BONDING AGENTS AND ADHESIVES

Master Format #: 03 05 00

DURAL 452 MV

ASTM C881 COMPLIANT, MEDIUM VISCOSITY, HIGH MODULUS EPOXY ADHESIVE

EUCLID CHEMICAL

PACKAGING

0.66 gal (2.5 L) unit
Code: 002DM 01

2 gal (7.6 L) unit
Code: 002DM 02

4 gal (15 L) unit
Code: 002DM 04

10 gal (38 L) unit
Code: 002DM 10

CLEAN UP

Clean tools and application equipment immediately with acetone, xylene, or MEK. Clean spills or drips with the same solvents while still wet. Hardened DURAL 452 MV will require mechanical abrasion for removal.

SHELF LIFE

2 years in original, unopened package

SPECIFICATIONS AND COMPLIANCES

- Complies with ASTM C881 Types I, II, IV and V, Grade 2, Class C
- Meets the requirements of AASHTO M 235

DESCRIPTION

DURAL 452 MV is a two-component, 100% solids, moisture insensitive, high strength epoxy adhesive and binder for numerous applications. This high modulus, medium viscosity epoxy resin is the perfect solution for bonding new, plastic concrete to existing concrete slabs and steel.

PRODUCT CHARACTERISTICS

FEATURES/BENEFITS

- Provides exceptional adhesion
- Easy to use 1:1 mix ratio
- Moisture insensitive

PRIMARY APPLICATIONS

- Bonding fresh concrete to hardened concrete
- Anchoring bolts, dowels, or pins
- General adhesive for concrete and masonry
- Mix with dried silica sand to create a repair mortar

APPEARANCE

Part A liquid is gray in color and Part B liquid is amber in color.

COVERAGE

For bonding, 1 neat gal (3.8 L) yields 231 in^3 (3,785 cm^3) of epoxy. The coverage rate as a bonding agent is approximately 60 to 80 ft^2/gal (1.5 to 2.0 m^2/L), depending upon the texture of the existing slab. 1 gal (3.8 L) of neat DURAL 452 MV epoxy mixed with 3 gal (11.4 L) of dry 20/40 mesh silica sand will yield approximately 643 in^3 (10,537 cm^3) of mortar.

Note: Coverage rates are approximate. Actual coverage depends on temperature, texture, and substrate porosity.

TECHNICAL INFORMATION

The following are typical values obtained under laboratory conditions. Expect reasonable variation under field conditions.

Test Method	Test Property	Result
ASTM D2556	Mixed Viscosity	4,400 cp
ASTM C881	Gel Time	35 minutes
ASTM C882	Bond Strength	2 days: 2,300 psi (15.9 MPa) 14 days: 2,590 psi (17.8 MPa)
ASTM D570	Water Absorption	24 hours: 0.2%
ASTM D648	Heat Deflection Temperature	120 °F (50 °C)
ASTM D2566	Linear Coefficient of Shrinkage	0.002
ASTM D695	Compressive Yield	7 days: 12,500 psi (86.2 MPa)
ASTM D695	Compressive Modulus	7 days: 625,000 psi (4,309 MPa)
ASTM D638	Tensile Strength	7 days: 7,500 psi (51.7 MPa)
ASTM D638	Elongation at Break	1.2%

DIRECTIONS FOR USE

Surface Preparation: The surface must be structurally sound, dry, clean and free of grease, oil, curing compounds, soil, dust and other contaminants. Surface laitance must be removed. Concrete surfaces must be roughened and made absorptive, preferably by mechanical means, and then thoroughly cleaned of all dust and debris. If the surface was prepared by chemical means (acid etching), a water/baking soda or water/ammonia mixture, followed by a clean water rinse, must be used for cleaning, in order to neutralize the substrate. Allow substrate to dry before application. Route cracks and blow dust/debris from them with oil-free compressed air. Following surface preparation, the strength of the surface can be tested if quantitative results are required by project specifications. An elcometer or similar tensile pull tester may be used in accordance with ASTM D4541, and the tensile pull-off strength should be at least 250 psi (1.7 MPa).
When coating steel, all contamination should be removed and the steel surface prepared to a "near white" finish (SSPC SP10) using clean, dry blasting media.

Mixing: Mix DURAL 452 MV using a low-speed drill and a mixing paddle. Pre-mix Part A and Part B separately for approximately 1 minute each. Combine Part A and Part B in a 1:1 ratio by volume, then mix thoroughly for 3 to 5 minutes.
To make DURAL 452 MV mortar, gradually add clean, dry, 20/40 mesh silica sand to previously mixed DURAL 452 MV epoxy and mix thoroughly for 3 to 5 minutes. The mix ratio of aggregate to mixed epoxy is approximately 3:1 by volume, but can be modified depending on the desired consistency of the mortar.
Scrape the bottom and sides of the containers at least once during mixing. Do not scrape bottom or sides of the container once mixing operations have ceased; doing so may result in unmixed resin or hardener being applied to the substrate. Unmixed resin or hardener will not cure properly. Do not aerate the material during mixing. To keep aeration to a minimum, the recommended mixing paddles are #P1 or #P2 as found in ICRI Guideline 320.5R-2014.

Application: Bonding fresh concrete to hardened concrete: Apply by brush, roller, squeegee, or spray to the prepared, existing concrete substrate. Place fresh concrete onto the DURAL 452 MV while it is still tacky. The open time is typically 3 to 4 hours at 75 °F (24 °C). The open time is reduced at warmer temperatures. If the DURAL 452 MV loses tackiness or exceeds open time, abrade the surface of the epoxy, wipe surface clean, re-apply DURAL 452 MV, and proceed. DO NOT PLACE CONCRETE OVER DRIED EPOXY. **Bonding hardened concrete to hardened concrete:** Apply by spatula, brush, or trowel. Ensure the surfaces to be joined have uniform coatings of DURAL 452 MV. For optimum results, the bond line should not exceed 1/8" (3.2 mm). Join surfaces and hold or clamp firmly until the epoxy gels. Ideally, a small amount of adhesive should exude from the joint. Surfaces must be mated while the adhesive is still tacky. **Anchoring bolts, dowels, pins:** DURAL 452 MV can be used neat or as a mortar to grout vertically-aligned anchors (into a horizontal substrate). The anchor hole should be free of all debris before grouting. The optimum hole size is 1/16" (1.6 mm) annular space (1/8" (3.2 mm) larger diameter than anchor diameter). Depth of embedment is typically 10 to 15 times anchor diameter. **Patching and repairs:** Apply DURAL 452 MV neat as a primer coat to the prepared concrete surface. Mix the DURAL 452 MV into an epoxy mortar and apply to the area by trowel or spatula in lifts of 1" to 1-1/2" (25 mm to 38 mm) before the neat primer coat becomes tack free. Allow each lift to reach initial set before applying subsequent lifts.

PRECAUTIONS/LIMITATIONS

- These instructions do not dictate mechanical surface preparation required prior to ready-mix concrete toppings. This product is not intended to excuse or replace proper mechanical surface preparation. Please refer to ACI 302 Section 4.3.2 and Table 4.1, along with the project engineer for guidance on proper surface preparation for ready-mix concrete toppings.
- Store DURAL 452 MV indoors, protected from moisture, at temperatures between 50 °F and 90 °F (10 °C and 32 °C)
- Surface and ambient temperature during applications should be between 50 °F and 90°F (10 °C and 32 °C)
- Material temperatures should be at least 50 °F (10 °C) and rising
- Working time and cure time will decrease as the temperature increases, and will increase as the temperature decreases
- Do not thin DURAL 452 MV
- DURAL 452 MV will discolor upon prolonged exposure to ultraviolet light and high-intensity artificial lighting.
- DURAL 452 MV is not to be used as a finished/aesthetic coating
- Do not use DURAL 452 MV for horizontally-aligned anchors (into a vertical substrate)
- Do not use DURAL 452 MV for overhead anchoring
- Maximum application thickness of DURAL 452 MV mortar is 1.5" per lift.
- In all cases, consult the product Safety Data Sheet before use

Rev. 08.24