ACERMI & INSULATION PROFESSIONALS

Association pour la CERtification des Matériaux Isolants newsletter

N°15 JUNE 2022

ACERMI, certification: a partner for summer **confort**

Faced with ever-warmer summers and longer heatwaves, designing high-performance buildings that are adapted to hot weather is now a major issue.
Summer comfort—or discomfort—is thus a core focus of the French 2020 environmental regulation (RE2020).

Which became effective on January 1, 2022. It incorporates greenhouse gas (GHG) emissions from construction products (which the environmental and health declaration datasheet (FDES) makes it possible to characterize) and emphasizes the performance of the building envelope and its insulation. It has significantly higher requirements than those of RT2012, particularly regarding the bioclimatic need (Bbio) indicator for energy efficiency. As a key indicator in establishing a building's ability to provide real comfort to its users or inhabitants in summer and winter, Bbio corresponds to the bioclimatic needs of a building: warm in winter, cool or cold in summer. Bbio defines the thermal indicators (heating, cooling and lighting) of new buildings, regardless of the heating and cooling methods, and thus makes it possible to assess energy efficiency for an entire building. It is an indicator of good bioclimatic design.

Advantages of both summer and winter insulation

With this tighter regulation, the right selection of insulators is, more than ever, a necessity to reduce energy consumption while maintaining, or even improving, perceived comfort. People usually associate insulation with protection against cold. But it is also provides an excellent barrier against heat. It therefore has a positive impact in summer because it increases comfort and decreases the use of costly and harmful air conditioning. Summer and winter, the use of ACERMI-certified products guarantees the overall thermal performance of a building in winter conditions as well as for summer comfort. A guarantee of efficiency.

Understanding the physics of summer comfort

With RE2020, the assessment of summer comfort takes on major importance. RT2012 set the standard indoor temperature (TIC)—the maximum indoor temperature reached in a stretch of 5 consecutive days – *Continued on page 2*

2021 report: continued activity and expansion abroad

Last year resulted in a sound, stable performance, which is a gratifying outcome given the health and economic crisis and supply chain issues for some components, such as polystyrene and cardboard, which are used in the manufacture of insulation systems.

This underscores the importance of being able to rely on certified and monitored materials and systems in complex times. This is ACERMI certification's raison d'être, and the loyalty of customers with certified products demonstrates it.
Continued on page 3

ACERMI in BRIEF

ACERMI quality certification is granted by the Association pour la CERtification des Matériaux Isolants, a nonprofit organization (French organization act 1901) established in 1983 by the CSTB and LNE. It enables insulation professionals to demonstrate the performance of their insulation products and achieve certification on completion of testing, inspection and auditing.

... Summer comfort
continued

by correlating it with that of a reference building (Ticref). TIC must be less than Ticref. Feedback on RT2012 brought to light the summer discomfort in many new buildings, leading to the conclusion that Ticref was inadequate in addressing the subject. This is all the more problematic since global warming is already causing unusually hot summers, with increasingly long heatwaves.

RE2020 introduces a new, finer and stricter approach. A new indicator has been adopted to keep track of summer discomfort: the degree-hours of discomfort (DH). This indicator is similar to a meter that sums, over the year, each degree of discomfort perceived each hour. The objective is to assess the impact of heatwaves on discomfort perceived by occupants and to reduce the energy consumption requirements associated with the use of cooling devices: air conditioning, fans, etc.

The Th-D calculation method defines a period that generally extends from May to October (depending on the weather zone) and compares, over the entire period, the indoor operative temperature (Top) with discomfort thresholds set at 26°C at night and 26–28°C in the day. Beyond these thresholds, each additional degree is considered a discomfort for the occupant. The DH indicator therefore quantifies the excess temperature perceived compared with the set threshold and is measured in °C.h (degree-hours). RE2020 also introduces the concept of adaptive comfort, varying the tolerance threshold from day to day to include the human body's ability to adapt to high temperatures after a succession of hot days, up to a limit of +2°C above the 26°C threshold.

Specifically, two DH thresholds are set to assess a building: DH_max and DH_min. If DH is less than DH_min, this RE2020 criterion is considered to be met. Conversely, a DH higher than DH_max means that the building design does not meet the regulatory standard and must be reviewed. Finally, if the DH is between the DH_min and DH_max, the building is considered to be potentially uncomfortable, and a cooling factor, proportional to the difference (DH-DH_min), is applied to the indicator.

RE2020 is clearly more precise and rigorous. It imposes new constraints on contracting authorities, building designers and construction professionals. It is also an opportunity to highlight the professionalism of each stakeholder, the quality of the materials and the merits of ACERMI certification.

Use the right products in the right place

Make the right choice at the design stage

The transition from RT2012 to RE2020 resulted in a reassessment of the thermal performance objectives of products. But beyond that, *« it is the full life cycle of a product and its environmental impact that RE2020 considers, »* says Yannick Hervé, CEO of SAPI Cloisons Isolation and President of the French Plaster and Insulation Trade Union (UMPI-FFB). *« Its carbon weight analysis includes the energy used for its production, transport, use and demolition. »*

Regarding the environmental and health declaration datasheet (FDES), *« it has become very difficult to consider substituting one product for another, even of equivalent class, during construction, »* Hervé adds. *« More than ever, the right product must be chosen beforehand, during the design phase. ACERMI certification is, in this case, a considerable asset. »*

Yannick Hervé
President of UMPI-FFB

Inertia: beware of popular belief

Inertia (the ability of a material to store and then release heat) of course contributes to the energy performance of a building envelope. But it is the inertia of the entire wall, comprising building material and insulation, that is considered. The inertia class of the insulator is an element of the DH calculation but not the main parameter. Stone and concrete, for example, have higher absorption capacity than insulation, and their contribution to overall inertia is greater than that of insulation. **Remember!**

...2021 report: continued

Some highlights:

- The number of certificates has levelled out at over 900 since 2019, and stood at 924 in 2021.

- All ACERMI-certified contractors have renewed their certificate applications, preferring quality and reliability over choosing to meet a lower requirement in the face of shortages and price increases.

- The number of contractors holding ACERMI certificates abroad is growing rapidly and now represents a third of the total number of certificates. Half of manufacturing plants making ACERMI-certified products are abroad.

- Product diversification continues, with a notable increase in the share of biosourced insulators (+4%) compared with previous years.

- The Uses matrix was updated in 2021. It now includes 7 families and 38 types of Uses. In 2021, 459 certificates mention at least one use.

See the 2021 activity report online
http://www.acermi.com
rubric Publications / Rapports d'activité

Performance

Bulk product compaction tests

Thanks to compaction tests performed in the laboratory, ACERMI gives users of insulation products a guarantee of thermal resistance measurements. An asset for professionals and a major challenge in the context of energy transition.

Compaction is the loss of thickness over time of bulk products blown onto the floors of unused roof voids, or the loss in height of products installed by blowing into walls. This compaction is natural during the life of the product, and concerns the various families of bulk products, glass and rock mineral wools, and biosourced products (cotton, cellulose, etc.). It must be considered in the same way as the other characteristics of products in choosing the insulation system and building design for new and renovated structures.

Horizontal thermal impact

For products blown onto the floors of unused roof voids, compaction has an impact on the system's thermal resistance. As a result of varying temperature and humidity, bulk products can experience compaction over time and therefore a decrease in thickness. Because thermal resistance is proportional to thickness, the efficiency of the insulation decreases. This phenomenon must be considered when installing insulation to achieve the thermal insulation expected by the project owner.

This is why the installation of thickness gauges is necessary and checked when completing the end of work sheet, in accordance with DTU 45.11.

To compensate for compaction, an additional quantity of bulk product is used, meaning an additional load. It is understood that this adjustment to compensate for the effect of compaction must be determined and included in the design of the ceiling (particularly the metal frame of its structure), which must be able to withstand this additional load.

Zero vertical tolerance

For products installed by blowing into the cavity between a support and the facing of a partition wall, compaction must be zero because it would result in the appearance of a vacuum in the upper part and constitute a loss of insulation and a source of pathology. It is therefore essential to know the rate of compaction of products to plan for this.

Continued on page 4

... Performance
continued

Tests under cyclic temperature and humidity conditions determine the compaction of bulk products.

Test protocol

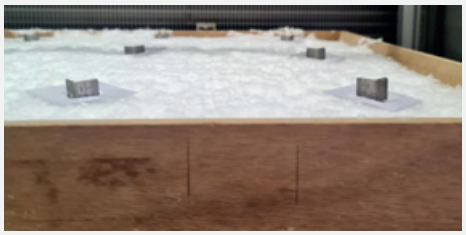
ACERMI laboratories have blowing and supply devices that make it possible to reproduce the use of a product. Product aging simulation is performed in an enclosure under cyclic temperature and humidity conditions, which makes it possible to determine the density and thickness range enabling a product to be used in accordance with the thermal performance displayed.

Tests take place over four months: it is estimated that this period is equivalent to a sufficient product life expectancy under natural conditions. The complete protocol is described in ACERMI Technical Specifications No. 4, «Determination of compaction,» written with all the representatives of the profession. It is viewable on the website www.acermi.com.

Families and reference systems

There are two ACERMI reference systems for the two bulk product families:

- The RP 13 product reference system concerns bulk thermal insulation products for buildings based on mineral wool (wool or rock), i.e. products meeting the harmonized standard NF 14064-1.
- The RP 14 product reference system is for cellulose-based bulk insulation products, which includes cellulose wadding, cotton and wood wool bases. These products are covered by Technical Assessment.



A laboratory for the profession

Thorough knowledge of the physical characteristics of insulation products contributes to the development of energy-efficient buildings. ACERMI pilot members perform tests in their laboratories to characterize the durability and energy efficiency of insulation products and systems. Their respective laboratories use specific devices for packaging products at precise and varied temperatures and humidity, making it possible to perform tests in accordance with current standards.

LATEST CERTIFICATES
http://www.acermi.com/isolants-certifies/derniers

Publishing directors: Etienne Crépon and Thomas Grenon - Coordination: groupe communication Acermi — Editorial: Florent Lebaigue, Vincent Lascault, Fabien Guinet, Hafiane Charkaoui — Mockup: RodolpheDesign.com — Photos: ACERMI, AdobeStock/Fizkes, Ashumskiy, Onidji.
Printed on recycled paper with a print run of 500 copies.
www.acermi.com | ww.cstb.fr | www.lne.fr.

ACERMI
CSTB le futur en construction
LNE Laboratoire national de métrologie et d'essais