

## TECHNICAL DATA SHEET

### DESCRIPTION

Civil/Structural VO is a fiber reinforced, silica fume enhanced, cement based mortar designed for structural repairs of vertical or overhead concrete substrates. Civil/Structural VO is enhanced with a corrosion inhibitor for rebar & steel protection and is especially formulated for use in spray applied applications using wet spray process equipment. Civil/Structural VO has excellent finishing characteristics making it very user friendly to screed and finish. Due to its superb workability, Civil/Structural VO may also be applied by trowel or hand.

### USE

For repairing of concrete above and below grade on both vertical and overhead applications. Typical applications include repair of columns, bridges, tunnels, parking structures, retaining walls, dams, etc.

### FEATURES

- One-component; just add water
- Unique corrosion inhibitor protects steel reinforcement from both chloride intrusion and carbonation
- Excellent resistance to freeze-thaw and de-icing salts
- Designed for vertical and overhead applications without the need for forming
- Interior and exterior applications
- Shrinkage compensated
- High bond strength
- Thermal expansion similar to concrete for long term durability
- Can be pumped and sprayed through small volume pneumatic equipment

### PROPERTIES

Unit weight (ASTM C185/C138):  
133.5 lbs. per cu. ft. (2138.46 kg/cu m)

Compressive Strength (ASTM C109)  
1 day: 6500 psi (44.8 MPa)  
7 days: 9500 psi (65.5 MPa)  
28 days: 12,000 psi (82.7 MPa)

Flexural Strength (ASTM C78):  
7 days: 600 psi (4.1 MPa)  
28 days: 1000 psi (6.9 MPa)

Splitting Tensile Strength (ASTM C496):  
3 days: 950 psi (6.6 MPa)  
7 days: 1000 psi (6.9 MPa)  
28 days: 1200 psi (8.3 MPa)

Modulus of Elasticity (ASTM C469): 28 days: 5.5x10<sup>6</sup>

Bond Strength: (ASTM C882)  
1 day: 2,600 psi (17.9 MPa)  
7 days: 3,450 psi (23.7 MPa)

Length Change (ASTM C157 modified): 28 days:  
<0.04%

Freeze/Thaw (ASTM C666 procedure A, modified):  
300 cycles: 95.5%

Salt Scaling Resistance (ASTM C672):  
25 cycles, rating = 0

Rapid Chloride Permeability (ASTM C1202):  
28 days:  
175 coulombs, very low

Sulfate Resistance (ASTM C1012):  
28 days: < 0.025

### Note:

The data shown is typical for controlled laboratory conditions. Reasonable variation from these results can be expected due to interlaboratory precision and bias. When testing the field mixed material, other factors such as variations in mixing, water content, temperature and curing conditions should be considered.

### Estimating Guide

Yield: 0.41 cu. ft. (0.012 cu. m)/50 lb. (22.7 kg) bag

### Packaging

PRODUCT CODE	PACKAGE	SIZE	
		lbs.	kg
308762	Bag	50	22.7

### STORAGE

Shelf life of unopened bags, when stored in a dry facility, is 12 months. Excessive temperature differential and/or high humidity can shorten the shelf life expectancy. Store in a cool, dry area free of direct sunlight.

### Surface Preparation:

The concrete must be sound and free of all foreign material, including oil, grease, dust, laitance, or other surface contaminants. Surface preparation in accord with ICRI Guidelines is recommended. The edges of the patches should be saw-cut perpendicular to the surface to no more than a depth of 1/2 in. (13 mm) to avoid feather edging the repair material. Best results will be obtained by abrasive blasting the area to be repaired, providing uniform depth, a high surface profile and a firm bonding area. All surfaces to be repaired should be in a saturated-surface-dry (SSD) condition with no standing water on the surface. Reinforcing steel should be cleaned and repaired as required and as determined by the engineer of record for the project.

### Water Requirements:

Each 50 lb. (22.7 kg) bag requires approximately 2.75 qt. (2.6 L) of clean potable water

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### Mixing

Mix with a low speed drill or, for larger projects, a mortar mixer. Add clean water into the container followed by the Civil/Structural VO. Mix 2 to 3 minutes to a uniform, lump free consistency. Mix only what can be applied within the setting period. Work time is approximately 45 minutes. Wet process mix/spray equipment is recommended.

### Placement:

Spray or hand applied. For hand applied applications apply a scrub coat of the mixed material to the dampened substrate. Minimum application thickness is 3/8 in. (0.95 cm); maximum is 2 in. (5.1 cm)

### CURING

Civil/Structural VO is self-curing under most conditions. To assure maximum durability under severe drying conditions (wind, low humidity and/or high temperature), moist cure or use approved ASTM C-309 Dayton Superior water based curing compound.

### CLEAN UP

Clean tools and equipment prior to material hardening with clean water. Hardened material requires mechanical/abrasive methods.

### LIMITATIONS

#### FOR PROFESSIONAL USE ONLY

When using less than one bag always dry mix the full bag to eliminate segregation that can occur during shipping.

Minimum application temperature is 40°F (5°C).

In hot weather, follow ACI Committee 305 recommended procedures.

Do not apply over smooth hard troweled surfaces without roughening.

Supported patches deeper than 2 in. (5 cm) may require reinforcement or anchorage.

Render applications for unsupported repairs exceeding 1 in. (2.54 cm) in thickness may require anchorage.

### PRECAUTIONS

#### READ SDS PRIOR TO USING PRODUCT

- Product contains Crystalline Silica and Portland Cement – Avoid breathing dust – Silica may cause serious lung problems
- Use with adequate ventilation

- Wear protective clothing, gloves and eye protection (goggles, safety glasses and/or face shield)
- Keep out of the reach of children
- Do not take internally
- In case of ingestion, seek medical help immediately
- May cause skin irritation upon contact, especially prolonged or repeated. If skin contact occurs, wash immediately with soap and water and seek medical help as needed.
- If eye contact occurs, flush immediately with clean water and seek medical help as needed
- Dispose of waste material in accordance with federal, state and local requirements

### MANUFACTURER

Dayton Superior Corporation  
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Miamisburg, OH 45342  
Customer Service: 888-977-9600  
Technical Services: 877-266-7732  
Website: [www.daytonsuperior.com](http://www.daytonsuperior.com)

### WARRANTY

Dayton Superior Corporation ("Dayton") warrants for 12 months from the date of manufacture or for the duration of the published product shelf life, whichever is less, that at the time of shipment by Dayton, the product is free of manufacturing defects and conforms to Dayton's product properties in force on the date of acceptance by Dayton of the order. Dayton shall only be liable under this warranty if the product has been applied, used, and stored in accordance with Dayton's instructions, especially surface preparation and installation, in force on the date of acceptance by Dayton of the order. The purchaser must examine the product when received and promptly notify Dayton in writing of any non-conformity before the product is used and no later than 30 days after such non-conformity is first discovered. If Dayton, in its sole discretion, determines that the product breached the above warranty, it will, in its sole discretion, replace the non-conforming product, refund the purchase price or issue a credit in the amount of the purchase price. This is the sole and exclusive remedy for breach of this warranty. Only a Dayton officer is authorized to modify this warranty. The information in this data sheet supersedes all other sales information received by the customer during the sales process. THE FOREGOING WARRANTY SHALL BE EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER WARRANTIES OTHERWISE ARISING BY OPERATION OF LAW, COURSE OF DEALING, CUSTOM, TRADE OR OTHERWISE.

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