



# DURAL 452 MV

ASTM C 881 COMPLIANT, HIGH MODULUS EPOXY ADHESIVE

EUCLID CHEMICAL

## 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.

## PRIMARY APPLICATIONS

- Bonding fresh, plastic 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

## FEATURES / BENEFITS

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

## TECHNICAL INFORMATION

Property	Result
Mixed Viscosity, cp	3,700
Gel Time, minutes ASTM C 881	40
Tensile Strength, MPa ASTM D 638	7 days: 50.0
Tensile Elongation, % ASTM D 638	7 days: 1.3
Compressive Strength, MPa ASTM D 695	7 days: 75.0
Bond Strength, MPa ASTM C 882	2 days: 15.0 14 days: 16.0
Heat Deflection Temperature ASTM D 648	51°C
Water Absorption @ 24 hours, % ASTM D 570	< 0.3
Appearance/Colour	Light Grey

Properties determined at laboratory conditions.

## PACKAGING

**DURAL 452 MV** is packaged in 5L and 10L units. The mix ratio is 1:1 by volume.

## SHELF LIFE

2 years in original, unopened containers

## COVERAGE

For bonding, 1L neat yields 0.001 m<sup>3</sup> of epoxy. The coverage rate as a bonding agent is approximately 1.5 to 2.0 m<sup>2</sup>/L, depending upon the texture of the existing slab. 1L of neat **DURAL 452 MV** epoxy mixed with 3L of dry 20/40 mesh silica sand will yield approximately 0.003 m<sup>3</sup> of mortar.

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

## SPECIFICATIONS/COMPLIANCES

**DURAL 452 MV** complies with ASTM C 881-10 Types I, II, IV and V, Grade 2, Class C

## 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 neutralise 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 D 4541, and the tensile pull-off strength should be at least 1.7 MPa. When coating steel, all contamination should be removed and the steel surface prepared to a “near white” finish 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 to 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 to 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, using the recommended mixing paddles.

**Application: Bonding fresh concrete to hardened concrete:** Apply by brush, roller, or squeegee 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 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, reapply **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 3 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 1.6 mm annular space (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 25 to 40 mm before the neat primer coat becomes tack free. Allow each lift to reach initial set before applying subsequent lifts.

## 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.

## PRECAUTIONS / LIMITATIONS

- Store **DURAL 452 MV** indoors, protected from moisture, at temperatures between 10°C and 32°C
- Surface and ambient temperature during applications should be between 10°C and 32°C
- Material temperatures should be at least 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 discolour 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
- In all cases, consult the product Safety Data Sheet before use

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