How Are Blended Cement Standards Changing in 2026?

Several significant changes to the blended cement standard specifications, ASTM C595, and AASHTO M 240, have been approved by ASTM and AASHTO for the 2026 editions of these standards. These changes are scheduled to publish around August 1, 2026 and impact the compositional limits for blended cement constituents, change how sulfate resistance of Type IL cements is determined, and revise limits on magnesium oxide (MgO) and loss on ignition (LOI). Both standards will also introduce a new table that presents limits on constituent amounts in an easy-to-read format. Additionally, ASTM C595 will introduce specification requirements for a new type of blended cement: Type IC composite cement.

Compositional Limits and New Type IC Cement

Changes for existing cement types:

- Type IP (portland-pozzolan cement) and Type IS (portland-blast furnace slag cement) will now be permitted to contain up to 15% ground limestone.
- Type IT (ternary blended cement) will now be required to contain two SCMs (either two pozzolans or one pozzolan and one slag cement) and will be permitted to contain up to 15% limestone.

The changes mean that current Type IT cements containing either a pozzolan or slag cement plus limestone will be redesignated as Type IP or Type IS cements. Cements currently designated as Type IP or Type IS will remain as such.

The limestone content of Types IP, IS, and IT cements must still be reported, and if greater than 5%, included in the type designation (e.g. Type IP(P25)(L10)). Performance requirements for Types IP, IS, and IT cements also remain unchanged.

New Type IC composite cement:

- Type IC cement will permit any number of pozzolan, slag, and limestone constituents, provided they do not in total exceed 70% of the cement by mass, and that limestone does not exceed 30% of the cement by mass.
- The physical requirements for Type IC are identical to other blended cement types with the same pozzolan and/or slag content.
- Type IC cement will be added to ASTM C595 but not AASHTO M 240. State DOTs that primarily utilize AASHTO standards may specify Type IC cement through reference to ASTM C595 Type IC.
- The same method as other blended cements will be used to declare the targeted amount of each constituent. Potential examples include:
  - A limestone-calcined clay blended cement with 15% limestone and 30% calcined clay (i.e. LC3) would be designated Type IC(P30)(L15).
  - A portland-limestone cement with 20% limestone (such as one being evaluated at the MnRoad test facility since 2023, would be designated as Type IC(L20).
  - A quaternary blended cement containing 25% slag cement, 15% natural pozzolan, and 15% coal ash would be designated as Type IC(S25)(P15)(P15).

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The following table summarizes the new compositional limits with key changes highlighted. Note that Type IS and Type IT cements with 70% or more slag cement may also contain hydrated lime.

	Limestone (L)	Pozzolan (P)	Slag (S)	Sum (L + P + S)
Type IL	>5 and ⩽15%	—	—	—
Type IP	⩽ 15%	>0 and ⩽ 40%	—	—
Type IS	⩽ 15%	—	>0 and ⩽ 95%	—
Type IT	⩽ 15%	⩽ 40%	*	⩽ 70%
Type IT(S⩾70)	⩽ 15%	*	⩾70%	⩽ 95%
Type IC	⩽ 30%	*	*	⩽ 70%

Type IT – Portland cement + 2 of (pozzolans or slag cement) + limestone (optional)
Type IC – Portland cement + 1 or more of (pozzolan, slag cement, limestone)
*No stated maximum but must satisfy limit on total limestone, pozzolan, and slag cement.

Sulfate Resistance of Type IL Cements

ASTM C595 and AASHTO M 240 have required the optional sulfate resistance designations for blended cements to be determined on the basis of the 6-to-12-month ASTM C1012 mortar bar expansion test. However, this test was developed to evaluate combinations of cementitious materials that include SCMs, rather than portland cements or portland-limestone cements on their own, because SCMs typically require more time to fully react in cementitious systems. The 14-day ASTM C452 mortar bar expansion test was first published in 1960. ASTM C150 and AASHTO M 85 specify an optional requirement for Type V cements (high-sulfate resistant) with a 0.040% maximum expansion limit in ASTM C452. Recent studies comparing the two test methods confirm that ASTM C1012 is a more severe test, to the point that some Type V portland cements could not meet the expansion limit for the high sulfate resistance designation in C595 and M 240,[1] and that ASTM C452 is appropriate for evaluating the sulfate resistance of Type IL cements.[2] For these reasons, sulfate resistance designations for Type IL cements will be primarily determined on the basis of ASTM C452 testing. A similar change was made to CSA A3001 in 2023.

With the approved 2026 revisions, Type IL cements will be designated moderate (MS) and high (HS) sulfate resistance designations based on meeting the following ASTM C452 expansion criteria:

- IL(MS) – 14-day expansion of 0.050% or less
- IL(HS) – 14-day expansion of 0.035% or less

If the cement does not meet ASTM C452 expansion limits, C595 and M 240 will permit the producer to qualify the cement using ASTM C1012 test results. When evaluating blended cements and concrete binder systems that contain pozzolans or slag cement, ASTM C1012 is still required.

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Magnesium Oxide (MgO) Limits

In 2023, the requirement for the autoclave expansion test (ASTM C151) was removed from ASTM C595 and AASHTO M 240, following a similar change to ASTM C150 and AASHTO M 85 in 2022. While portland cements have a 6.0% limit on MgO, no such requirement exists for most blended cements, which had led to concerns about how to provide assurances against unsoundness from the periclase form of MgO in blended cements. An MgO limit on finished blended cements was considered impractical given that many limestone and slag cement constituents can contain substantial amounts of MgO, but not in the form of periclase that would present a risk of unsoundness.

Therefore, the following revisions are approved for 2026:

- A limit of 6.0% MgO in the portland cement constituent of Types IL, IP, IS, and IT cements is established with this revision. This replaces a 6.0% MgO limit on finished Type IP cements and Type IT cements where the pozzolan content exceeds the limestone or slag cement content. It also ensures that portland cements meeting the requirements of ASTM C150 and AASHTO M 85 can be used in these blended cements.
- Type IC cements will have a 6.0% MgO limit on the finished cement if the pozzolan content exceeds the limestone or slag cement content.

Loss on Ignition (LOI) Limits

ASTM C595 and AASHTO M 240 contain maximum LOI limits both on finished cements and on the individual natural pozzolan, coal ash, and silica fume constituents. These LOI limits exist to reduce the potential for unburned coal and activated carbon in these SCMs to absorb chemical admixtures, particularly air-entraining admixtures, which limits the effectiveness of the admixtures and creates uncertainty regarding the necessary dosing in concrete mixtures.[3]

However, for natural pozzolans, it is primarily bound water that accounts for measured LOI.[4] Bound water does not absorb chemical admixtures, so the LOI limit on natural pozzolans is not necessary. The existing LOI limits on Type IP and Type IT cements also restrict some natural pozzolans from being used in amounts up to the 40% limit on pozzolans in those cements.

The following revisions are approved for 2026:

- The 10.0% LOI limit on natural pozzolan constituents of blended cements is eliminated. This aligns with Canadian (CSA A3001) and European (EN 197-1) standards that do not have LOI limits on natural pozzolans.
- The LOI limit on finished blended cements (except the new Type IC cement) containing natural pozzolans is increased to 8.0% if the limestone content is less than 5% and increased to 13.0% if the limestone content is between 5 and 15%.
- The LOI limit on Type IC cement is 5.0% if limestone is not a constituent and 16.0% if limestone is a constituent.

Note that all changes described in this information sheet do not take effect until published by ASTM or AASHTO, unless explicitly agreed to be the customer.

For more information, contact ACA's Director, Product Standards & Technology, **Eric Giannini** (egiannini@cement.org).

[1] Gagatek, D.; and Hooton, R.D., "Assessing Performance of Sulfate-Resistant Portland Cements," ACI Materials Journal, Vol. 116, No. 6, November 2019, pages 227 to 233. https://doi.org/10.14359/51718056

[2] Giannini, Eric R.; and Niemuth, Mark, Performance of Portland and Portland-Limestone Cements in ASTM C452 and ASTM C1012 Testing, SN3355, Portland Cement Association, Washington, DC, USA, 2025, 27 pages. https://doi.org/10.70909/pca.2025.SN3355

[3] ACI PRC-232.2-18, Report on the Use of Fly Ash in Concrete, American Concrete Institute, Farmington Hills, MI, 2018.

[4] ACI PRC-232.1-12, Report on the Use of Raw or Processed Natural Pozzolans in Concrete, American Concrete Institute, Farmington Hills, MI, 2012.