

Energy Efficiency Regulations for Existing Buildings (RTex) 2018/2023 : What's the Impact on Opaque Building Elements?



Construction, France's most energy-intensive industry, represents 45% of the country's power consumption. With the goal of 500,000 renovated housing units per year and entirely energy-efficient existing buildings by 2050, building performance is a major issue addressed by the French law on energy transition for green growth.

Successive government orders have raised requirements for thermal performance and therefore the energy efficiency of existing buildings. Here's a close-up of evolving RTex for thermal resistance of opaque building elements, taking effect on January 1, 2018.

Regulations for overall energy efficiency and for individual building elements

Overall energy efficiency regulation apply to existing buildings with surfaces greater than 1,000 m² and those where renovations represent more than 25% of construction costs. If either of these two criteria is not met, the regulation apply to individual building elements. The first such regulation for individual building elements dates to 2007 (order of May 3, 2007). It was recently amended by the order of March 22, 2017.

What does the order of March 22, 2017, which goes into effect on January 1, 2018, change?

→ Requirements based on precise breakdown of climatic zones: Zone H1 ("H" for hiver, or "winter"), the coldest in mainland France, is the most stringent.

→ Strengthening of RTex requirements in 2 phases.

January 2018 : Energy efficiency requirements for renovated elements will rise, on average, by about 15%. Floors over crawl spaces or unheated spaces are subject to the highest increase in performance levels (35%), followed by flat roofs (32%).

January 2023 compared with 2018: Requirements will rise again by about 15% on average for all building elements. The greatest impact is on flat roofs, with new standards 36% more strict than 2018.

See page 2 table on RTEX requirements for individual building elements.

TAX CREDITS: WHAT YOU NEED TO KNOW



Individuals who have their homes insulated, especially if they benefit from specific financial incentives, must be attentive to the quality of work so that they can receive the expected savings.

There are three simple rules for the level of quality:

→ Use products that meet the technical criteria for the Energy Transition Tax Credit (CITE) (all ACERMI-certified insulation materials with thermal resistance that meets the criteria are eligible for the tax credit).

→ Adhere to industry standards for installation of products and to technical appraisal (fitness for use) for innovative products.

→ Work with RGE-certified craftspeople and contractors.

Look for two easy-to-spot quality marks:

→ Product certification on packaging.

→ RGE (Reconnu Garant de l'Environnement) status must be specified in the price estimates and on the invoices of those performing the work.

Learn about the different types of financial incentives : <http://www.acermi.com/en/marque-acermi/les-aides-financieres/>

ABOUT ACERMI

The ACERMI quality certification is awarded by the Association pour la Certification des Matériaux Isolants, a French non-profit organization (*association loi 1901*) established in 1983 by the CSTB and LNE. The certification enables insulation professionals to demonstrate the performance of their products following a testing, inspection and auditing procedure.



Technical requirements



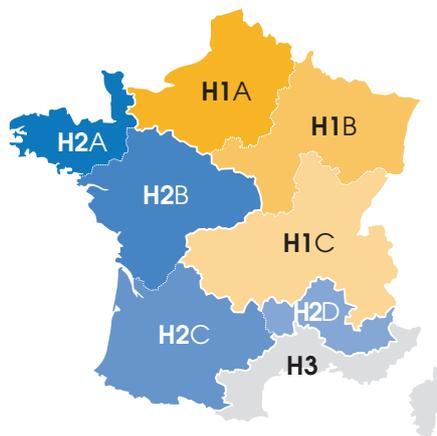
REQUIREMENTS BY WEATHER AREAS

Winter areas

- H1
- H2
- H3

Summer areas

- H1 A
- H1 B
- H1 C
- H3
- H2 A
- H2 B
- H2 C
- H2 D



This gradual change in energy efficiency regulations for existing buildings, spread over four years, enables manufacturers to prepare and adjust their products and insulation techniques to meet the new requirements of the 2023 renovation market. ACERMI certification assists construction industry stakeholders in meeting the terms of the new regulations.

Salem Farkh, head of the Hygrothermal Properties of Constructions Unit at the CSTB.

RTEX REQUIREMENTS FOR INDIVIDUAL BUILDING ELEMENTS

BUILDING ELEMENTS	YEAR OF APPLICATION	MINIMUM THERMAL RESISTANCE OF RENOVATED WALL (m².K/W)			ADJUSTMENT
		H1 a, b, c	H2 a, b, c, d H3 > 800 m	H3 < 800 m	
Wall and roof pitch > 60°	2007	2.3	2.3	2.3	2.0 (H3 < 800 m; -5% Usable Floor Area; double-walled metal panel)
	2018	2.9	2.9	2.2	-
	2023	3.2	3.2	2.2	3.2 (Internal wall insulation, double-walled metal panel)
Walls in contact with unheated spaces	2007	2.0	2.0	2.0	-
	2018	2.0	2.0	2.0	-
	2023	2.5	2.5	2.5	-
Flat roofs	2007	2.5	2.5	2.5	1.5 (technical effects related to insulation thickness)
	2018	3.3	3.3	3.3	3.0 (technical effects related to insulation thickness)
	2023	4.5	4.3	4.0	3.0 (technical effects related to insulation thickness)
Unused attics	2007	4.5	4.5	4.5	-
	2018	4.8	4.8	4.8	-
	2023	5.2	5.2	5.2	-
Roof pitch < 60°	2007	4.0	4.0	4.0	3.0 (-5% Usable Floor Area)
	2018	4.4	4.3	4.0	4.0 (-5% Usable Floor Area)
	2023	5.2	4.5	4.0	4.0 (-5% Usable Floor Area)
Low floors leading outside or to parking lot	2007	2.3	2.3	2.3	2.0 (H3 < 800 m; min. ceiling height requirement; installation or replacement of heated floor)
	2018	2.7	2.7	2.1	2.1 (min. ceiling height requirement)
	2023	3.0	3.0	2.1	2.1 (min. ceiling height requirement)
Low floors over crawl spaces or unheated spaces	2007	2.0	2.0	2.0	R reduced if installation or replacement of heated floor
	2018	2.7	2.7	2.1	2.1 (min. ceiling height requirement)
	2023	3.0	3.0	2.1	2.1 (min. ceiling height requirement)

RText applies to renovations, except when such work is done following a weather-related incident (for example, a storm) or damage due to vandalism (Order of May 3, 2007, Order of March 22, 2017).

➤ Certification bodies and Acermi

NF Habitat: a New Generation of Certifications

**INTERVIEW WITH ANTOINE DESBARRIÈRES,
DIRECTOR OF QUALITEL ASSOCIATION AND
PRESIDENT OF CERQUAL QUALITEL CERTIFICATION**



Antoine
Desbarrières

Tell us a little about Cerqual, the certification body.

Cerqual is a subsidiary of Qualitel Association which promotes housing quality through certification and by providing information to the public. It focuses on apartment buildings and grouped individual dwellings under renovation, under construction or in use. Cerqual plays a role in the new NF Habitat certification, providing a mark that assures essential qualities. Combined with the HQE™ mark, which was developed by Alliance HQE-GBC, Cerqual offers higher levels of performance in terms of quality of life, environmental protection and economic performance. Today, Cerqual lists 150,000 housing units per year applying for certification.

What does product certification mean to Qualitel?

We approach the quality of buildings by considering their components, the stakeholders, design methods, installation and management. Product quality is vital.

Therefore, we recommend the use of certified products. When we talk about energy efficiency, acoustic comfort and other factors,

we need proven data on insulation materials. It's a measure of quality, a requirement that enables us to check the performance levels of buildings. This is especially trustworthy when a third party measures, checks and certifies structural characteristics, manufacturing processes, consistency at the industrial company, and traceability beyond the design phase, all of which are crucial factors.

Insulation is a component that greatly contributes to energy efficiency. It represents a basic requirement in all our benchmarks for future positive energy buildings, whether new buildings or energy-efficient renovation.

Do you influence the choice of insulation products?

For energy efficiency, we focus on overall performance or, for renovations, individual component performance. We do not impose construction methods or the types of insulation when they are backed by calculations of energy efficiency in the design stage. Performance is the thing that interests us and, from that perspective, we do have influence on the choice of insulation.

What role do financial incentives play?

NF Habitat HQE™ certification is subject to requirements concerning aspects such as property tax exemption. Municipalities sometimes have energy efficiency requirements which are more stringent than national regulations, such as the Climate Plan of the City of Paris. There is a link between obtaining certification of apartment buildings or private homes and the financial incentives or local requirements.

Regarding the certification of products, according to Energy Transition Tax Credit (CITE) provisions, there are also direct links between tax credits, taxation and the energy efficiency of the certified insulation installed. Public funding is involved, so it is justifiable that allocations should only be awarded when there is firm evidence of the energy performance of the insulation installed.

Do you receive feedback from users?

We do get some feedback. By comparing the performance specified in the design with the experience of residents, we note a good level of overall satisfaction. Claims made by residents regarding certification are never about insulation performance. Rather, they concern usage or the choice of inappropriate products or installation methods.

We haven't received specific feedback from the professionals with whom we work. This isn't an issue because the certified data is highly reliable.

A final word?

Cerqual needs ACERMI to continue its important work on energy performance. It would be worthwhile for it to certify other characteristics, such as product life cycles of low-carbon buildings, which is an increasingly important issue in regulations concerning construction products.



Coeur Boisé Residence in Chaville, NF Logement HQE™,
BBC-effinergie®, for Bouygues Immobilier, Anthony Bechu, architect

➤ Insulation & Uses

Manufactured Materials: Vacuum Insulation Panels (VIPs)

Vacuum insulation panels are innovative products whose use requires specific considerations because of their special characteristics. They are subject to Technical Appraisal (ATec) or Technical Experimentation Assessment (ATEX) procedures.

Vacuum insulation panels (VIPs) are insulation materials in which the gas or air is replaced by a partial vacuum, giving them thermal insulation properties four times better than conventional insulation materials.

To maintain the vacuum and reduce moisture transmission, the material (amorphous silica) is inserted in an airtight metal enclosure. A product's thermal performance depends on the integrity of its enclosure, which must be protected during storage and installation. Note: Performance is weakened at the edges because of the continuity of the enclosure, which includes a heat-conducting metal layer (border's thermal bridges).

Guidelines for use

The VIP must be protected from protruding or sharp elements on the wall or liner system which could damage the panel. Since the panels must not be cut or pierced, the layout has to be optimized to obtain the maximum area covered by the VIP. Similarly, the panels must be held in place mechanically using methods that do not compromise the integrity of the enclosure (for example, bonding). The junctions between building elements are caulked with "conventional" insulation. The installa-

tion method can induce thermal bridges, for example, the insertion of metal fixing in the wall.

For internal insulation, a vapor barrier system is generally recommended to protect the junctions between panels or through the conventional insulation.

An air space is created between the internal facing and the vapor barrier to prevent accidental piercing of the VIP enclosure by the mechanical fasteners.

Durability and performance checks

VIPs must maintain their properties over time. ACERMI certification provides thorough and expert assessment of panels and the quality control system used at the factory. It reliably ensures their performance levels and durability.

The ACERMI Springboard (Tremplin) standard specifically for VIPs was developed in 2015. It prescribes the methods used to characterize the intrinsic performance of products, for example, thermal conductivity and resistance to water vapor transmission. It also specifies the conditions under which

FASTENING SYSTEM

SPACE TO FILL WITH CONVENTIONAL INSULATION MATERIAL



VACUUM INSULATION PANELS (VIP)

VAPOR BARRIER MEMBRANE

aging tests are performed to assess VIP durability, depending on the intended use (internal or external wall insulation). Six-month accelerated aging tests are carried out under appropriate temperature and humidity conditions. In addition, the standard sets out procedures for assessing the impact of thermal bridges at the edges on overall thermal resistance.

➤ DIARY DATES

SEPTEMBER 20-21	IVIS PARIS 2017	13th international Vacuum insulation Symposium - Acermi booth
NOVEMBER 6-10	BATIMAT 2017	Visit Acermi at CSTB's booth (hall 6 G40)

➤ LATEST CERTIFICATES

<http://www.acermi.com/isolants-certifies/derniers/>

