

# Ductile 400

## Ultra-high performance shotcrete for concrete repair, earth stabilization, earthquake remediation

GST International's Ductile 400 is a specially engineered cement-based product that offers tremendous performance in horizontal, vertical and overhead shotcrete applications. Half-inch to three-quarter inch patches are typical. Thicker sections can be applied as needed.

### Benefits:

- High ductility, allowing Ductile 400 to “flex” without being damaged.
- 500 times the crack resistance and tensile strain capacity of other cement-based products.
- Tests at the University of Nevada, Reno, were unable to damage Ductile 200 patches at the maximum of 9.0 on the Richter scale in their shake tests.
- Ability to apply directly over existing damaged concrete without bonding agents.
- Excellent for use to repair spalling from water damage.
- The fibers used in Ductile 400 have 10 times the bond strength of competitive fibers due to a molecular bond between the fiber and the Portland cement.
- Ductile 400 handles long-term shrinkage cracking, structural movement and fatigue cracking by generating thousands of microcracks. These microcracks are generally too small for water penetration, reducing the chance of delamination or spalling.
- This bond strength reduces chipping, cracking or impact damage.
- Crystalline self-healing of microcracks prevents water penetration over an extended product service life.
- The high density of Ductile 400 reduces abrasion wear.
- Ground or structure movement that would normally cause large cracks are controlled through the “bending” and microcracking of Ductile 400.
- Freeze thaw protection is over 100 times that of competitive mortars.
- Ductile 400 can be colored, stained, acid etched or stamped.
- The unique chemistry of Ductile 400 makes it resistant to UV, chemicals, and provides an expected service life of 100 years.
- Ductile 400 can be sprayed directly on ground surfaces to reduce erosion. Forms are not required.
- Ductile 400 can be sprayed directly onto non-reinforced masonry structures to provide earthquake remediation.
- Ductile 400 can be sprayed on to other surfaces to reduce the chance of fire damage.
- No harmful chemicals, acrylics or epoxies are used in Ductile 400.
- Only water is added at the jobsite. Ductile 400 is preblended. (cont.)

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**Benefits (cont.):**

- Ductile 400 is typically used with peristaltic pumps due to the very high fiber loading required to achieve high performance.
- Ability to apply directly over existing damaged concrete without bonding agents. The surface must be clean and wet. Power washing is advised.
- Any surface that will absorb water from the mix should be soaked or sealed.
- Thin overlays should immediately be coated with an acrylic or other curing agent. This is especially true outdoors.
- Texture rollers or other concrete finishing tools can be used, but this not necessary.