

Physical Properties:

| | |
|---|---|
| Solids content, % by wt | 28 |
| Coagulum (100 mesh), % | <0.1 |
| Wt/gal, lb | 8.5 |
| Specific gravity | 1.02 |
| Color | White, milky liquid |
| Odor | Slightly ammoniacal |

Test Data: Strength comparisons of a cement-sand mortar versus latex-modified mortar made with Acryl 60 are shown below. All tests were run for 7 days, and specimens were air cured.

| | Cement-Sand Mortar | Latex-Modified Mortar (Acryl 60) |
|---|---|---|
| Tensile Str, ASTM C 190-49, psi | 270 | 598 |
| Compressive Str, ASTM C 109-54T | 1,980 | 2,995 |
| Flexural Str, ASTM C 348-54T, psi | 350 | 930 |
| Brick Bond Str, ASTM C 321-54T, psi | 40-100 | 450 |

## 6. MANUFACTURER'S GUIDANCE FOR APPLICATION

Surface Preparation: In all cases, a good, clean surface should be prepared since the bond will only be as good as the surface permits. All loose material and disintegrated concrete should be removed as should all traces of oil, grease, dirt, dust, laitance, efflorescence, form treatments, etc. The area to be repaired should be swept or blown clean with air, it should be dampened but water should not be left standing.

Mixing: Thoroughly mix the cement and sand first. (Sand must be clean and dry.) If the Acryl 60 is to be diluted, mix it with water first before adding the liquid to the dry mixture. Stir the mixing liquid first, place the cement-sand mixture in a clean container, and then slowly add the mixing liquid. Mix only for a very short time (1 to 2 min) since overmixing entrains excessive air.

Mixture Proportions:

| Application | |
|---|---|
| Slurries applied before patching or overlays; patching concrete | Undiluted Acryl 60 |
| Improve adhesion of Thoroseal or Thoroseal Plaster Mix; with pointing mortars for improved adhesion; reduce cracking in cement plaster | 1 part Acryl 60 to 3 parts water |
| Large overlays or toppings | 2 parts Acryl 60 to 1 part water |
| Bonding cement plaster no thicker than 1/4 to 3/8 in. | 1 part Acryl 60 to 2 parts water |

NOTE: These proportions are for normal conditions. Where bonding is more critical, increase the Acryl 60 content of the mixing liquid. In instances of doubt, prepare a test patch.

Placement: Brush on a slurry coat of undiluted Acryl 60 and cement-sand mixture to eliminate air pockets. Then place the appropriate mixture into the area to be repaired while the slurry coat is still soft. The mixture should be placed quickly since weather conditions may cause setting time to vary. Maximum time for placement should not exceed 20 min.

Trowel the mixture into place but do not over trowel. The trowel should be cleaned frequently, and very little pressure should be used. Large areas can best be handled by screeding the mixture with a narrow, metal straightedge. A buildup of the mixture should be kept in advance of the screed, and a short vibratory stroke will give the smoothest surface.

Curing: When drying is rapid due to high temperatures, rapid air movement, etc., cover the surface with wet burlap. For normal use areas, allow the surface to cure for 24 to 48 hr; for heavy traffic areas, a 4-day curing period is required.

Safe Handling Information: Toxicity testing on Acryl 60 emulsions have not shown it to be hazardous via single acute oral, dermal, or inhalation exposure. It may be a slight skin and eye irritant. This irritation may result from its alkalinity and should be treated accordingly.

## 7. CORPS OF ENGINEERS' EVALUATION

Mixture Proportioning:

Mixture No. 1

| Material | Percent by Mass |
|---|---|
| Sand (ASTM C 109) | 66.5 |
| Portland cement (Type I) | 22.2 |
| Polymer (1:1)* | 11.3 |

* 1 part Acryl 60 (27.6% solids) to 1 part water by volume.

NOTE: Acryl 60 total solids tested to be about 27.6%. A water-cement ratio of 0.37 was used, and no account was made for the water absorption of the sand. The polymer-to-cement ratio was 0.141. Sand and cement were blended for 1 min. The latex and water were mixed then added to the sand and cement. (Acryl 60 contains a defoamer which eliminates the requirement for adding a defoamer to the mixture.) All materials were mixed for 1 min. The sides and bottom of the mixing container were scraped so that all materials were completely mixed. The mixture was then blended for another minute. Specimens were cast in accordance with ASTM procedures.

Mixture No. 2

| Material | Percent by Mass |
|---|---|
| Sand (ASTM C 109) | 67.6 |
| Portland cement (Type I) | 22.5 |
| Polymer (1:1) | 9.9 |

NOTE: The water-cement ratio was 0.38 for the latex-modified mortar. The Acryl 60 was diluted: 1 part latex to 1 part water by volume. Polymer content as received was 27.6%, and the polymer-to-cement ratio for Mixture No. 2 was 0.051. Mixing and placing procedures were the same as for Mixture No. 1.

Control Concrete Mortar

| Material | Percent by Mass |
|---|---|
| Sand (ASTM C 109) | 67.0 |
| Portland cement (Type I) | 22.3 |
| Water | 10.6 |

NOTE: The water-cement ratio was 0.475, as the water absorption of the sand was not used. Mixing and placing procedures were the same as for Mixture No. 1.

Mechanical Data:

| | Mixture | | |
|---|---|---|---|
| | No. 1 | No. 2 | Control |
| Compressive Str, ASTM C 39, psi | 3120 | 5250 | 5880 |
| Flexural Str, ASTM C 348, psi | 1520 | 1310 | 970 |
| Bond Test, Arizona Slant Shear, ASTM C 882, psi | 1250 | 2620 | --- |

The latex-modified mortar specimens were cured 28 days at 73°F (23°C) and 50% relative humidity, and the control specimens were cured in the moisture cure room (73°F and 100% relative humidity) for 28 days.

## 8. ENVIRONMENTAL CONSIDERATIONS

Reasonable caution should guide the preparation, repair, and cleanup phases of concrete or mortar repair activities involving potentially hazardous and toxic chemical substances. Manufacturer's recommendations to protect occupational health and environmental quality should be carefully followed. Material safety data sheets should be obtained from the manufacturers of such materials. In cases where the effects of a chemical substance on occupational health or environmental quality are unknown, chemical substances should be treated as potentially hazardous toxic materials.

## 9. AVAILABILITY & COST

Availability: The material is available throughout the US through a network of local distributors.

Cost: FOB $477.40 for a 55-gal drum.