

D.O.T. PATCH HD

RAPID-SETTING, HEAVY-DUTY FLOWABLE REPAIR MORTAR

PURPOSE

D.O.T. PATCH HD is a rapid-setting, fiber-reinforced and polymer-modified material for concrete repair. It is easily mixed with water to provide a flowable material that exhibits greater compressive, flexural and shear bond strengths than most other repair materials.

D.O.T. PATCH HD will not rust or break down under moist or humid conditions. This formulation uses a low water/cement ratio to produce rapid-setting and high strength properties.

D.O.T. PATCH HD is recommended for concrete repairs on bridge decks, pavements, runways, parking decks and industrial floors. Areas repaired with D.O.T. PATCH HD can be reopened for traffic quickly because the rapid-setting properties produce compressive strengths in excess of 2,000 psi within one hour.

Extremely low water permeability provides excellent durability to freeze/thaw conditions. D.O.T. PATCH HD can be installed at temperatures as low as 10°F (-12°C) by following proper cold weather instructions.

DESCRIPTION

D.O.T. PATCH HD is a single component, cement-based, rapid-setting repair mortar. It does not contain chlorides or magnesium phosphate.

PACKAGING

D.O.T. PATCH HD is available in 50 lb. (22.7 kg) bags or pails.

PROPERTIES

D.O.T. PATCH HD meets or exceeds the ASTM-C-928 specification for "Very Rapid-Hardening Cementitious Repair Materials."

Compression Test (ASTM-C-109)

75°F (24°C)	3.25 qts water
psi	MPa
2500	17.2 (at 1 hour)
3500	24.1 (at 3 hours)
6145	42.4 (at 1 day)
7370	50.8 (at 7 days)
7970	50.8 (at 28 days)
40°F (4°C)	3.25 qts water
psi	MPa
2700	18.5 (at 3 hour)
6100	42.0 (at 1 day)
6860	47.3 (at 7 days)
7800	53.8 (at 28 days)
100°F (38°C)	3.25 qts water
psi	MPa
5100	35.1 (at 3 hours)
6300	43.4 (at 1 day)
7300	50.3 (at 7 days)
8500	58.6 (at 28 days)

Length Change (ASTM-C-157)

75°F (24°C)	3.25 qts water
Air Storage	-0.082% at 28 days
Water Storage	+0.051% at 28 days

Rapid Freeze-Thaw Test (ASTM-C-666 "B")

75°F (24°C)	3.25 qts. water
At 300 cycles, the samples indicated an average weight loss of .3% with no signs of spalling.	

Scaling Resistance (ASTM-C-672)

75°F (24°C)	3.25 qts. water
.71 lbs./ft ²	(3.5 kg/m ²)

Bond Strength (ASTM-C-882)

75° F (24°C)	3.25 qts water
psiMPa	
195013.4	(at 1 day)
225015.5	(at 7 days)

Chloride Ion Permeability (ASTM-C-1202)

75°F (24°C)	3.25 qts. water
Elapsed time - 360 minutes	
Permeability rating - very low	

YIELD

D.O.T. PATCH HD yields .42 ft³ per 50 lbs. (.012 m³ per 22.7 kg) at 3.25 qts. (3.0 L) of water.

D.O.T. PATCH HD yields .60 ft³ per 50 lbs. (.017 m³ per 22.7 kg) when extended with 30 lbs. (13.6 kg) of 3/8" (1 cm) pea gravel at 3.25 quarts (3.0 L) of water.

Actual yield will vary slightly depending on the amount of water, type of mixing equipment and other field conditions.

APPLICATION

Storage: Opened bags should be used immediately or discarded. Material should be stored in a cool, dry place.

Preparation: For best results follow the ACI standards for concrete preparation, removing all residue, grease, dirt, oil, etc. from the surfaces to be in contact with the repair material. All loose concrete must be removed until firm substrate is exposed. Saw cut the perimeter of the repair by a maximum depth of 1/2" (1.3 cm). Best results will be obtained by saw cutting the area to be repaired, providing uniform depth and firm bonding areas. Minimum repair depth of 1/2" (1.3 cm) is required. All surfaces to be repaired should be in a saturated, surface-dry (SSD) condition with no standing water on the surface. A scrub coat or approved bonding agent, like Symons STRONG BOND, is recommended as a primer.

Placement: D.O.T. PATCH HD requires only water for mixing at the rate of 3.25 quarts (3.0 L) per 50 lbs. (22.7 kg) of material. Place water into the mixing container and then add the repair

material to the water. The product can be mixed with a mud paddle in a 5 gallon (18.9 L) container or mortar mixer, preferably with rubber-tipped blades. Continue mixing until the material is free of lumps. Mix as close as possible to the area to be repaired. Do not allow material to build up on equipment and wash periodically with water. Do not re-temper the mixed material or use admixtures. Place immediately after mixing, working the material firmly into the sides and bottom to eliminate air pockets and assure maximum bond. Where practical, work from one side to the other and screed to the level of the surrounding concrete. Trowel the surface or provide a desired finish. Working time is 10-15 minutes.

D.O.T. Patch HD should be extended 60% by weight with clean $\frac{3}{8}$ " (1.0 cm) pea gravel on patches deeper than 2" (5 cm). For aggregate extension greater than 60%, contact a Symons representative. On hot or windy days, the repair area should be moisture-cured with wet burlap for 1 hour or treated with an approved curing compound, like Symons RESI-CHEM CLEAR.

Cold Weather Application: D.O.T. Patch HD can be applied in temperatures down to 10°F (-12°C), provided these instructions are followed. When applying in cold weather (below 40°F, 4°C), heat the surrounding concrete until warm to the touch. Warm the repair material and use approximately 90°F (33°C) mixing water. After placement, the repaired patch should be covered with a construction insulating blanket for a minimum 1-3 hours to keep material from freezing and to assure proper set and bond.

Hot Weather Application: When placing the material in hot weather, cold water should be used as a mixing agent. Ambient and water temperatures will affect the setting time. Colder temperatures will extend the setting time, where warmer temperatures will shorten the setting time. At 70°F (21°C), the initial setting time is between 15 and 20 minutes. In applications where temperatures are above 90°F (33°C), the repair area be soaked with

water or approved bonding agent, like Symons STRONG BOND, to prevent the rapid loss of the moisture in the material. The repair area should be covered with wet burlap or an approved curing compound, like Symons RESI-CHEM CLEAR.

Unusual applications or conditions may require the technical assistance of a Symons representative.

LIMITATIONS

D.O.T. PATCH HD is recommended for use between 50° and 90°F (10° and 32°C). Protective measures are required outside this temperature range.

D.O.T. PATCH HD is not recommended when feather-edge installation is required.

SHELF LIFE

Shelf life of properly stored material is one year.

PRECAUTIONS

It is mandatory to take the following precautions to protect workers and the public:

1. KEEP OUT OF THE REACH OF CHILDREN.
2. Contains free silica and may cause delayed lung injury (silicosis). Avoid inhalation of dust and ensure adequate ventilation.
3. Avoid contact with skin. Protective clothing is recommended. Contact areas should be thoroughly washed with soap and water.
4. Avoid contact with eyes. Protective goggles are recommended in case of splashing. Flush eyes with water if contact occurs.
5. Avoid ingestion of material. If ingestion occurs, contact poison center or physician.

Additional precautions, safety information and first aid treatments are contained in the Material Safety Data Sheet.

WARRANTY

Symons 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 Symons, the product is free of manufacturing defects and conforms to Symons' published specifications in force on the date of acceptance by Symons of the order. Symons shall only be liable under this warranty if the material has been applied, used, and stored in accordance with Symons instructions in this technical data sheet.

The purchaser must examine the product when received and promptly notify Symons in writing of any nonconformity before the product is used, or no later than 30 days after such nonconformity is first discovered. If Symons, in its sole discretion, determines that the product breached the above warranty, it will, in its sole discretion, replace the nonconforming product, refund the purchase price or issue a credit. This is the sole and exclusive remedy for breach of this warranty.

Only a Symons officer is authorized to modify this warranty. The sales information on the Symons website and received by the customer during the sales process does not supersede this warranty and the specifications of the product in force on the date of sale. THE FOREGOING WARRANTY SHALL BE EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, 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.

LIMITATION OF LIABILITY

Symons shall not be liable, in contract or in tort (including, without limitation, negligence, strict liability or otherwise) for loss of sales, revenues or profits; cost of capital or funds; business interruption or cost of downtime, loss of use, damage to or loss of use of other property (real or personal); failure to realize expected savings; frustration of economic or business expectations; claims by third parties (other than for bodily injuries), or economic losses of any kind; or for any special, incidental, indirect, consequential, special, punitive or exemplary damages arising in any way out of the performance of, or failure to perform, this Agreement, even if Symons could foresee or has been advised of the possibility of such damages. The Parties expressly agree that these limitations on damages are allocations of risk constituting, in part, the consideration for this agreement, and also that such limitations shall survive the determination of any court of competent jurisdiction that any remedy provided in these terms or available at law fails of its essential purpose.

MANUFACTURER

Symons
2400 Arthur Avenue
Elk Grove Village, IL 60007
General: 847-298-3200
FAX: 847-635-9287

www.symons.com
info@symons.com
Technical: 877-854-0643
Fax: 913-279-4806

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