

Table 9-1:– Shotcrete Properties

Property	Test Method	Value
Max aggregate size	-	12.5mm
Min compressive strength	BS 4551-1	40 N/mm2 at 28 days
Min flexural strength	BS 6319-3	10 N/mm2 at 28 days
Min tensile strength	BS 6319-7	5 N/mm2 at 28 days
Water absorption	BS 1881	< 2%
Drying shrinkage	ASTM C157	< 300 microstrain at 7 days < 500 microstrain at 28 days
Rapid chloride penetration	ASTM C1202	1000 coulombs max

- C. Bulk mixed shotcrete compliant with the recommendations of ACI 506.2 may be utilized in lieu of pre-bagged shotcrete, if approved by the Engineer.
- D. Aggregates shall meet the requirements in Section 03300 of the specification except as modified hereunder.
- E. The combined grading shall be within the limits given in Table 9-2 below unless otherwise agreed by the Engineer.

Table 9-2:– Shotcrete Aggregate Grading

Sieve Size (mm)	Percent Passing
12.5	100
9.5	90-100
4.75	70-85
2.36	50-70
1.18	35-55
0.6	20-35
0.3	8-20
0.15	2-10

- F. Suitable approved fibre shall be added to the shotcrete to reduce crack propagation.
- The use of fibre shall be strictly in accordance with the manufacturer's instructions and as approved by the Engineer.
 - Prior to the approval of shotcrete the Contractor shall carry out trials mixes in the presence of the Engineer.
- G. Minimum cement content shall be 415 kg/m³.
- Type of cement shall be ASTM Type I, unless otherwise approved by the Engineer.
 - Shotcrete shall have the properties given in Table 9-1 above.
 - The temperature of the mix shall not be more than 32°C.
 - Where applicable shotcrete shall comply with the ACI 506, ACI 506.2,