

TARGET® SUPERSTICK LOW TEMPERATURE SHOTCRETE

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PRODUCT

TARGET® Low Temperature Shotcrete is made with accurately mass-batched blends of Portland cement, silica fume, sand, coarse aggregate and dry-powdered shotcrete accelerators. Shotcrete aggregates are blended to ACI 506R-90 gradation requirements and shotcretes are available in either ACI Gradation No.2 (medium) or Gradation No.1 (fine) aggregate gradations. Other aggregate gradations can be manufactured on request.

All materials used conform to the requirements of relevant standards, including: CSA A23.1-94 "Concrete Materials and Methods of Concrete Construction", ACI 506.2 "Specifications for Materials, Proportioning and Application of Shotcrete", ASTM C1141 "Standard Specification for Admixtures for Shotcrete".

USES

TARGET® Low Temperature Shotcrete is used in a wide range of civil engineering and mining applications where application in low temperature is necessary. Typical areas of use include:

- Mining applications, including ground support and lining of portals, shafts, drifts, raises, loading pockets and underground chambers.
- Ground support and slope stabilization.
- Tunnel and shaft lining.

ADVANTAGES

TARGET® Low Temperature Shotcrete offers many advantages to owners, contractors and engineers, particularly in situations where conventional formed concrete construction would not be appropriate or cost effective. Major advantages of using TARGET® Low Temperature Shotcrete include:

- Supply of a precision mass-batched mixture produced to stringent quality control standards.
- Ease of application, particularly in difficult to access or remote locations.
- Elimination or reduction of formwork.
- Greater thickness of build-up in a single pass relative to conventional shotcrete, particularly in the dry-mix shotcrete process.
- Substantial reductions in rebound, particularly in the dry-mix shotcrete process.
- Reduction in construction time.
- Superior bond to (properly prepared) surfaces.
- Elimination of secondary reinforcing steel or mesh when fiber reinforcement is included in the mixture.
- High early and later age strengths and low permeability.

Product performance is affected by many factors, including storage, method and conditions of application and use. User testing is ESSENTIAL to determine suitability of product for intended method of application and use. Target's SOLE WARRANTY is that the product has been manufactured to specifications. No oral or written information or advice shall increase this warranty or create new warranties. Target's SOLE LIABILITY is to replace product proved defective. In no event shall Target be liable for any consequential, indirect or other damages whether arising from negligence or otherwise.

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TYPICAL PROPERTIES

Compressive strength at various ambient temperatures

Time	20C	0C	-5C
5 hours	10 MPA	2 MPa	2 MPa
24 hours	18 Mpa	9.6 MPa	8.6 MPa
3 days	38 MPa	17.9 MPa	11.6 MPa
7 days	45 MPa	22 MPa	19.1 MPa
28 days	50 MPa	28 MPa	25. 0 MPa

SPECIAL SHOTCRETES

- Fiber reinforced shotcretes can be custom formulated to meet different Toughness Performance Levels using appropriate fiber types and addition rates.
- Air entrainment can be added to wet-mix shotcretes to produce the required parameters of the air void system for freeze-thaw durable shotcrete.
- Special high alumina cement based shotcretes can be formulated for refractory applications and for shotcretes applied to permafrost or frozen ground.

PROCEDURES

TARGET® Low Temperature Shotcrete should be applied in accordance with good shotcrete practice as detailed in ACI 506R "Guide to Shotcrete" and ACI 506.2 "Specifications for Materials, Proportioning and Application of Shotcrete". The use of nozzleman qualified to the ACI 506.3R "Guide to Certification of Shotcrete Nozzleman" is strongly recommended.

CAUTION

- Store bagged shotcrete products in a warm, dry place. Preferably shotcrete temperature at the time of application should be in the range of 10°C to 20°C (50°F to 68°F). Discard any shotcrete that has been exposed to moisture in the bags and allowed to prehydrate.
- Shotcrete should not be applied to substrates with temperatures below 0°C (32°F).
- Preferably ambient temperatures during shotcrete application should be in the range of 5°C to 30°C.
- Proper moist curing of applied shotcrete is important to minimize the potential for restrained shrinkage cracking and delamination. Three days of continuous moist curing is the minimum recommended requirement but seven days is preferred.
- In situations where moist curing is not feasible consult Target Products Ltd regarding the use of TARGET Cure and Seal curing compound.

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PACKAGING

TARGET® Low Temperature Shotcrete is supplied in 30 kg (66 lb) multiwall paper bags or in synthetic cloth bulk bin bags with up to 1678 kg (3700 lb) capacity. The bulk bin bags can be supplied with or without discharge spouts. Bags are supplied on pallets and can be capped with plastic sheets and stretchwrapped for moisture protection. Custom packaging is available on request. Bulk deliveries to silos in the field, or to ready-mix concrete plants can be arranged. Also site production of dry pre-mixed materials, with silo storage, can be provided for large shotcrete projects.

YIELD

Exact yield will depend on the specific shotcrete mix design but for conventional shotcrete mixes the yield and quantity estimating values (excluding an allowance for rebound and wastage) are as follows:

1 x	3700 lb	bulk bin bag	/ yd ³
56 x	66 lb	paper bags	/ yd ³
73 x	30 kg	paper bags	/ m ³
0.48	ft ³		/ 66 lb bag
0.0137	m ³		/ 30 kg bag
0.767	m ³		/ 3,700 lb bag

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