

Information on Magnesium Oxide (MgO) and Magnesium Chloride (MgCl) building products

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TECHNICAL ADVISORY #23



CODE COMPLIANCE IMPORTANT WHEN SELECTING NEW BUILDING PRODUCTS

To avoid building failures and their harmful and costly effects on homeowners, all builders are required to adhere to local building codes. In the United States, these building codes are modeled on the International Residential Code (IRC) and the International Building Code (IBC) developed by the International Code Council (ICC).

The design and material properties (strength, durability, etc.) for commodity building products such as wood, steel and masonry are covered by the existing ICC codes. However, any new proprietary product that is introduced to the market must be properly vetted and approved by ICC-Evaluation Services (ICC-ES) before being introduced to the market and installed on a home. One way that building inspectors ensure that proprietary products have been evaluated against the code is through a Product Evaluation Report typically called an ESR that is published by ICC-ES.

BACKGROUND

In recent years, backer boards, siding and other products made from magnesium oxide (MgO) and magnesium chloride (MgCl) cements have become available to builders. These products are being used primarily for tile underlayment, soffit, panel and trim. Unlike James Hardie fiber-cement products, MgO/MgCl products are not ICC-ES approved and do not have a published ESR. Let's take a minute to better understand the importance of codes and the code process for new building materials.

IMPORTANCE OF CODE COMPLIANCE

Building codes are an important part of the cooperative efforts of industry and government to insure the health, safety and welfare of all of us by creating safe buildings and communities. We have come to expect that all U.S. homes and buildings are constructed with strict adherence to the established building codes.

Building codes provide design criteria and material properties for common building materials such as timber, concrete and steel. For proprietary building products, such as cement backer boards and siding, the code allows for products to be tested and approved. Testing, submission for approval and validation is a costly and time-consuming five-step undertaking that can take anywhere from 1-to-2 years to complete.



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TYPICAL CODE PROCESS FOR NEW BUILDING MATERIALS

- Step 1: Contact ICC-ES to discuss creating an Acceptance Criteria (AC) for the new product
- Step 2: Create a draft AC which addresses quality, durability, traceability and structural requirements
- Step 3: A committee of building officials take into consideration public comment, vote and approve a draft AC at an ICC-ES hearing
- Step 4: The product is tested to the AC by a third-party IAS accredited laboratory
- Step 5: The test results are submitted to the ICC-ES and the ICC-ES issues an Evaluation Report

Manufacturers that undertake the code approval process know that quality builders value the investment and the assurance that code approval offers. An Evaluation Services Report (ESR) indicating compliance with all applicable AC is an important demonstration of a manufacturer's commitment to quality and a long-term commitment to the building industry.

James Hardie is invested in the long-term success of builders and our backer boards and siding have been tested for quality, durability, safety and integrity. James Hardie products comply with all relevant ICC codes for both residential and commercial construction as well as a host of other code and testing criteria including:



- ASTM testing
- Underwriters Laboratories (UL) fire tests
- National Fire Protection Association (NFPA) tests
- State of Florida Product Approval
- Miami-Dade County Florida Notice of Acceptance
- Texas Department of Insurance
- City of Los Angeles Research Report
- Wildland Urban Interface (WUI) Compliance
- HUD Material Release Reports
- City of New York Department of Buildings Report

(For a comprehensive list of all James Hardie code approvals and testing, please visit www.jameshardie.com/builder/technical)

MGO/MGCL PRODUCTS ARE NON-COMPLIANT FOR INTERIORS

MgO/MgCl interior products (used primarily for interior tile underlayment) are governed by the International Code Council – Evaluation Services (ICC-ES) Acceptance Criteria 386 (AC 386). To date, no product made with MgO or MgCl has been tested to AC 386 and, consequently, no ICC-ES report has been issued. And, even if MgO/MgCl backer boards were tested to AC 386, AC 386 does not allow for the product to be installed in wet areas, as defined by the IBC. Therefore, currently available MgO/MgCl backer boards are not code approved.



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MGO/MGCL PRODUCTS ARE NON-COMPLIANT FOR EXTERIORS

There are no approved governing criteria for MgO/MgCl exterior products (used primarily for soffit, panel, trim and siding) with ICC-ES. Therefore, MgO/MgCl exterior products are not code approved.

CONFUSING CLAIMS

Some MgO/MgCl material suppliers indicate that their products have passed certain ASTM International (formerly known as the American Society for Testing and Materials) tests. An examination of the claims shows that some of the tests apply to other product categories or functions (for example, assessed for interior application but recommended for external use) while important tests for quality and application suitability, including moisture resistance, are lacking.

AVOIDING UNNECESSARY RISK

Choosing to build with new materials that have not yet met ICC codes puts builders at risk of potential diminished credibility, criminal negligence and financial liability with code officials, building inspectors, homeowners and building owners. As with all other building materials, a lack of proof for code compliance, poor measures of product quality and worrisome warranty offerings put builders at an unnecessary risk. Both the IBC and the IRC are model codes adopted into law by local jurisdictions including cities, counties and states. It is expected that builders will adhere to these model codes at all times.

CHOOSE JAMES HARDIE

James Hardie® products undergo rigorous product development and testing and are produced in manufacturing environments with controls for exceptional quality assurance. Add the value of comprehensive warranties – a 30-year* limited, transferable warranty offers non-prorated product coverage for the entire 30 years – and you can choose James Hardie products with confidence.

*HardieTrim® board comes with a 15-year limited transferable warranty.



CHOOSE A HISTORY OF QUALITY

As the world leader in fiber-cement products, James Hardie siding can be found on more than 4 million homes across the United States. James Hardie products perform to high standards in all climates and often under extreme weather conditions, in all 50 states and 4 continents.

HELPFUL CODE-RELATED TERMS

Acceptance Criteria (AC) – Developed by the ICC-ES technical staff in consultation with the report applicant and with input from interested parties. New criteria and revisions to criteria are approved by the Evaluation Committee during open public hearings.

ASTM – ASTM International is one of the largest voluntary standards development organizations in the world and considered a trusted source for technical standards for materials, products, systems and services. Formerly known as the American Society for Testing and Materials.

ENERGY STAR – A joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy committed to protecting the environment through energy efficient products and practices. Products must meet performance-based specifications in specified categories to earn the ENERGY STAR label.

EVALUATION COMMITTEE

Code officials who review and approve Acceptance Criteria documents.

EVALUATION SERVICES REPORT (ESR)

An ICC-ES Evaluation Service Report which summarizes all evaluation results.

EVALUATION SERVICES (ES)

The ICC Evaluation Service, Inc. (ICC-ES) is the United States' leader in evaluating building products for compliance with code. A nonprofit, public-benefit corporation, ICC-ES does technical evaluations of building products, components, methods and materials. The evaluation process culminates with the issuance of reports on code compliance which are made available free of charge to code officials, contractors, specifiers, architects, engineers and other building professionals.

IBC

International Building Code – Developed by the ICC, the scope of this code covers all buildings except detached one and two family dwellings and townhouses not more than 3 stories in height. This comprehensive code features time-tested safety concepts, structural, and fire and safety provisions covering means of egress, interior finish requirements, comprehensive roof provisions, seismic engineering provisions, innovative construction technology, occupancy classifications and the latest industry standards in material design.

ICC

International Code Council – Established in 1994 as a non-profit organization dedicated to developing a single set of comprehensive and coordinated national model construction codes. As a membership association, ICC is dedicated to building safety and fire prevention. The I-Codes have been accepted in all 50 states, District of Columbia and by many federal agencies.

IRC

International Residential Code – First published in 2000 and the culmination of the Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO), Southern Building Code Congress International (SBCCI) and the National Association of Home Builders (NAHB) to draft a stand-alone resident code consistent with and inclusive of the scope of the existing model codes.

IMPORTANT: Failure to install and finish this product in accordance with applicable building codes and James Hardie written application instructions may affect system performance, violate local building codes, void the product-only warranty and lead to personal injury.

Additional Installation Information, Warranties, and Warning are available at JamesHardie.com



DESIGN ADVICE: Any information or assistance provided by James Hardie in relation to specific projects must be approved by the relevant specialists engaged for the project eg. builder, architect or engineer. James Hardie will not be responsible in connection with any such information or assistance.

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