



TECHNICAL DATA SHEET

DURALITH[®], DURALITH[®] LV, DURALITH[®] GEL High Modulus, Low Temperature Epoxy Mortar Binder

03930
CONCRETE REHABILITATION
CONCRETE

TAMMS INDUSTRIES
MARCH 2002 (Replaces 1/00)

- DESCRIPTION:** DURALITH, DURALITH LV, and DURALITH GEL are two part, 100% solids, moisture insensitive epoxy resin compounds. They are high strength, high modulus, adhesive and mortar binder systems used when load transfer is required. When mixed with aggregate, they yield a high strength epoxy mortar for patching and overlays. DURALITH, DURALITH LV and DURALITH GEL formulations are resistant to salts, gasoline, oil, and chemicals. DURALITH, DURALITH LV and DURALITH GEL develop high early strengths, and are recommended for use at temperatures between 40-60°F.
- USES:** DURALITH is a medium viscosity, high modulus adhesive, mortar binder and grout for concrete structures. DURALITH LV is a low viscosity, high modulus adhesive and mortar binder for horizontal repairs of structural concrete. It is used as a rapid setting pressure injection resin or as an anchor bolt grout, where the anchor holes are drilled vertically. DURALITH GEL is a non-sag high modulus adhesive and mortar binder for vertical and overhead repairs of structural concrete. DURALITH GEL is also used as an anchor bolt grout where the anchor holes are drilled horizontally. It can be used neat or mixed with silica sand.
- COMPOSITION AND MATERIAL:** DURALITH, DURALITH LV, and DURALITH GEL are two component, low temperature cure, moisture insensitive, 100 percent solids, epoxy compounds.
- COMPLIANCE:** DURALITH meets ASTM C881-90 Type I & Type IV, Grade 1, Class A and B. DURALITH GEL meets ASTM C881-90 Type I & Type IV, Grade 3, Class A and B. DURALITH LV meets ASTM C881-90, Type I, Grade 1, Class A and B.
- SURFACE PREPARATION: Concrete:** Concrete must be structurally sound, dry, free of grease, oils, coatings, dust, curing compounds and other contaminants. Surface laitance must be removed. The preferred method of surface preparation is abrasive blasting or shotblasting. For oil contaminated surfaces, using steam cleaning in conjunction with a strong emulsifying detergent may be considered. Rinse thoroughly with potable water. After cleaning, remove defective concrete, honeycombs, cavities, joint cracks, voids and other defects by routing to sound material. Smooth, precast and formed concrete surfaces must be cleaned, roughened and made absorptive by abrasive blasting or shotblasting. If it is not possible to sandblast or shotblast, acid etch with a 15% Hydrochloric acid solution followed by pressure washing or flushing the surface with copious amounts of water to neutralize the surface. Care must be taken to ensure that all salts and residue from the reaction have been removed. The pH of the surface should be checked, as per ASTM D4262, following acid etching. For grouting applications, ensure that the hole is free of any debris or standing water. Following surface preparation, the cleaned surface should have a surface tensile strength of 250 psi when tested with a pull tester or an elcometer (ASTM D4541). **Steel:** All oils, greases, dirt, old coatings or chemical contaminants must be removed. All surfaces should be blasted to a near white metal finish using clean dry aggregate.

Material Properties at 75°F

	DURALITH	DURALITH LV	DURALITH GEL
COLOR, Part A & B	Amber	Amber	Lt. Grey
Mixing Ratio (A:B) by vol.	2:1	2:1	2:1
Viscosity: A & B mixed, cps	600-1000	250-550	Gel
Gel Time (100 gm sample), mins.	15-25	10-20	15-25
Pot Life, 3 gal. unit, mins.	10-12	5-8	10-12
ASTM D638, 7 Day Tensile Strength, psi	7,000	7,000	-
Tensile Elongation, Pct.	2-6	2-6	-
ASTM D695, 7 Day Compressive Strength, psi	10,000	9,500	9,000
Compressive Modulus, psi	225-325,000	300,000	225-325,000
Hardness (ASTM D2240) Shore D	90-95	90-95	90-95
Flexural Strength (ASTM D790)	12,000	9,000	11,000
ASTM C882 Slant Shear Bond Strength, psi	1,800	1,500	2,200
ASTM C109, 7 day Compressive Strength, psi	10,500	10,000	9,500
Parts sand, by volume	3	3	1
ASTM C580 (3 parts sand) Flexural Strength, psi	4,000	-	-
ASTM D648, (°F) Heat Deflection Temp.	122	112	121

Values are typical and not necessarily referenced to create specifications.

- MIXING INSTRUCTIONS: Premix Part A and Part B. Binder and Adhesive:** Combine Part A (Base) and Part B (Hardener), 2:1 by volume in a clean container and mix thoroughly with a slow speed motor and "Jiffy" Mixer. Make sure to scrape sides and bottom of mixing container. Do not aerate mix. **Mortar:** Gradually add 20/40 mesh silica aggregate to the mixed Binder. Blend thoroughly.

Mix Ratios for Mortar:

Mixed Binder: Aggregate (by volume)

DURALITH	1:3
DURALITH LV	1:4
DURALITH GEL	Max. 1:1

Mix ratios may be varied depending upon desired consistency.

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7. **APPLICATION TECHNIQUES:** Application temperature for DURALITH, DURALITH LV and DURALITH GEL must be at least 40°F and rising.

7.1 Hardened to hardened concrete: Apply the premixed DURALITH GEL with a spatula, brush, or trowel. Ensure that surfaces to be joined have a uniform coating of DURALITH GEL on them. Join surfaces together and hold or clamp firmly until adhesive hardens or gels. Excess adhesive should squeeze out from the sides.

7.2 Patching: A) Horizontal: Prime surface with neat DURALITH or DURALITH LV. Before the primer coat becomes tack free trowel the Duralith mortar to the primed surface.

B) Vertical and Overhead: Prime by scrubbing the surface with neat DURALITH GEL. Apply DURALITH GEL neat or mixed with silica sand, by trowel or spatula, in lifts of 1 to 1½ inch. Allow each lift to set before applying subsequent lift.

7.3 Anchor Bolt Grouting: For vertical anchor bolts use DURALITH. For horizontal anchor bolts use DURALITH GEL. Before grouting, the anchor bolt hole must be free of all debris. Prime the hole with neat DURALITH (vertical) or DURALITH GEL (horizontal). For close tolerances between the anchor bolt and the hole walls, DURALITH can be used. For larger tolerances, silica sand should be added to the grout. Fill the hole with enough material so that when the bolt is inserted, excess material will come to the surface. Push the bolt into the hole using a twisting motion to ensure full contact. Pack the hole with additional resin to be flush with the surface. Care should be taken to ensure there are no air voids in the hole. For additional information on anchor bolt grouting, consult “Anchor Bolt Grouting Installation Guidelines” which is available from TAMMS Industries upon request.

7.4 Pressure Grouting: A) Vertical Cracks: Install injection ports at appropriate intervals using DURALITH GEL. Seal the surface of the crack with DURALITH GEL. Pump DURALITH LV with two component, mixing, pressure injection pump, starting at the bottom and working up. Cracks should be clean and dry prior to injection of the DURALITH LV. **B) Horizontal Cracks:** “Vee” out cracks. Cracks must be free of all debris and dry before filling. Pressure injection method is the same as for vertical cracks. For gravity feed, pump DURALITH LV until cracks are filled. **TECH KITS**, which are 15 oz. dual cartridge kits, are available for small pressure grouting applications.

8. **COVERAGE:** DURALITH coverage rates are approximate and for estimating purposes only. Surface temperature, porosity and texture will determine actual material requirements.

	DURALITH	DURALITH LV	DURALITH GEL
Prime Coat	200 sq.ft/gal.	250 sq.ft/gal.	150 sq.ft/gal
Resin/Aggr. (mixed with silica aggregate) (by vol.)	1:3	1:4	1:1
Approx. gals to make 1 cu.ft.	2.7:8.0	2.2:8.8	4.7:4.7

9. **CLEAN-UP INSTRUCTIONS:** Clean tools and application equipment immediately after use with ethyl ketone or Xylene. Clean spills or drips while still wet with same solvent. Dried epoxy materials will require mechanical abrasion for removal.

10. **CAUTIONS:** Do not mix or apply below 40°F. Condition the resin/aggregate at 65-75°F for 24 hours prior to application at temperatures of 40°F and rising. Aggregate temperature should be above 40°F. Do not aerate epoxy materials during mixing. For critical grouting applications, concrete should be cured for at least 28 days. For applications at temperatures above 60°F and when longer working times are desired, use corresponding grades of DURALCRETE, DURALCRETE LV or DURALCRETE GEL. Not recommended for sealing cracks under hydrostatic pressure. Do not thin with solvents.

11. **PACKAGING:** All DURALITH types are available in 3 and 15 gallon units. DURALITH LV and DURALITH GEL are also available in 15 oz. (450 ml.) TECH KITS.

Storage: 50 to 90°F, protect from moisture.

Shelf Life: 2 years, unopened properly stored.

Freight Class: Class 60.

12. **ENVIRONMENTAL/SAFETY: Industrial Use Only.**

Component A: Contains epoxy resin. Vapors can cause respiratory irritation. Skin and eye irritant. Can cause sensitization after prolonged or repeated exposure. Use of safety goggles and chemical resistant gloves is recommended. Use only with adequate ventilation.

Component B: Is CORROSIVE. Contains amines. Contact with eyes and skin may cause severe burns. Can cause sensitization after prolonged or repeated use. Use of safety goggles and chemical resistant gloves is highly recommended. Use only with adequate ventilation.

First Aid: In case of skin contact, wash immediately and thoroughly with soap and water for at least 15 minutes. In case of eye contact, wash with copious amounts of water and consult physician immediately. For respiratory problems, remove person to fresh air. **Disposal:** Collect with absorbent material. Dispose of in accordance with current local, state and federal regulations. **READ MATERIAL SAFETY DATA SHEET BEFORE USING. FOR INDUSTRIAL USE ONLY. KEEP AWAY FROM CHILDREN AND ANIMALS. EMERGENCY RESPONSE PHONE NUMBER: (800) 862-2667 TAMMS OR (800) 424-9300 CHEMTREC.**

13. **TECHNICAL SERVICE:** For application procedures or surface conditions not specified above, please contact:

TAMMS INDUSTRIES
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