



813 Chestnut Street • PO Box 68  
Lebanon, PA 17042  
Phone: 717.272.3744  
Fax: 717.272.5147  
Email: [staff@caststone.org](mailto:staff@caststone.org)  
[www.caststone.org](http://www.caststone.org)

---

## **Cast Stone – a Quality Masonry Product Simulating Natural Stone**

**By Jan Boyer, Executive Director, Cast Stone Institute**

If it looks like stone and is a manufactured concrete product, then it must be Cast Stone - not true. The product could be Cast Stone or one of a number of other products including adhered manufactured stone masonry veneer (AMSMV), architectural precast, calcium silicate, natural stone or even new lightweight products made with only an outer coating of concrete. Each product has its appropriate applications dependent upon the project.

The focus of this article is information about Cast Stone – what it is, how it is specified and how to determine quality Cast Stone production, and new standards for installation coming soon.

### **What is Cast Stone?**

Architectural Cast Stone is a refined architectural concrete building unit manufactured to simulate natural cut stone and used in unit masonry applications. In other words, it is a unit that is installed by a mason.

Used as an architectural feature, trim, ornament or veneer for buildings or other structures, it is created with a fine grain texture to simulate all types of natural cut stone including but not limited to limestone, granite, slate, travertine or marble. Cast Stone can be made from white and/or grey cements, manufactured or natural sands, carefully selected crushed stone or well graded natural gravels, mineral coloring pigments and admixtures to achieve the desired color and appearance while maintaining durable physical properties which exceed most natural cut building stones.

Cast stone is generally non-structural and anchored to load bearing masonry wall systems in traditional commercial and residential buildings and other structures. It is also used in numerous hardscape applications and is often the materials of choice for restoration projects where it can easily replicate intricate natural stone original pieces. To see photos of the many uses of Cast Stone, log onto <http://www.caststone.org/photographs.htm>

### **Proper Specification of Cast Stone**

Cast Stone is specified to be manufactured to meet or exceed standards as per the current version of ASTM C1364, Standard Specification for Architectural Cast Stone, which originated in 1997. In this document there are very specific requirements for the physical properties, testing, appearance and tolerances for Cast Stone. These requirements are applicable whether the product is manufactured by dry tamp, wet cast or machine made methods.

ASTM C-1364 is referenced beginning with the 2012 International Building Code as the definition for Cast Stone and is therefore legally binding in jurisdictions that have adopted the building codes.

Cast Stone requirements in ASTM C1364-16 are:

- Compressive Strength - ASTM C1194, testing in 2 inch cubes: 6,500 psi minimum for product at 28 days
- Absorption - ASTM C1195, testing of 2 inch cubes, 6% maximum by the cold water method only at 28 days
- Freeze-thaw – ASTM C1364: of less than 5% after 300 cycles of freezing and thawing. Of note is that Cast Stone is the only product with a freeze thaw requirement that must be met by all manufacturers. The passing of Cast Stone by this test relates to over 60 years of durable product life.

The Cast Stone Institute does not just make industry recommendations – we work within recognized reference standards documents to assure the specifier of the highest quality Cast Stone for a project.

### **Cast Stone Production Methods**

According to ASTM C1364-16 standards for Architectural Cast Stone, Cast Stone can be produced in dry tamp, wet cast or machine made methods. No matter what the method, the Cast Stone produced MUST comply with all of the testing minimums in order to be compliant with the specification. Therefore any method of production can provide quality cast stone. ASTM C1364-16 specifically states that the method of production be chosen by the manufacturer and not the specifier. This would include the mason contractor.

Cast Stone manufacturers produce under one, two or all of these methods depending on the company. Why the different methods if they are all under the same technical standards? There are circumstances where the production by one method would be more beneficial for a specific project and the manufacturer is the best person to make that determination. Just as the specifier knows what they need to comply with various building codes and standards and how the cast stone is intended to function on the wall, so also does the manufacturer know how best to produce the Cast Stone to meet these performance criteria.

For more guidance on this issue, reference the Cast Stone Institute Technical Bulletin # 54 which is available for free download at [www.caststone.org](http://www.caststone.org) under the Technical Icon.

### **Cast Stone Institute Plant Certification**

Recognizing the importance of quality Cast Stone production to the viability and longevity of a structural or landscape project, the Cast Stone Institute developed a plant certification program 15 years ago. Over the years, this certification program has been enhanced to make it one of the most rigorous certification programs in the construction industries. The CSI Certified Producers take great pride in the production of exceptional Cast Stone for each project for which they supply material.

In order for a non-certified producer plant to be considered equal to a CSI Certified Plant, there are very specific and very important criteria that a specifier should require as documentation. Simply stating that a plant complies with CSI Certification Guidelines is absolutely not enough.

Prior to admission, each potential Producer Member must submit to a rigorous examination of product quality, safety, testing (including freeze thaw), meticulous record keeping and financial viability of the company. Once certified, they undergo the recertification process every other

year with unannounced inspections and test data reporting every six months in addition to numerous other requirements.

**Testing requirements** The following two tests must be performed for every 500 cubic feet of Cast Stone produced and passing reports available for review for at least the most recent six months. These tests can be performed in house or by independent testing laboratory. Each test must also be performed at least every six months by a qualified independent testing laboratory that has successfully passed the CSI Testing Technician Training Course. Note that this required testing is completed on 2 inch cube samples and NOT by cylinders as per ASTM requirements.

- Compressive Strength must be at least 6,500 psi at 28 days (ASTM C1194).
- Absorption must be less than 6% with cold water test at 28 days (ASTM C1195).

A passing Freeze Thaw test, ASTM C666, by a qualified independent testing laboratory should be available for each mix design. This test measures product weight loss after 300 cycles of rapid freezing and thawing in a wet environment with cumulative percentage mass loss less than 5% required for passing. Freeze Thaw testing shows durability of the Cast Stone over time and it is a good indicator of quality Cast Stone Production.

### **10 Year Product Warranty**

Continuing to lead the industry, the Cast Stone Institute Producer Members adopted language for a 10 year Limited Product Warranty in 2011. CSI Producer Members are aware of the evolving environment for products in the marketplace that demand sustainability, durability and useable service life. This warranty demonstrates that CSI Producer Members embrace these principles and produce product that will stand the test of time.

Cast Stone Institute Technical Information, Details, Or Equal and Warranty documents are available for free download from the website [www.caststone.org](http://www.caststone.org).

### **NEW CAST STONE STANDARDS COMING SOON**

The Masonry Society, the organization that creates the standards for the masonry industry, is in the process of finalizing new Standards for Cast Stone design, production and installation. This important standalone document will be an invaluable resource to architects, engineers, Cast Stone producers and mason installers. These mandatory guidelines will be available through The Masonry Society and included in the 2018 version of the International Building Codes. Once the new standards are finalized, training sessions will be held for masons.

There are several educational opportunities available through the Cast Stone Institute. To get more information, contact the CSI office at [staff@caststone.org](mailto:staff@caststone.org) or 717-272-3744.

---

Jan Boyer has been the Executive Director of the Cast Stone Institute since 2006. She currently serves on the Board of Directors for the Masonry Alliance for Codes and Standards (MACS) as Board Secretary and serves on several administrative committees for The Masonry Society. She also sits on the ASTM C27 Committee under which Architectural Cast Stone falls. She can be reached at [jboyer@caststone.org](mailto:jboyer@caststone.org) .