INTERNATIONAL CODE COUNCIL™

ICC ES™

ICC EVALUATION SERVICE™

# BUILDING SAFETY, BUILDING CONFIDENCE *WORLDWIDE*

## Global Product Approval through Quality Conformity Assessment

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## INTRODUCTION

In today's world it is often necessary to objectively state the conformity of products, processes, and services to specified requirements. Consumers now demand products to perform as promised. They insist on product compliance to codes to ensure safety and prevent catastrophic building failures.

Conformity assessment is critical to safety for residents around the world. Consumers have long been demanding safer building products globally. They require characteristics such as quality, safety, economy, reliability, compatibility, efficiency and effectiveness to be examined through conformity assessment.

Conformity Assessment Bodies (CABs) can objectively state such conformity. CABs perform conformity assessment activities that include review, inspection, testing, and evaluation. Product certification/evaluation is conducted to a variety of codes and standards internationally, as well as to specific normative documents (acceptance and listing criteria) created for innovative products.

Certification bodies use a variety of schemes, which are defined as a set of rules and procedures that describe the object of conformity assessment. **There any many scheme operators and many conformity assessment bodies; scheme operators may have similar schemes, but the conformity assessment quality resulting from the scheme operators (CABs) is not the same.**

The International Code Council (ICC) family of solutions embodies all the elements required to foster confidence in the building community so that all involved in the global community can sleep well at night, knowing the products, processes and services they come in touch with meet the highest global standards.

## WHY CONFORMITY ASSESSMENT MATTERS

### What is Conformity Assessment

Conformity assessment is defined by ISO/IEC 17000-2020 as a demonstration that specified requirements are fulfilled. Conformity assessment includes activities such as, but not limited to, testing, inspection, certification, and accreditation.

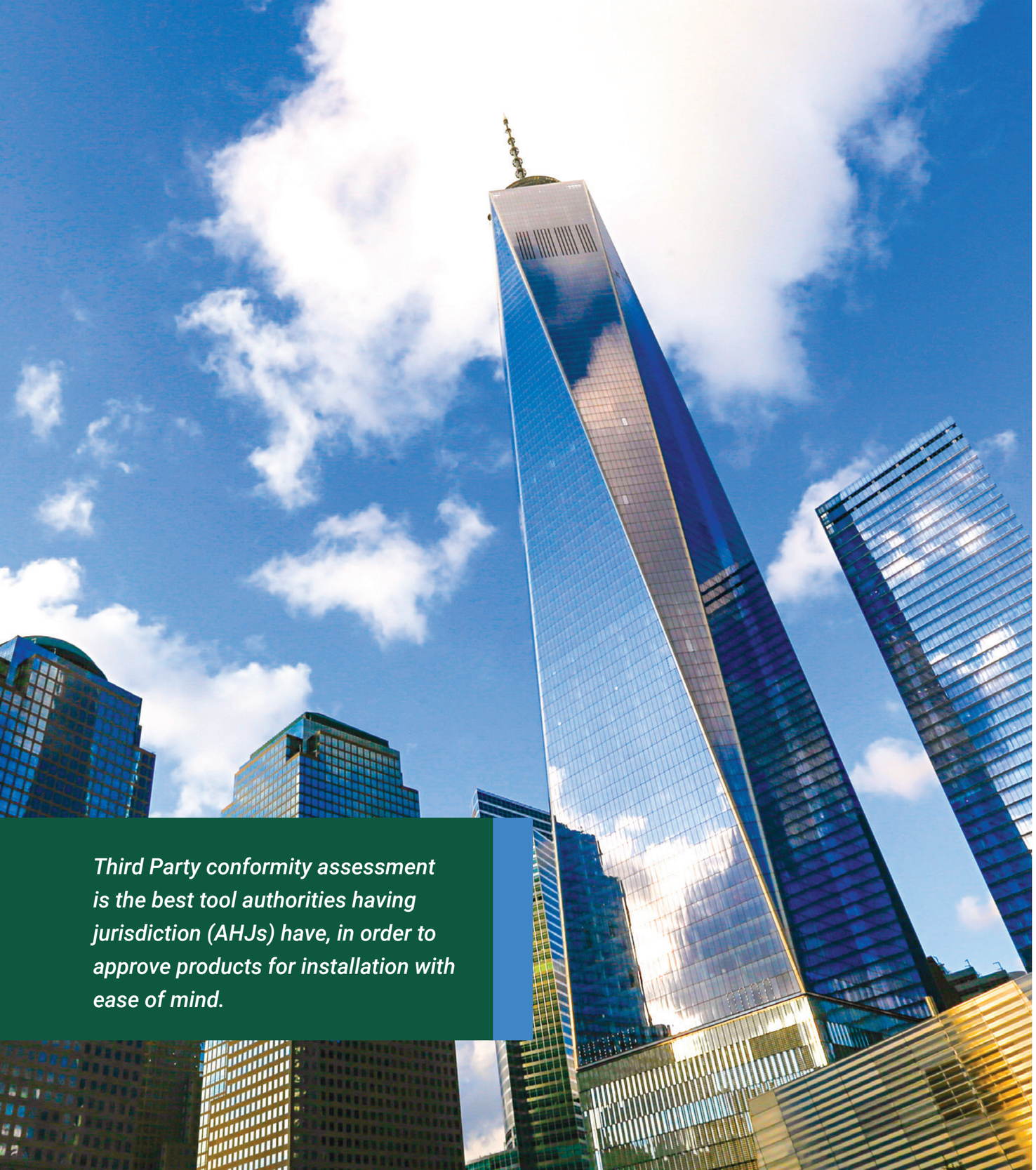
Product certification is a review of products against a standard, a criteria, or a code to ensure continuous compliance of products. Certification steps include review of products, periodic inspection of plants (by an ISO/IEC 17020 accredited inspection agency) and periodic review of submitted information against new or revised standards. The value of product certification is a degree of confidence and trust that is established by an impartial and competent demonstration of fulfillment of specified requirements by a third party (Annex A1.1 17065).

What does all this mean? Why should people care? **Because when it comes to building products, conformity assessment helps saves lives.**

### History of Conformity Assessment and Standards

Conformity assessment has evolved and improved throughout the years. In 1993, the American National Standards Institute released ANSI Z34.1. This was one of the first of its kind standards used





*Third Party conformity assessment is the best tool authorities having jurisdiction (AHJs) have, in order to approve products for installation with ease of mind.*

in the United States. During that time, a handful of third-party certification bodies in the US applied and received accreditation to that standard. The standard referenced a number of ISO/IEC Guides to address the related requirements. Globally however, different standards governed this space. In 1978 ISO Guide 24 (currently withdrawn) began to address conformity assessment. Guide 24 was entitled *Guidelines for Acceptance of Testing and Inspection Agencies by Certification Bodies*. The standard addressed two of the most important parts of third-party certification namely, inspection and testing. In 1983, Guide 40 replaced Guide 24 and addressed conformity assessment more thoroughly and went beyond testing and inspections. That standard was replaced in 1996 by ISO/IEC Guide 65 entitled *General Requirements for Bodies Operating Product Certification Systems*. This was the most comprehensive standard of its kind and as a result was adopted internationally. This guide governed conformity assessment for a period of 16 years.

ISO/IEC Guide 65 was eventually withdrawn after ISO/IEC 17065 was written in 2012 through ISO working Group 29 (which ICC staff participates in). This standard was different from Guide 65 in the following areas:

- Restructuring
- Introduction ISO/IEC 17000 functional approaches in process requirements
- Improvements in impartiality requirements
- Inclusion of reference to certification schemes

It is the reference to the scheme that has made ISO/IEC 17065 a much more relevant standard to govern conformity assessment. Certification bodies operate different schemes and that is one of the reasons why not all certification bodies are equal.

## ISO Requirements for Products, Processes and Services

There are several parties involved in conformity assessment:

- 1st Party: Generally, the supplier or manufacturer
- 2nd Party: Generally, the purchaser or user of the product
- 3rd Party: An independent entity that is generally distinct from the first or second party and has no interest in transactions between the two parties
- Government: Serves a unique role; regulator

Third party conformity assessment by nature is the preferred method to ensure impartial certification of products to a normative document. This is well described in the definition in ISO/IEC 17000: "*Third party conformity assessment activity is an activity that is performed by a person or organization that is independent of the provider of the object of conformity assessment and has no user interest in the object.*" All services that the ICC family of solutions offers are of third-party nature – certification, testing and inspection.

ISO/IEC 17065 makes the following requirements for third party certification bodies:

- Legal entity (legally responsible)
- Have a certification agreement
- Have a method to manage impartiality
- Policies and procedures shall be non-discriminatory
- Confidentiality
- Publicly available information

- An organizational structure to manage all aspects of conformity assessment
- Competent personnel
- Infrastructure to conduct surveillance
- Procedures for complaints and appeals
- Periodic internal audits
- Mark of conformity

Let us address the three most important areas referenced in ISO/IEC 17065, namely:

- Qualifying testing laboratories
- Qualifying inspection agencies
- Standard for use for conformity assessment

**Qualifying Testing Laboratories**

The competence of testing and calibration laboratories is governed by the international standard ISO/IEC 17025. This standard outlines requirements from the initiation of a contract to the publication of test reports. The requirements include, but are not limited to, management system, document control, supplies, equipment and calibration, service, dealing with complaints, competence of the personnel, test methods, validation of the methods, and the uncertainly of measurements. The ICC family of solutions has two testing laboratory subsidiaries, ICC-NTA and ICC-PEI, accredited to conduct testing to a variety of building product standards.

**Qualifying Inspection Agencies**

The competence of inspection agencies is governed by the international standard ISO/IEC 17020. The organization requirements for the inspection agencies is like those of the testing laboratories, except that this standard focuses on bodies performing inspection. Inspection is a part of the surveillance activities outlined in ISO/IEC 17065 and is one of the most important elements of conformity assessment. Surveillance inspections confirm the product/process is consistent with what was certified. Not all surveillance activities are the same.

ICC NTA and ICC-PEI are accredited to conduct qualifying and surveillance inspections for ICC-ES. The ICC-ES requirements during such inspections include product verification activities, quality system verification activities, and possible sample selection. These rigorous activities are what sets ICC-ES certification apart.

*Many accredited agencies claim compliance to minimum requirements, but only some actually have the experience that can give AHJs confidence to approve products with peace of mind.*

**Standard For Use for Conformity Assessment**

The international standard governing such standards is ISO/IEC 17007. The requirements in this standard are to ensure consistency and the repeatability of the prescribed requirements within a standard normative document. It also promotes neutrality toward parties performing the conformity assessment. The international Code Council codes as well as standards and normative documents meet the intent of ISO/IEC 17007 and are created with outmost rigor to insure a very high bar for product compliance.

## ISO Requirements for Personnel Certification

Product approval for installation is another important part of the conformity assessment cycle. The personnel conducting such approval must have competence in conducting such activities. The ICC family of solutions offers personnel certification and is accredited to the requirements of ISO/IEC 17024. This standard covers the entire process, from the organizational structure, to resources, examination, decision of certification, to the suspension or withdrawal of certificates. ISO/IEC 17024 is one of the many standards in the CASCO toolbox and has a number of requirements that are similar to other ISO standards, such as those in 17065 or 17025.

**The Accreditation Role in Conformity Assessment**

The value of accreditation in conformity assessment is immense – the accreditation process allows for independent validation and declaration of the competence of a conformity assessment body. ISO/IEC 17065 is the standard that accrediting bodies use to accredit certification bodies. This standard addresses the following areas:

- General requirements regarding legal responsibilities, management of impartiality, liability insurance, non-discriminatory policies and procedures, and confidentiality.
- Structural requirements that mandate a clear organization structure, which includes the competence of the personnel, responsiveness to complaints, and requirements for evaluation, review and decisions on certification.

- Requirements for internal and external resources necessary to conducting product certification.
- Process requirements for application, review, evaluation, certification decisions, documentation and surveillance.
- Management system requirements that addresses document control, management review and internal audits.

Accrediting bodies must keep records on the scope of accreditation for every certifying body that they accredit. This helps well-informed consumers verify the scope before using an organization's listing certificates or evaluation reports and prevents certifying bodies from evaluating products to standards or criteria that are not in their scope of accreditation.

## CONFIDENCE MATTERS

Product approval is a matter of confidence. Confidence in the codes and standards, confidence in the certification body, confidence in the scheme of the certification body, and confidence in the AHJs who are approving building products for installation.

### Benefits of Accreditation

Accreditation enhances product certifications' reliability and promotes consistency. The minimum process, however, may not be enough to approve products for installation.

The standard used for accreditation of certification bodies, namely ISO/IEC 17065 states, "*The requirements against which the products of a client are evaluated shall be those contained in specified standards and other normative documents.*" It then references ISO/IEC 17007 as the standard that contains guidance for developing normative documents. The aforementioned contains general guidelines; however, there are variety of methods to use these guidelines, and that is why not all normative documents have the same quality and go through the same rigor.

In addition to the use of consensus standards, ICC-ES develops normative documents for innovative products. Acceptance Criteria (AC) and Listing Criteria (LC) are developed by technical staff in consultation with the report applicant and with input from interested parties.

### Not all Conformity Assessment Bodies Are Equal

ICC-ES evaluates products to the International Codes published by the International Code Council. Such codes undergo a very rigorous process and hence ensure thoroughly vetted content. **Moreover, ICC-ES is one of the very few certification bodies that reviews products to codes adopted by jurisdictions in addition to the standards and normative documents.** This is to further ensure compliance with local and state codes before approval for installation.

If the accreditation requirements are followed properly, the result will yield high quality certification by a competent accredited certification body such as ICC-ES. This is true for testing and inspection activities as well. Accredited testing and inspection agencies such as ICC NTA and ICC-PEI are highly qualified to conduct testing and inspection as a result of completing a rigorous accreditation process.

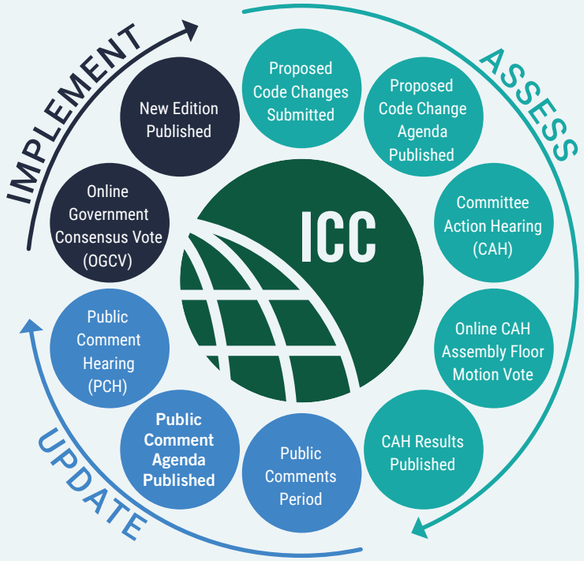
**The scheme matters.** As mentioned earlier, scheme is a set of rules and procedures that describe the object of conformity assessment. A certification scheme is specifically defined in ISO/IEC 17067 as a "certification system related to specified products, to which the same specified requirements, specific rules and procedures apply." Although in general the set of rules of procedures used by conformity assessment bodies may look the same from far, the detail of the scheme is what sets one conformity assessment body apart from another.

*There is more to having confidence in certified products, namely:*

- *The quality of codes, standards or normative documents used*
- *The details of the certification scheme*
- *Knowledge and expertise of AHJs*

As an example, there are conformity assessment bodies that use engineering judgement in lieu of a specific criteria in a code, standard or normative document in order to decide on product compliance for innovative products. ICC-ES however, develops an AC or LC for such a product. Such criteria has specific testing and evaluation requirements and is vetted by a committee of experts before their approval is granted. This is how the quality of the reports generated by ICC-ES is built into the scheme.

New criteria and revisions to criteria are reviewed and approved by the Evaluation Committee (made up entirely of code officials) during open public hearings. The process, highlighted below, is very rigorous and results in a thoroughly vetted AC.



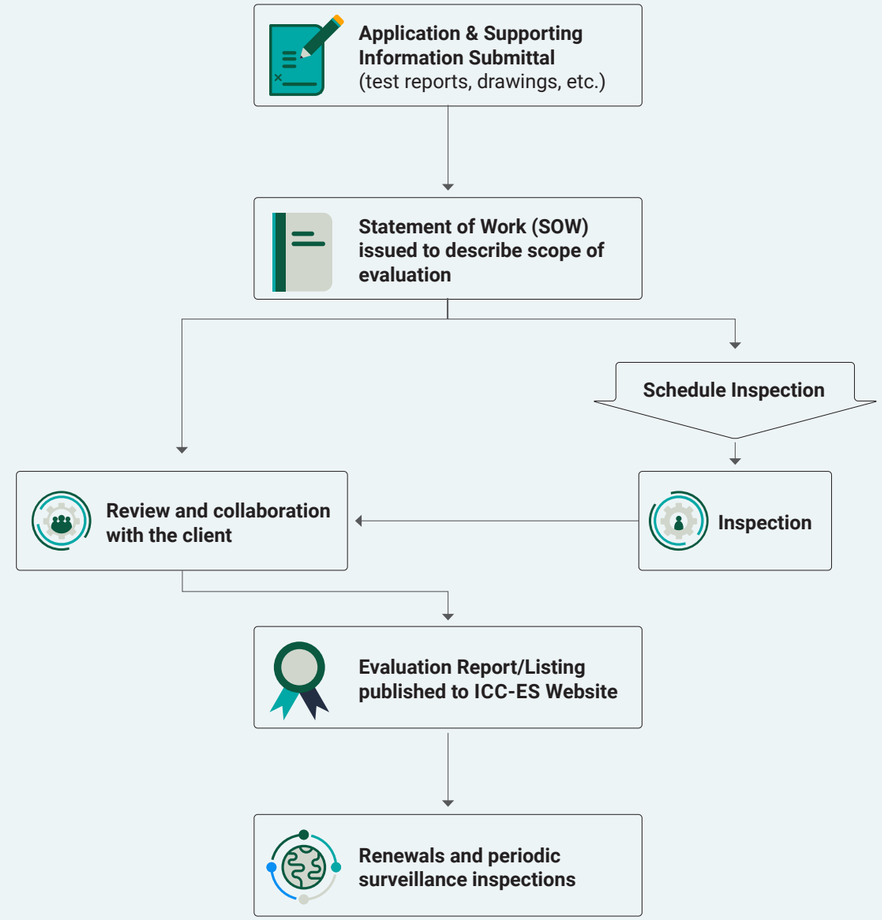

*ICC Code Development Process: How it Works*

1. Acceptance Criteria (AC) is developed by ES staff when a code or standard is not recognized for an innovative product.
2. The AC is vetted by ES staff, a commitee of experts as well as interested members of the public.
3. The resulting document is used for product evaluation.

*ICC-ES Acceptance Criteria Process*

**Product Review Process**

The product review process starts with an independent, rigorous review of product test data and specifications. Qualifying inspections at product manufacturing facilities are also conducted, and an evaluation report is then issued to the building product manufacturer. The evaluation report authorizes the manufacturer to apply the ICC-ES mark of conformity to their product as proof of review against applicable code requirements. Throughout the life of an evaluation report, surveillance inspections are periodically conducted to ensure that no unauthorized changes have occurred in the manufacturing process, and that the product has not varied from what was originally certified.




*ICC-ES offers a continuous code compliance process through periodic compliance inspections.*

## Certificate

An evaluation report (or certificate) is a document that presents the findings, conclusions, and recommendations from a particular review. ICC-ES reports verify that building products, including new and innovative ones, comply with code requirements. ICC-ES reports provide information about what code requirements or acceptance criteria were used to evaluate a product, and how the product should be identified, installed and much more.

## Marks of Conformity

According to ISO/IEC 17030 (developed in part by ICC staff), a third-party mark of conformity is a protected mark issued by a body performing third-party conformity assessment, indicating that an object of conformity assessment is in conformity with specified requirements. **Because of the rigor in its process and requiring more than the minimum outlined in the applicable ISO standards, ICC-ES marks are the most widely accepted and recognized around the world,** and the preferred choice by code officials and government regulators – allowing them to instantly approve products for installation with confidence and peace of mind.

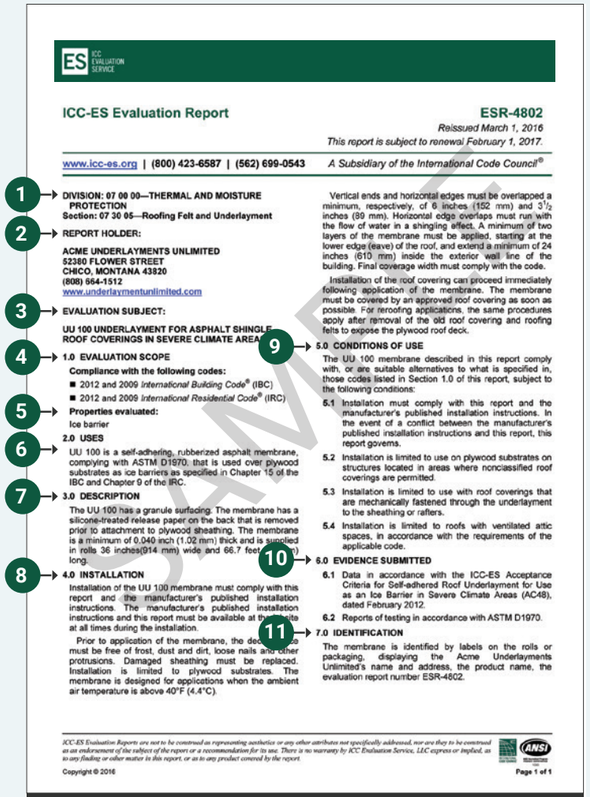
*ICC marks are found on a wide variety of Building, Plumbing, Mechanical, Swimming Pool and Spa, and Fuel Gas products around the world.*

*Start looking for the new mark option on ICC-ES approved building and plumbing products worldwide!*

# What's in an ICC-ES Evaluation Report

ICC-ES Evaluation Reports from ICC Evaluation Service® are the most preferred resource used by code officials to verify that new and innovative building products comply with code requirements. The ICC-ES Evaluation Reports provide information about what code requirements or acceptance criteria were used to evaluate the product, how the product should be installed to meet the requirements, how to identify the product, and much more. ICC-ES Evaluation Reports are divided into eleven major areas.

1. **CSI Division Number**—ICC-ES Evaluation Reports, and the building products represented in them, are organized according to the Construction Specifications Institute's (CSI) Masterformat system.
2. **Report Holder**—The name and address of the company or organization that has applied for the ICC-ES Evaluation Report.
3. **Evaluation Subject**—The specific product(s) covered by the report.
4. **Evaluation Scope**—The code(s) that were used to evaluate the product.
5. **Properties Evaluated**—A brief description of the properties the product was evaluated against such as fire resistance and wind resistance. This section also shows if the product can be used for structural purposes.
6. **Uses**—Identifies the scope of the ICC-ES Evaluation Report and relates the product evaluated to code provisions.
7. **Description**—Provides a general description of the product and its features, such as length, thickness, etc.
8. **Installation**—Identifies general and often specific requirements to help the inspector ensure the product is installed properly according to the code requirements or acceptance criteria.
9. **Conditions of Use**—Statement that the product, as described in the ICC-ES Evaluation Report, complies with or is a suitable alternative to the requirements of the applicable code and a list of conditions under which the report is issued.
10. **Evidence Submitted**—Data (i.e. test reports, calculations, installation instructions) that was used in evaluating the product.
11. **Identification**—Information that can be used to identify the product, including the manufacturer's name, product code, ICC-ES Evaluation Report number, etc.



ICC-ES Evaluation Report

ESR-4802

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1 DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 30 05—Roofing Felt and Underlayment

2 REPORT HOLDER:
ACME UNDERLAYMENTS UNLIMITED
52380 FLOWER STREET
CHICO, MONTANA 43820
(808) 664-1512
www.underlaymentunlimited.com

3 EVALUATION SUBJECT:
UU 100 UNDERLAYMENT FOR ASPHALT SHINGLE ROOF COVERINGS IN SEVERE CLIMATE AREA

4 1.0 EVALUATION SCOPE
Compliance with the following codes:
- 2012 and 2009 *International Building Code*® (IBC)
- 2012 and 2009 *International Residential Code*® (IRC)

5 Properties evaluated:
Ice barrier

6 2.0 USES
UU 100 is a self-adhering, rubberized asphalt membrane, complying with ASTM D1970, that is used over plywood substrates as ice barriers as specified in Chapter 15 of the IBC and Chapter 9 of the IRC.

7 3.0 DESCRIPTION
The UU 100 has a granule surfacing. The membrane has a silicone-treated release paper on the back that is removed prior to attachment to plywood sheathing. The membrane is a minimum of 0.040 inch (1.02 mm) thick and is supplied in rolls 36 inches(914 mm) wide and 66.7 feet (

8 4.0 INSTALLATION
Installation of the UU 100 membrane must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions and this report must be available at the site at all times during the installation.
Prior to application of the membrane, the deck surface must be free of frost, dust and dirt, loose nails and other protrusions. Damaged sheathing must be replaced. Installation is limited to plywood substrates. The membrane is designed for applications when the ambient air temperature is above 40°F (4.4°C).

9 5.0 CONDITIONS OF USE
The UU 100 membrane described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:
5.1 Installation must comply with this report and the manufacturer's published installation instructions. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.
5.2 Installation is limited to use on plywood substrates on structures located in areas where nonclassified roof coverings are permitted.
5.3 Installation is limited to use with roof coverings that are mechanically fastened through the underlayment to the sheathing or rafters.
5.4 Installation is limited to roofs with ventilated attic spaces, in accordance with the requirements of the applicable code.

10 6.0 EVIDENCE SUBMITTED
6.1 Data in accordance with the ICC-ES Acceptance Criteria for Self-adhered Roof Underlayment for Use as an Ice Barrier in Severe Climate Areas (AC48), dated February 2012.
6.2 Reports of testing in accordance with ASTM D1970.

11 7.0 IDENTIFICATION
The membrane is identified by labels on the rolls or packaging, displaying the Acme Underlayments Unlimited's name and address, the product name, the evaluation report number ESR-4602.

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

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SAMPLE

**View current ICC-ES Evaluation Reports online: www.icc-es.org/evaluation**

## GLOBAL MARKETPLACE

Recent trends show the value and importance of accreditation expanding internationally as more countries require accreditations of conformity assessment bodies. However, some regions have issues with the quality of the product certification offered by available certification bodies. As an example, the Oceania region has had issues relative to this topic and is taking steps to alleviate them.

Most countries have within them organizations that accredit conformity assessment bodies. There are a variety of accredited conformity assessment bodies serving such countries. However, AHJs continue to search for a more thorough, higher quality evaluation report.

Many conformity assessment bodies have not been in the building product certification industry for very long and therefore do not have the experience of an organization such as ICC-ES, with a longstanding history of nearly 100 years. Moreover, the details included in the certification documents from other entities lack information, which ICC-ES evaluation reports include, that AHJs need relevant to installation, usage and the like for building products.

Another challenge some regions face is the lack of thoroughly vetted criteria for innovative products, such as those provided by ICC-ES Acceptance Criteria or EOTA European Assessment Documents (EADs).

Such authorities want to sleep well at night knowing that they have been approving products for installation that have met the applicable requirements. Conformity assessment for building products matter because at the end of the day, human lives are at stake. As extensively described in this document, there are many aspects to the quality of the products approved for installation:

1. Accreditation and the accreditation scheme
2. Certification and the certification scheme
3. Code, standards and normative requirements used
4. Testing laboratory, the quality of the such testing labs
5. Inspection agency conducting periodic surveillance.
6. Authority having jurisdiction and their training
7. The five common elements of ISO/CASCO standards at all levels namely: Impartiality, Confidentiality, Appeals and Complaints, Competence and Management Systems.

At least one of these aspects is missing in a society that yearns for a system that yields the approval and installation of safe products. This is where the ICC family of solutions can be the answer to a very complicated global challenge.

## ICC FAMILY OF SOLUTIONS

The International Code Council is the largest international association of building safety professionals. Code Council building safety solutions draw directly from the expertise developed in authoring the International Codes and standards and apply that to product evaluation, accreditation, certification, codification, training, and technology.

The ICC family of solutions includes the ICC Evaluation Service (ICC-ES), S.K. Ghosh Associates, the International Accreditation Service (IAS), General Code, ICC NTA, ICC Community Development Solutions. Alliance for National & Community Resilience (ANCR), and ICC-PEI, which are dedicated to the construction of safe, sustainable and affordable structures.

### Codes and Standards

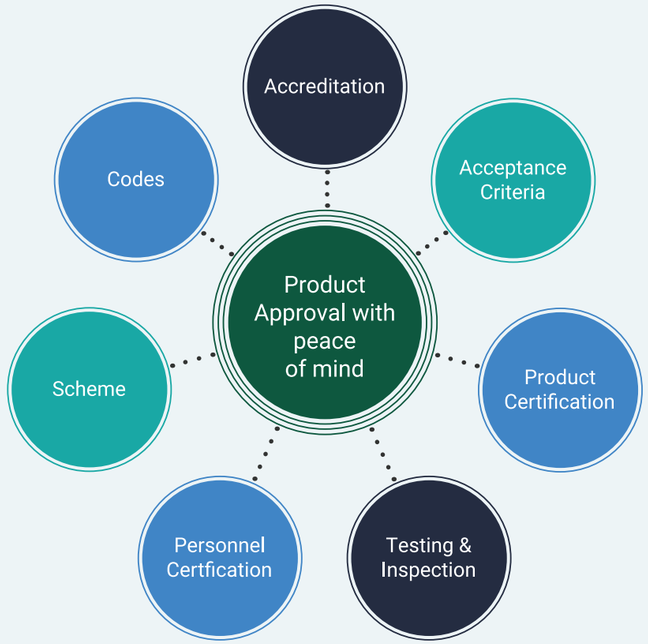
The Code Council is the trusted source of model codes and standards that establish the baseline for building safety globally and create a level playing field for builders and manufacturers. ICC develops construction and public safety codes through a governmental consensus process which has provided the highest level of safety in the world for over 100 years.

### Accreditation

As an independent third party, the International Accreditation Service (IAS) accredits testing and calibration laboratories, inspection agencies, building departments, fabricator inspection programs and special inspection agencies. IAS can help identify and close regulatory gaps, confirm compliance, and meet the needs of customers. The IAS globally-recognized accreditation programs meet several international standards (ISO, IEC, etc.) and verify that organizations are competent and comply with requirements.

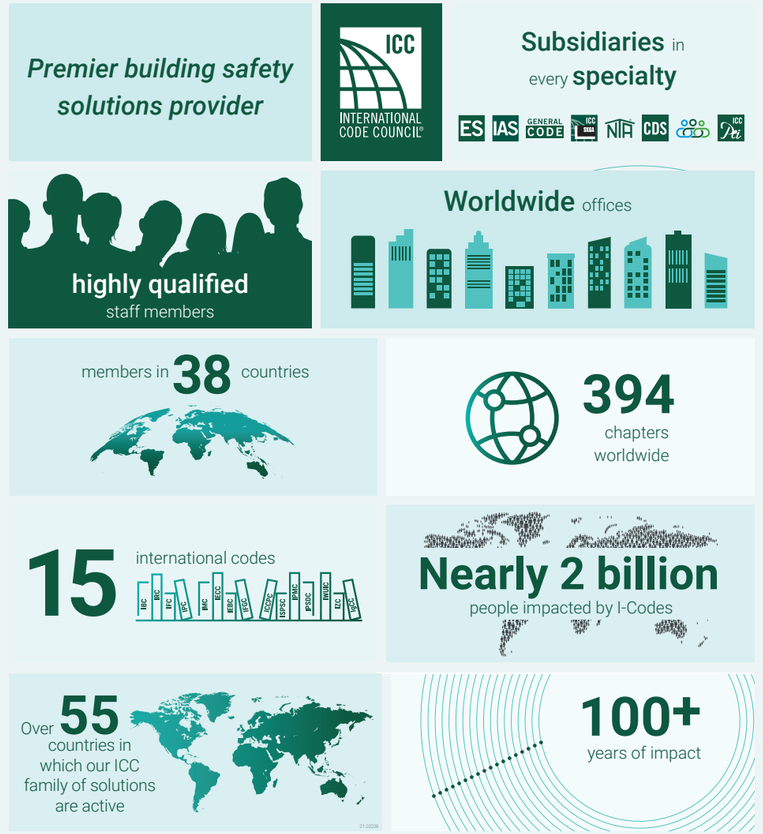
### Personnel Certification

International Code Council credentialing offers professionals an excellent opportunity to take their career to the next level. Many building departments, jurisdictional agencies and third-party entities recognize professional certification




*Code Council building safety solutions draw directly from the expertise in authoring the International Codes and standards.*

The ICC family of solutions – together – stronger.




like the International Code Council's as substantial proof of codes and standards knowledge.

The ICC Assessment Center offers examinations to professionals who wish to obtain licensing, professional certification or otherwise demonstrate their knowledge of a specific skilled trade or subject matter. Tests are available anywhere in the world 24/7 online through the innovative PRONTO remote proctoring system. Specialized certifications can be developed in conjunction with licensing and oversight agencies.

### Testing and Inspection

Through competencies from ICC NTA and ICC-PEI, the family of solutions can offer a wide scope of testing capabilities to verify that that a product will perform as promised and to determine code compliance or safety, as part of a robust certification program. Test results provide comprehensive information regarding how a product or component performed under an agreed test methodology.

### Product Evaluation

With over 90 years of experience and thousands of reports, ICC Evaluation Service is the industry leader in performing technical evaluations of building products, materials and systems for code compliance. Due to its diligence and unparalleled engineering experience, ICC-ES is the most widely accepted evaluation agency in North America and beyond.

ICC-ES issues reports and listings under the following programs:

- Evaluation Reports Program
- Plumbing, Mechanical and Fuel Gas Listing Program
- Building Products Listing Program
- Environmental Programs
- Solar Rating & Certification Corporation (SRCC)

ICC-ES evaluation reports are available free online to interested parties, as a resource to building code officials, designers and specifiers.

## ABOVE AND BEYOND

There are many elements and roles involved when it comes to building safety. When best practices are employed throughout the entire supply chain, trust and confidence are fostered – allowing for a transparent process that is beneficial to manufacturers, regulators, and the public at large.

**ICC-ES product evaluation goes above and beyond the ISO minimum requirements to deliver reports that instill confidence in the industry.** The ICC family of solutions understands that building safety is everyone's job. From quality codes and standards and qualified personnel to accredited third party agencies and rigorous product certification, our goal is to deliver peace of mind in the built environment – no matter what country that may be in.

**Contact Us**

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Learn more at www.icc-es.org

***Because Quality and Speed Matter***



## REFERENCES

**ISO 17011** Conformity assessment — General requirements for accreditation bodies accrediting conformity assessment bodies

**ISO/IEC 17000-2020** Conformity assessment — Vocabulary and general principles

**ISO/IEC 17007** Conformity Assessment – Guidance for drafting normative documents suitable for use for conformity assessment

**ISO/IEC 17020** Inspection Bodies Accreditation

**ISO/IEC 17024** Personnel Certification

**ISO/IEC 17065** Product Certification (for products, processes and services)