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CAN UNBONDED CAPS BE USED FOR COMPRESSION TESTING OF CONCRETE MASONRY UNITS?

Capping is used on concrete masonry units and other concrete products to create a smooth, plane, and level surface for compressive strength testing. ASTM C140/C140M[1], the test method that includes procedures for compression testing of concrete masonry units and related units, references ASTM Practice C1552[2] for capping of manufactured concrete masonry products and assemblies. In this practice, the only acceptable capping materials are high-strength gypsum and sulfur capping material. Capping systems that do not bond to the unit to be tested are not mentioned.

An unbonded capping system is used quite frequently for testing of ready-mix concrete cylinders. This system consists of a neoprene cap and a steel containment ring. The ring keeps the neoprene from expanding laterally when a vertical force is placed on the specimen. Because concrete masonry units

come in many shapes, sizes, and configurations, an unbonded capping system that also provides confinement is not practical. Without confinement a neoprene cap or a piece of fiberboard will deform laterally under compressive load, which will impart lateral forces on the specimen effectively lowering the measured compressive strength.

Therefore, for purposes of testing for determining compliance with product specifications, only high-strength gypsum or sulfur capping materials should be used. An unbonded capping system is sometimes used for in-plant quality control purposes. It is important to remember that when using unbonded caps the measured compressive strengths will be lower.

For more information on capping materials and testing concrete masonry, see CMHA TEK 18-01C[3] and TEK 18-02B[4].

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REFERENCES

1. ASTM C140/C140M-14, *Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units*, ASTM International, www.astm.org.
2. ASTM C1552-12, *Standard Practice for Capping Concrete Masonry Units, Related Units and Masonry Prisms for Compressive Testing*, ASTM International, www.astm.org.
3. *Evaluating the Compressive Strength of Concrete Masonry*, TEK 18-01C, CMHA, 2014
4. *Sampling and Testing Concrete Masonry Units*, TEK 18-02B, CMHA, 2012

ABOUT CMHA

The Concrete Masonry & Hardscapes Association (CMHA) represents a unification of the Interlocking Concrete Pavement Institute (ICPI) and National Concrete Masonry Association (NCMA). CMHA is a trade association representing US and Canadian producers and suppliers in the concrete masonry and hardscape industry, as well as contractors of interlocking concrete pavement and segmental retaining walls. CMHA is the authority for segmental concrete products and systems, which are the best value and preferred choice for resilient pavement, structures, and living spaces. CMHA is dedicated to the advancement of these building systems through research, promotion, education, and the development of manufacturing guides, design codes and resources, testing standards, and construction practices.

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