

Hydraulic Cement for Stabilisation and Concrete

Types I · II · II(MH) · III · IV · V (ASTM C150) · GU · HE · MS · HS · MH · LH (ASTM C1157)

In accordance with ASTM C150 / AASHTO M 85 (prescriptive specification) or ASTM C1157 (performance specification)

1. Description

Hydraulic cement is a binder that sets and hardens by chemical reaction with water and that, once hardened, retains its strength and stability even under water. In road engineering it is used as a stabilising agent for soils and granular bases, in the production of cement-treated bases and in the manufacture of hydraulic concretes for drainage works, structures and rigid pavements.

2. Types and uses

Type	Description and intended use
I	General use, when the special properties of the other types are not required.
II	General use, especially when moderate sulfate resistance is desired.
II(MH)	General use, when moderate heat of hydration and moderate sulfate resistance are desired.
III	When high early strength is required.
IV	When a low heat of hydration is desired (mass concrete).
V	When high sulfate resistance is required.

Types IA, IIA, II(MH)A and IIIA are the air-entraining versions of Types I, II, II(MH) and III respectively. ASTM C1157 is a performance-based alternative which, unlike C150, imposes no restriction whatsoever on the composition of the cement or its constituents; its designations are GU (general use), HE (high early strength), MS (moderate sulfate resistance), HS (high sulfate resistance), MH (moderate heat of hydration) and LH (low heat of hydration), with the optional suffix (R) for low reactivity with alkali-silica-reactive aggregates.

3. Specifications

Standard physical requirements — ASTM C150, Table 3

Property	I	II	II(MH)	III	IV	V
Air content of mortar (vol %), max.	12	12	12	12	12	12
Fineness, Blaine specific surface (m ² /kg), min.	260	260	260	—	260	260
Fineness, Blaine, max. (m ² /kg)	—	—	430	—	—	—
Compressive strength, min. (MPa)						
1 day	—	—	—	12.0	—	—
3 days	12.0	10.0	10.0	24.0	—	8.0
7 days	19.0	17.0	17.0	—	7.0	15.0
28 days	—	—	—	—	17.0	21.0
Time of setting, Vicat method						
Time of setting, Vicat initial (min), min.	45	45	45	45	45	45
Time of setting, Vicat final (min), max.	375	375	375	375	375	375

Selected chemical requirements — ASTM C150, Table 1

Property	I	II	II(MH)	III	IV	V
Al ₂ O ₃ (%), max.	—	6.0	6.0	—	—	—
MgO (%), max.	6.0	6.0	6.0	6.0	6.0	6.0
SO ₃ (%), max. — when C ₃ A ≤ 8 %	3.0	3.0	3.0	3.5	2.3	2.3
Loss on ignition (%), max. — without limestone addition	3.0	3.0	3.0	3.0	2.5	3.0
Insoluble residue (%), max.	1.5	1.5	1.5	1.5	1.5	1.5
C ₃ A (%), max.	—	8	8	15	7	5
C ₃ S (%), max.	—	—	—	—	35	—

Property	I	II	II(MH)	III	IV	V
C ₂ S (%), min.	—	—	—	—	40	—

Verification notes. (i) ASTM C150 contains no SiO₂ limit in its Table 1; if a specification requires a minimum silica content, that requirement comes from another standard (C595 or C1157). (ii) The insoluble residue limit is 1.5 % in current editions; the 0.75 % figure, still widely quoted, corresponds to editions prior to 2020. (iii) The tables in this sheet have been transcribed from edition ASTM C150/C150M-22; the current edition is C150/C150M-24. Before issuing a contractual warranty on autoclave expansion values, heat of hydration or the Fe₂O₃ and C₄AF + 2(C₃A) limits — parameters not included in this sheet — confirm against a purchased copy of the current standard. (iv) For use in soil and base stabilisation, the contracting authority's specification may add specific requirements that prevail over those of C150.

4. Storage and transport

Store in a dry, covered and ventilated place, on pallets and away from the ground. Keep containers closed: prolonged contact with ambient moisture causes hydration, lump formation and loss of reactivity. Do not stack more than two pallets of big bags. Typical shelf life of 6 months in the original sealed packaging under suitable storage conditions. In bulk handling, protect silos against water ingress and verify ventilation before any confined-space entry.

5. Packaging and logistics

In bulk in pneumatic bulk carriers of 25–35 t · 1,000–1,500 kg big bags with discharge valve · 25 kg and 50 kg bags on ISPM-15 certified pallets. All packages are labelled in accordance with GHS.

6. Quality control

Every batch shipped is accompanied by a laboratory-issued quality certificate reporting the tests required by the applicable standard, with traceable batch identification. Additional testing or independent third-party inspection (SGS, Bureau Veritas, Intertek, Cotecna) at origin or destination can be arranged at the customer's request.

Consult the product Safety Data Sheet (SDS) before handling.

The information in this data sheet is offered in good faith, based on PRO-ROAD®'s technical knowledge of its products and on the requirements of the standards cited. It does not constitute a sales specification or a warranty of results. The customer is responsible for verifying the suitability of the product for its intended use, for its correct handling and for its application in accordance with project specifications. Values guaranteed per batch are certified in the corresponding quality certificate.