IRUFIRE

FIRE RETARDANT COATINGS FOR WOOD

SINCE 1969

IRURENA

WOOD COATINGS

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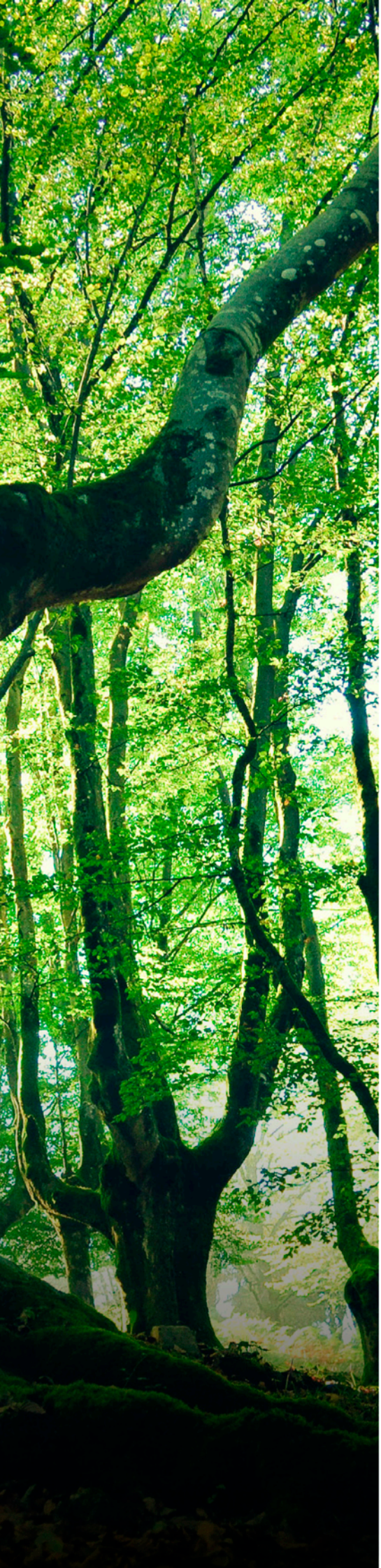

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FOREST AS A WOOD PRECURSOR

We tend to see the forest as a source of timber resources, when it must be considered as an authentic **forest ecosystem**. Given that it constitutes a complex biological community, in addition to wood products, it provides important goods and performs vital ecological and social functions for the health and welfare of human beings.

Some of the multiple functions it fulfills are:

- Being the only natural resource that is completely renewable, sustainable and even self- regulating.
- Act as a supplier of wood and its industrial derivatives (biomass, firewood, resin, etc.), hunting and fishing, fruits, beekeeping, mycological uses, it contributes to the hydrological cycle, etc.
- Produce benefits for human beings simply by performing its natural functions. Forests are carbon sinks as they require CO_2 (carbon dioxide) for their growth. Through photosynthesis, plants absorb carbon dioxide (CO_2) from the atmosphere and release oxygen (O_2).

FOREST AS A WOOD PRECURSOR

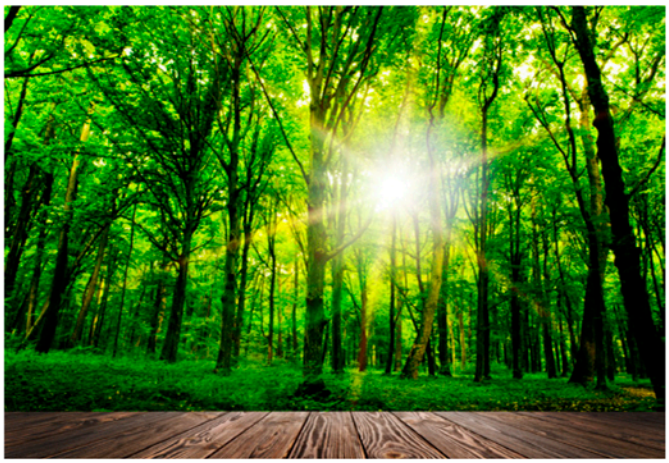
The wood that comes from forests has become increasingly present in construction, thanks, among other things, to its zero or very low environmental impact (depending on its origin, the so-called “carbon footprint” is very low and may even be negative). Thus, we can consider **wood** as the ideal material for construction and design, for several reasons:

STRUCTURAL STRENGTH

Wood is an ideal material for **beams or structural elements**, whose main demand is bending, it is also optimal for elements which must resist compression, but above all, it is important to study in detail the element, geometry and wood species because the properties of wood may vary greatly depending on different factors.

New developments in laminated wood, cross laminated timber (CLT), high density fibreboard, OSB, etc. make the **resistance** vary and the benefits of the materials are improved considerably. Depending on the case, wood as a building element, can be compared to other construction elements such as concrete and steel, etc.

IT IS RENEWABLE

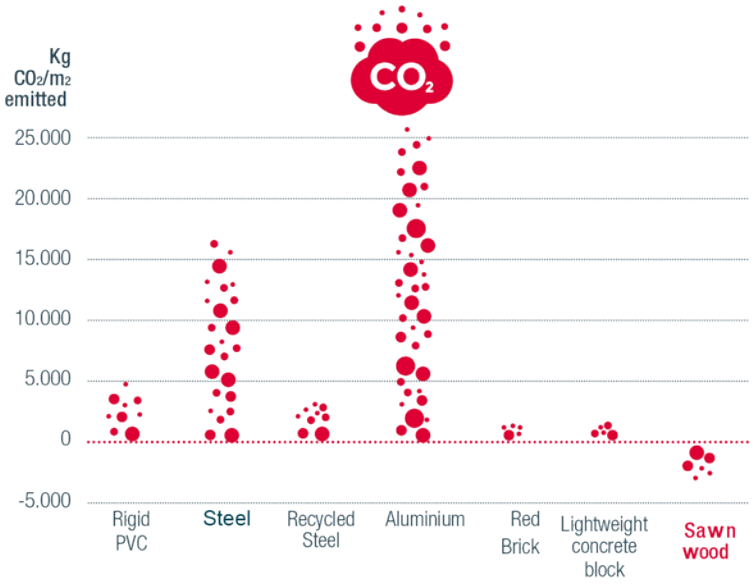


Unlike concrete, brick and metal, wood is a natural element which, after being extracted, can be replaced several times. **Its availability for human consumption is guaranteed** to the extent that we produce it and use it responsibly.

ENVIRONMENTAL BENEFITS, ABSORBING CO_2 FROM THE ATMOSPHERE

Wood is the only building material that helps tackle climate change. It is important to remove carbon (CO_2) from the atmosphere as well as reduce new carbon emissions going into the atmosphere. Wood achieves both of these. **It is the constructive alternative with the lowest carbon footprint**.

Forest ecosystems contribute significantly to the reduction of greenhouse gases, since trees at the growth stage have more capacity to capture carbon than established mature trees. Controlled forest exploitation followed by replanting, as well as the use of the forest resources generated, give rise to what we know today as "circular economy".



Comparison of CO_2 produced by different materials (net CO_2 emissions, including the carbon sink effect).
Source: "Reducing the carbon footprint and the environmental impact of new buildings", Tazmania Timber, CSAW / RTS, Environmental reports for building materials, 1998 – 2001 (CEI-Bois).

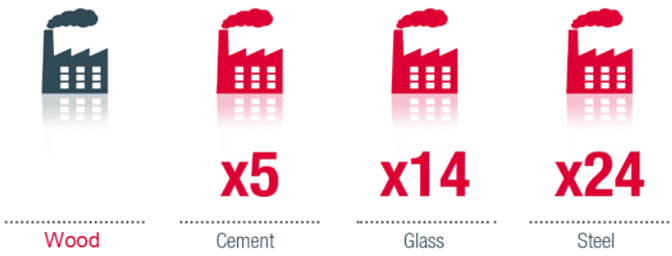
CLEANER AND MORE EFFICIENT PRODUCTION

The production of cement, glass and steel requires very high temperatures which are obtained by using large amounts of energy, as shown in the following figures. It takes five times more energy to produce cement,14 times more to produce glass and 24 times more to produce steel, compared to the energy required to produce wood.

Thus, the volume of (CO_2) emitted into the atmosphere during these processes is much less for wood, 0,28 T, against 4 T generated by the manufacture of steel, 7,5 T of PVC and 15 T of aluminum.

In additio, the optimization of processes in the forestry industry has managed to significantly reduce solid waste production. Almost all of the raw materials are used in useful products, such as reconstituted panels, fibres and fuels derived from wood.

ENERGY CONSUMPTION IN THE PRODUCTION

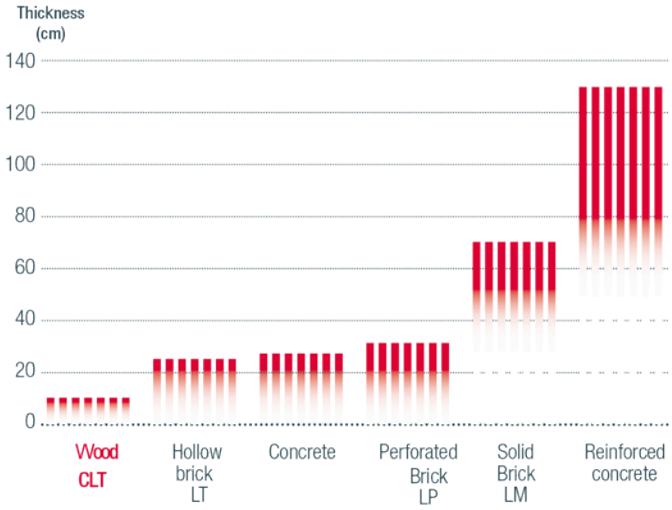


Comparison of the amount of energy required to produce a ton of wood, cement, glass and steel.
Source: www.apawood.org/sustainable-forestry

THERMAL INSULATION

Due to its porosity, wood has a low thermal conductivity, which makes it an excellent insulator. Combined with other materials - such as fibreglass or mineral wool - a wooden construction can meet the thermal insulation requirements of a house even in extreme climates.

The air pockets within its cellular structure allow the wood to isolate heat up to 6 times better than brick, 15 times better than concrete and 400 times better than steel.



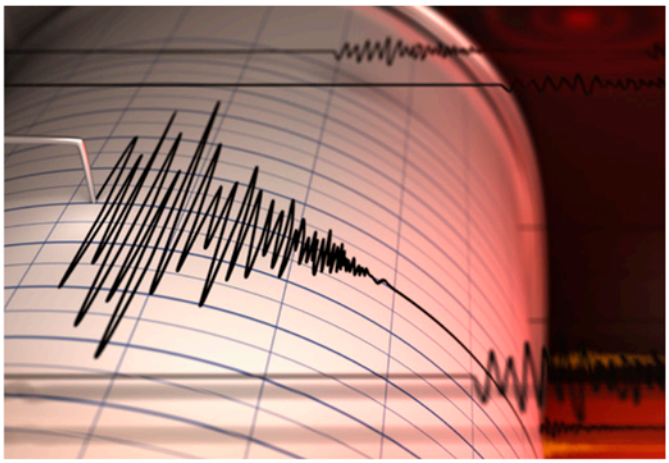
Illustrated are the thermal insulation performance of 8cm CLT

8 cm. of CLT is equivalent performance to that which can be reached with 130 cm. of concrete and with 30 cm. of perforated brick.

ACOUSTIC INSULATION

Thanks also to its porous cellular structure, wood has a natural capacity to dampen sound vibrations. Its performance as an acoustic insulator can be improved by using layers of absorbent materials such as fibreglass, mineral wool or plaster.

ANTISISMIC PERFORMANCE



Wooden construction solutions may exhibit **similar or better performance than other materials during an earthquake**. Since the forces of an earthquake are proportional to the weight of the structures that receive them, wooden constructions -between six and nine times lighter than those of masonry or concrete- are exposed to lower impacts.

WARMTH AND WELLBEING

Research has identified that the use of wood in the interior of a building has clear physiological and psychological benefits that mimic the effect of spending time outside in nature. The presence of natural materials in buildings tends to generate feelings of well-being among those who occupy them, even enjoying lower stress levels and higher productivity.

The feelings of natural warmth, beauty and comfort that wood elicits in people has the effect of improving the quality of life of its occupants. These benefits are particularly important for environments such as hospitals, public buildings, educational centres and offices.

FAST EXECUTION

Due to the lightness of the material and the dry execution of the works, assembling wooden construction systems is faster than building with other materials. Moreover, the market offers high precision prefabricated structures that further reduce execution times.

It is estimated that wooden construction is up to 50% faster than other materials.

LOWER COSTS

Comparative studies of the economics of different wall framing systems indicate that, in terms of direct building expenses, timber frames are consistently the most cost effective solution. Timber buildings would be up to 15% more cost effective than other materials across many building types.

Due to the lightness and strength of wood construction can be of smaller dimensions and at least a third less expensive than those that require other materials.

In addition, as these are faster executed constructions, the cost of work is reduced, and as it is an easy material to work, it does not generally require expensive and very complex tools for optimal results.

FIRE BEHAVIOR

For millenia, wood has been used as a fuel, which leads us to believe that wood may be one of the worst materials due to its reaction to fire. However, this assumption is false and its behavior is, in many circumstances, better than that of other materials. Despite its combustibility, wood ignites only when it reaches temperatures above 300ºC, thus forming a charred layer on the outside, capable of protecting the interior of the element. This protective carbon layer has an insulating capacity 6 times greater than that of unbumt timber, preventing heat and oxygen (combustion essential factors) to penetrate inside.

The wooden building solutions are protected against fire by the intrinsic characteristics mentioned above. In compatison, steel undergoes deformation at about 500ºC, causing the collapse of the building wehere is used. In turn, concrete reacts to fire by changing its composition, whic means that afer 400ºC, its removal may be necessary even if the structure remains standing. That is why in the case of a building material, exposed to the same fire, the wooden one can resist longer, which leaves more time to evacuate the building.

Domestic fires are a more common problem. Thus, in 2023 in Spain, there were more than 28.312 fires of this type, with 249 deaths*. Almost half of these victims were caused by poisoning from the gases released during the fire. In this context, prevention and early detection of fires are fundamental.

*Source:
https://documentacion.fundacionmapfre.org/documentacion/publico/es/media/group/1126145.do

The superficial combustibility of wood being the weak point of its fire behavior, means the possiibility of applying fire retardant coatings which improve this point of vital importance. Therefore, we have developed the different IRUFIRE coating processes listed in this catalogue used to protect wood elements with certified results in terms of reactions to fire according to the European standard (EN UNE 13501), standard that takes into account the flammability of the materials tested and the amount of smoke generated.

Tests and accreditations carried out in:

FCBA AFITI

EUROCLASES
FOR WALLS AND CEILINGS

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IRURENA
WOOD COATINGS

The EU has adopted a harmonized system for testing and classifying materials in their behavior to fire, as well as limit values for classifications, something that did not exist before it came into force. Until then, each country had a different classification system and the results obtained could be mutually incompatible.

Focusing on products used for coating walls and ceilings, these are classified depending to their reaction to fire according to standard EN 13501-1. This classification of materials takes into account different concepts:

its combustibility, the quantity and speed of smoke production and the presence or absence of flaming droplets.

The combustibility of the material takes into account the propagation of the flame, the degree of flammability and the development of heat which occurs during the test, the results move on a scale from E (combustible material with high contribution to fire) up to A1 (non-combustible material and with a maximum degree of protection). The classification of wood and its derivatives is generally **"D".**

(combustibility and average fire contribution). In this case, using the IRUFIRE processes from IRURENA, the classification of these coated substrates can be upgraded to a **"B"** classification (combustible and very limited contribution to fire).

The sécond parameter takes into account the **generation of smoke and toxic particles** during the test, which can be s1, s2 or s3. In this case, the IRUFIRE processes allows the user to obtain a s1 classification (low smoke emission and slows down its propagation speed), Taking into account the high mortality rate due to fumes and gases produced during fires, obtaining a good classification in this section is very important.

The third parameter refers to the **absence or presence of droplets or flaming particles** during the test. These flaming particles can then act as sources of new fires. The classification obtained is d0, d1 or d2. The different IRUFIRE processes have obtained a **"d0"** classification in the various tests carried out, which means the absence of flaming particles.

European classification of reaction-to-fire performance of construction products and elements.

WALLS AND CEILINGS

COMBUSTIBILITY

FLAME PROPAGATION

FLAMMABILITY OF MATERIAL

HEAT DEVELOPMENT

FINAL APPLICATION: WALLS AND CEILINGS	COMBUSTIBLE	COMUBUSTIBILITY AND CONTRIBUTION TO FIRE
A1	NO	NON OR MINIMUM CONTRIBUTION
A2	NO	LOWER (flame duration ≤20s)
B	YES	VERY LIMITED
C	YES	LIMITED
D	YES	MEDIUM
E	YES	HIGH
F		Not evaluated, without determined behavior

SMOKE OPACITY*1

SMOKE AND TOXIC GAS PRODUCTION

FINAL APPLICATION WALLS AND CEILINGS	QUANTITY AND SPEED OF EMISSION
s1	LOW
s2	MEDIUM
s3	HIGH

DROPLETS OR SWOLLEN PARTICLES FALL OUT*2

DRIPPING OF FLAMMABLE MATERIAL

FINAL APPLICATION WALLS AND CEILINGS	DROPLETS OR SWALLEN PARTICLES FALL OUT
d0	No production of swollen particles
d1	Droplet fall / flaming particles (<10s)
d2	Droplet fall / flaming particles (>10s)

*1 Note: A1, E y F classes are not classified under this concept.
*2 Note: A1 y F classes are not classified under this concept.

European classification of reaction-to-fire performance of construction products and elements.

FLOORING

COMBUSTIBILITY

FLAME PROPAGATION

FLAMMABILITY OF MATERIAL

HEAT DEVELOPMENT

FINAL APPLICATION: FLOORS	COMBUSTIBLE	COMBUSTIBILITY AND CONTRIBUTION TO FIRE
A1fl	NO	NON or MINIMUM CONTRIBUTION
A2fl	NO	LOWER (flame duration ≤20s)
Bfl	YES	VERY LIMITED
Cfl	YES	LIMITED
Dfl	YES	MEDIUM
Efl	YES	HIGH
Ffl		No evaluated, without determined behavior

SMOKE OPACITY*1

SMOKE AND TOXIC GAS PRODUCTION

FINAL APPLICATION FLOORS	QUANTITY AND SPEED OF EMISSION
s1	LOW
s2	MEDIUM

*1 Note: The classes A1fl, Efl y Ffl are not classified under this concept

EUROPEAN COMMISSION

This European Commission standard EN 13501-1 provides the reaction-to-fire classification procedure for all construction products, including products incorporated in building elements. Products are considered in relation to their end-use application.

INDOOR

WALLS, CEILINGS AND FURNITURE

SOLVENT-BASED

IRUFIRE REAL & INTEGRAL B-s1,d0 PUR

FOR NON FIRE RETARDANT TREATED WOOD: D or E.

Characteristics:
CLEAR AND PIGMENTED WITH DIFFERENT GLOSS LEVELS.

After applying the coating process:
UPGRADES THE CLASSIFICATION: B-s1,d0.

IRUFIRE ISOLATOR II-1 + IRUFIRE REAL & INTEGRAL B-s1,d0 PUR

FOR NON FIRE RETARDANT TREATED WOOD: D or E.

Characteristics:
CLEAR WITH DIFFERENT GLOSS LEVELS

After applying the coating process:
UPGRADES THE CLASSIFICATION: B-s1,d0.

IRUFIRE REAL B-s1,d0 PUR

FOR NON FIRE RETARDANT TREATED WOOD: D or E.

Characteristics:
CLEAR AND DEEP MATT.

After applying the coating process:
UPGRADES THE CLASSIFICATION: B-s1,d0.

IRUFIRE INTEGRAL B-s1,d0 PUR

FOR FIRE RETARDANT TREATED WOOD: B.

Characteristics:
CLEAR AND PIGMENTED WITH DIFFERENT GLOSS LEVELS.

After applying the coating process:
MAINTAINS THE CLASSIFICATION: B-s1,d0.

WATER-BASED

IRUFIRE AQUA REAL & INTEGRAL B-s1,d0 INT-1

FOR NON FIRE RETARDANT TREATED WOOD: D or E.

Characteristics:
DIFFERENT COLORS AND GLOSS LEVELS.

After applying the coating process:
UPGRADES THE CLASSIFICATION: B-s1,d0.

IRUFIRE REAL & B-s1,d0 AQUA INT-2

FOR NON FIRE RETARDANT TREATED WOOD: D or E.

Characteristics:
CLEAR OR TRANSPARENT TINTED COLORS AND GLOSS LEVELS.

After applying the coating process:
UPGRADES THE CLASSIFICATION: B-s1,d0.

IRUFIRE INTEGRAL B-s1,d0 AQUA INT

FOR FIRE RETARDANT TREATED WOOD: B.

Characteristics:
CLEAR AND PIGMENTED WITH DIFFERENT GLOSS LEVELS.

After applying the coating process:
MAINTAINS THE CLASSIFICATION: B-s1,d0.

Notes: All the products are free of halogenated compounds.

INDOOR
FLOORING

WATER-BASED

IRUFIRE REAL FLOORING Bfl-s1 AQUA

FOR NON FIRE RETARDANT TREATED WOOD: Cfl, Dfl or Efl.

Characteristics:
CLEAR WITH DIFFERENT GLOSS LEVELS.

After applying the coating process:
UPGRADES THE CLASSIFICATION: Bfl-s1.

OUTDOOR
FACADES

WATER-BASED

IRUFIRE REAL & INTEGRAL C-s1,d0 AQUA EXT

FOR NON FIRE RETARDANT TREATED WOOD: D or E.

Characteristics:
DIFFERENT COLORS.

After applying the coating process:
UPGRADES THE CLASSIFICATION: C-s1,d0.

Notes: All the products are free of halogenated compounds.

IRUFIRE REAL & INTEGRAL B-s1,d0 PUR

Process based on acrylic two component products developed for finishing wooden substrates and its derivatives devoid of any previous fire retardant treatment, whose end use is the coating of indoor walls and ceilings.

Start with wood **D-s2,d0** >>> FIREPROOFING PROCESS **IRURENA** >>> Achieve classification **B-s1,d0**

SUBSTRATE

All wood-based substrates commonly used as wall and ceiling coverings (with a density 510 kg/m^3 or higher) or substrates classified as A2-s1,d0 or A1.

*Do not apply to products containing more than 11% moisture **content.**

INITIAL STEP

Remove all sanding residues from the substrate and stir the varnish and the mixture thoroughly before use.

MIXTURE

IRUFIRE PRIMER IP-1 (10:1 by volume with **CATALIZADOR IRUFIRE).**

IRUFIRE TOPCOAT IT-1 (10:1 by volume with **CATALIZADOR IRUFIRE).**

*Add 5–10% of D-202, D-525, 125-DPN or similar thinner to adjust application viscosity.

SPRAYING EQUIPMENT

All types of spraying equipment (air spray, airmix and airless).

1ST COAT – BASECOAT

Apply at exposed face a weight of 400-480 g/m^2 of **IRUFIRE PRIMER IP-1 (**10:1 with **CATALIZADOR IRUFIRE**) applied in 2-3 wet coats, allowing 1-2 hours between each coat, without

DRYING, CURING AND SANDING

Cure for 24 hours, lightly sand with flexible 280–320 grit sandpaper, and remove any residues with a vacuum cleaner or compressed air.

2ND COAT - TOPCOAT

Apply a weight of 80-100 g/m^2 of **IRUFIRE TOPCOAT IT-1** (10: 1 with **CATALIZADOR IRUFIRE**).

DRYING AND FINAL CURING

Allow to cure overnight (16-20 h) before handling.

GENERAL PROPERTIES

- Completely halogen-free process (chlorinated or brominated compounds).
- Excellent wetting properties, transparency, thixotropy, smoothness, surface hardness and uniform appearance.
- High resistance to abrasion, scuffs and scratches.
- High covering power.
- No yellowing: the acrylic–aliphatic nature of the products that make up the process makes it unalterable under light exposure.

DEGREES OF GLOSS

Various degrees of gloss.

COLOUR

Clear or pigmented. Compatible with the "PASTA PIGMENTARIA 9700" range for formulating paints according to various colour charts (RAL, NCS, etc.). Included in the KOLORE tinting system.

kolore

TESTING

The process has been tested on non-fire-retardant chipboard. Substrate that complies with European Standard EN 13238 substrate requirements, classified as D-s2,d0.

Testing was carried out at AFITI (Report 4970T23-2).

AFITI

RESULT

Fire classification B-s1,d0 (as per EN 13501-1 (Euroclasses))

IRUFIRE ISOLATOR II-1 + IRUFIRE REAL & INTEGRAL B-s1,d0 PUR

Process based on acrylic two component products developed for finishing wooden substrates and its derivatives devoid of any previous fire retardant treatment, whose end use is the coating of indoor walls and ceilings.

Start with wood **D-s2,d0** >>> FIREPROOFING PROCESS **IRURENA** >>> Achieve classification **B-s1,d0**

SUBSTRATE

All wood-based substrates commonly used as wall and ceiling coverings (with a density 510 kg/m^3 or higher) or substrates classified as A2-s1,d0 or A1.

INITIAL STEP

Remove all sanding residues from the substrate and stir the varnish and the mixture thoroughly before use.

MIXTURE

IRUFIRE ISOLATOR II-1 (10:1 by volume with **CATALIZADOR IRUFIRE).**

IRUFIRE PRIMER IP-1 (10:1 by volume with **CATALIZADOR IRUFIRE).**

IRUFIRE TOP COAT IT-1 (10:1 by volume with **CATALIZADOR IRUFIRE).**

*Add 5–10% of D-202, D-525, 125-DPN or similar thinner to adjust application viscosity.

SPRAYING EQUIPMENT

All types of spraying equipment (air spray, airmix and airless).

SUBSEQUENT APPLICATION

Apply 50-70 g/m^2 of **IRUFIRE ISOLATOR II-1 (10: 1 with CATALIZADOR IRUFIRE)**.

DRYING AND CURING

Allow to cure for 0.5–5 hours.

1ST COAT – BASECOAT

Apply 400-480 g/m^2 of **IRUFIRE PRIMER IP-1** (10:1 with **CATALIZADOR IRUFIRE**) in 2-3 wet coats, allowing 1-2 hours between each coat, without sanding.

DRYING, CURING AND SANDING

Cure for 24 hours, lightly sand with flexible 280–320 grit sandpaper, and remove any residues with a vacuum cleaner or compressed air.

2ND COAT - TOP COAT

Apply a weight of 80-100 g/m^2 of **IRUFIRE TOP COAT IT-1** (10: 1 with **CATALIZADOR IRUFIRE**).

DRYING AND FINAL CURING

Allow to cure overnight (16-20 h) before handling.

GENERAL PROPERTIES

- Completely halogen-free process (chlorinated or brominated compounds).
- Excellent wetting properties, transparency, thixotropy, smoothness, surface hardness and uniform appearance.
- High resistance to abrasion, scuffs and scratches.
- High covering power.
- No yellowing: the acrylic–aliphatic nature of the products that make up the process makes it unalterable under light exposure.

DEGREES OF GLOSS

Various degrees of gloss.

COLOUR

Clear or pigmented. Compatible with the "PASTA PIGMENTARIA 9700" range for formulating paints according to various colour charts (RAL, NCS, etc.). Included in the KOLORE tinting system.

kolore

TESTING

The process has been tested on non-fire-retardant chipboard. Substrate that complies with European Standard EN 13238 substrate requirements, classified as D-s2,d0.

Testing was carried out at AFITI (Report 4253T21-2).

AFITI

RESULT

Fire classification B-s1,d0
(as per EN 13501-1 (Euroclasses))

IRUFIRE REAL B-s1,d0 PUR

Coat and coat process based on acrylic two component products developed for finishing wooden substrates and its derivatives devoid of any previous fire-retardant treatment, whose end use is the coating of indoor walls and ceilings.

Start with wood **D-s2,d0** >>> FIREPROOFING PROCESS **IRURENA** >>> Achieve classification **B-s1,d0**

SUBSTRATE

All wood-based substrates commonly used as wall and ceiling coverings (with a density 510 kg/m^3 or higher) or substrates classified as A2-s1,d0 or A1.

*Do not apply to products containing more than 12% moisture **content.**

INITIAL STEP

Remove all sanding residues from the substrate and stir the varnish and the mixture thoroughly before use.

MIXTURE

IRUFIRE REAL B-s1,d0 PUR (10:1 by volume with **CATALIZADOR IRUFIRE).**

*Add 5–10% of D-202, D-525, 125-DPN or similar thinner to adjust application viscosity.

SPRAYING EQUIPMENT

All types of spraying equipment (air spray, airmix and airless).

1ST COAT – BASECOAT

Apply at exposed face a weight of 210-230 g/m^2 of **IRUFIRE REAL B-s1,d0 PUR** (10:1 with **CATALIZADOR IRUFIRE**).

DRYING, CURING AND SANDING

Cure for 24 hours, lightly sand with flexible 280–320 grit sandpaper, and remove any residues with a vacuum cleaner or compressed air.

2ND COAT - TOP COAT

Apply a weight of 210-230 g/m^2 of **IRUFIRE REAL B-s1,d0** (10: 1 with **IRUFIRE CATALYST**).

DRYING AND FINAL CURING

Allow to cure overnight (16-20 h) before handling.

GENERAL PROPERTIES

- Completely halogen-free process (chlorinated or brominated compounds).
- Excellent wetting properties, transparency, thixotropy, smoothness, surface hardness and uniform appearance.
- High resistance to abrasion, scuffs and scratches.
- High covering power.
- No yellowing: the acrylic–aliphatic nature of the products that make up the process makes it unalterable under light exposure.

DEGREES OF GLOSS

Deep matt.

COLOUR

Clear.

TESTING

The process has been tested on non-fire-retardant chipboard. Substrate that complies with European Standard EN 13238 substrate requirements, classified as D-s2,d0.

Testing was carried out at AFITI (Report 4035T20-2).

AFITI

RESULT

Fire classification B-s1,d0 (as per EN 13501-1 (Euroclasses))

IRUFIRE INTEGRAL B-s1,d0 PUR

Process based on acrylic two-component products developed for finishing fire retardant treated wooden substrates, whose end use is the coating of interior walls and ceilings.

Start with wood **B-s1,d0** >>> FIREPROOFING PROCESS **IRURENA** >>> We mantain the classification **B-s1,d0**

SUBSTRATE

Fire retardant treated substrate with classification B-s1,d0.
*Do not apply to products containing more than 12% moisture content.

INITIAL STEP

Remove all sanding residues from the substrate and stir the varnish and the mixture thoroughly before use.

MIXTURE

IRUFIRE PRIMER IP-1 (10:1 by volume with **CATALIZADOR IRUFIRE).**

IRUFIRE TOP COAT IT-1 (10:1 by volume with **CATALIZADOR IRUFIRE).**

*Add 5–10% of D-202, D-525, 125-DPN or similar thinner to adjust application viscosity.

SPRAYING EQUIPMENT

All types of spraying equipment (air spray, airmix and airless).

1ST COAT – BASECOAT

Apply a weight of 80-100 g/m² of **IRUFIRE PRIMER IP-1** (10:1 with **CATALIZADOR IRUFIRE**).

DRYING, CURING AND SANDING

Cure for 24 hours, lightly sand with flexible 280–320 grit sandpaper, and remove any residues with a vacuum cleaner or compressed air.

2ND COAT - TOP COAT

Apply a weight of 80-100 g/m² of **IRUFIRE TOP COAT IT-1** (10: 1 with **CATALIZADOR IRUFIRE**).

DRYING AND FINAL CURING

Allow to cure overnight (16-20 h) before handling.

GENERAL PROPERTIES

- Completely halogen-free process (chlorinated or brominated compounds).
- Excellent wetting properties, transparency, thixotropy, smoothness, surface hardness and uniform appearance.
- High resistance to abrasion, scuffs and scratches.
- No yellowing: the acrylic–aliphatic nature of the products that make up the process makes it unalterable under light exposure.

DEGREES OF GLOSS

Various degrees of gloss.

COLOUR

Clear or pigmented. Compatible with the “PASTA PIGMENTARIA 9700” range for formulating paints according to various colour charts (RAL, NCS, etc.). Included in the KOLORE tinting system.

kolore

TESTING

The process has been tested applied on fire retardant treated pine (classified as B-s1,d0 in accordance with European Standard UNE 13501-1 (Euroclasses)).

Testing was carried out at AFITI (Report 4765T23-2).

AFITI

RESULT

Fire classification B-s1,d0 (as per EN 13501-1 (Euroclasses))

IRUFIRE AQUA REAL & INTEGRAL B-s1,d0 INT-1

Process based on single-component water-based products, including a vinyl primer and an acrylic finish, developed to produce **pigmented** coatings suitable for indoor wood surfaces and their derivatives.

Start with wood **D-s2,d0** >>> FIREPROOFING PROCESS **IRURENA** >>> Achieve classification **B-s1,d0**

SUBSTRATE

For indoor use, suitable for all types of wood substrates, their derivatives (density 510 kg/m³ or higher), or substrates classified as A2-s1,d0 or A1.

* Do not apply to products with moisture content exceeding 15%.

INITIAL STEP

Sand the wood with fine grit sandpaper (240-280) for greater coverage. Remove any traces of dirt, grease, sanding residue, etc.

APPLICATION EQUIPMENT

All types of spraying equipment (air spray, airmix and airless)

1ST COAT – PRIMER

Apply 350-400 g/m² of wet **IRUFIRE AQUA PRIMER INT-1 WHITE** to the exposed face as the first coat, allowing 2-3 hours between coats. Do not apply in cold, damp environments.

DRYINGAND SANDING

Allow to cure for at least 2-6 hours. It is advisable to sand lightly (280-320 grit) for higher surface quality. Drying time depends on the substrate type and environmental conditions.

2ND COAT - TOP COAT

Apply 1 wet coat of 80-100 g/m² of **IRUFIRE AQUA TOPCOAT AQUA INT-1 (colour).**

DRYING AND FINAL CURING

Allow to cure for at least 24-48 hours.

GENERAL PROPERTIES

- Completely halogen-free process (chlorinated or brominated compounds).
- Excellent elasticity and adhesion properties on wood, as well as high colour stability.
- Fast drying.
- Odourless when applying.

DEGREES OF GLOSS

Various degrees of gloss.

COLOURS

Colours (pigmented). Compatible with the range“URAPAST W-900” range for formulating paints according to various colour charts (RAL, NCS, etc).

TESTING

The process has been tested on chipboard that complies with the requirements for a “standard substrate” as defined in EN 13238, “Fire reaction tests for construction products. Conditioning procedure and general rules for selecting substrates”.

Testing was carried out at AFITI (Report 5260T24-2).

AFITI

RESULT

Fire classification B-s1,d0
(as per EN 13501-1 (Euroclasses))

IRUFIRE REAL B-s1,d0 AQUA INT-2

Process based on single-component water-based products, including a vinyl primer and an acrylic finish, developed to produce **clear** coatings suitable for indoor wood surfaces and their derivatives.

Start with wood **D-s2,d0** >>> FIREPROOFING PROCESS **IRURENA** >>> Achieve classification **B-s1,d0**

SUBSTRATE

For indoor use, suitable for all types of wood substrates, their derivatives (density 510 kg/m³ or higher), or substrates classified as A2-s1,d0 or A1.

* Do not apply to products with moisture content exceeding 15%.

INITIAL STEP

Sand the wood with fine grit sandpaper (240-280) for greater coverage. Remove any traces of dirt, grease, sanding residue, etc.

APPLICATION EQUIPMENT

All types of spraying equipment (air spray, airmix and airless)

1ST COAT – PRIMER

Apply 60–80 g/m² of **IRUFIRE AQUA ISOLATOR INT-2** to the exposed surface.

DRYING AND SANDING

Allow to cure for 2–3 hours. Sand lightly (grit 280–320).

2ND COAT – BASE COAT

Apply 350-400 g/m² of wet **IRUFIRE AQUA PRIMER INT-1 WHITE** to the exposed face as the first coat, allowing 2-3 hours between coats. Do not apply in cold, damp environments.

DRYING AND SANDING

Allow to cure for at least 2-6 hours. It is advisable to sand lightly (280-320 grit) for higher surface quality. Drying time depends on the substrate type and environmental conditions.

3RD COAT - TOP COAT

Apply 1 wet coat of 80-100 g/m² of **IRUFIRE AQUA TOPCOAT AQUA INT-1 (colour).**

DRYING AND FINAL CURING

Allow to cure for at least 24-48 hours.

GENERAL PROPERTIES

- Completely halogen-free process (chlorinated or brominated compounds).
- Excellent elasticity and adhesion properties on wood, as well as high colour stability.
- Fast drying.
- Odourless when applying.

DEGREES OF GLOSS

Various degrees of gloss.

COLOURS

CLEAR OR TRANSPARENT TINTED COLORS.

TESTING

The process has been tested on chipboard that complies with the requirements for a “standard substrate” as defined in EN 13238, “Fire reaction tests for construction products. Conditioning procedure and general rules for selecting substrates”.

Testing was carried out at AFITI (Report 5503T25-2).

AFITI

RESULT

Fire classification B-s1,d0 (as per EN 13501-1 (Euroclasses))

IRUFIRE INTEGRAL B-s1,d0 AQUA INT

Process based on a single-component water-based acrylic product developed for finishing fire treated wooden substrates that have as final use the coating of indoor walls and ceilings.

Start with wood **B-s1,d0** >>> FIREPROOFING PROCESS **IRURENA** >>> We mantain the classification **B-s1,d0**

SUBSTRATE

Fire retardant treated substrate with classification B-s1,d0.
*Do not apply to products with moisture content exceeding 12%.

INITIAL STEP

Remove all sanding residues from the substrate and stir the varnish and the mixture thoroughly before use.

APPLICATION EQUIPMENT

All types of spraying equipment (air spray, airmix and airless)

APPLICATION – BASECOAT AND TOPCOAT

Apply a total weight of 80-100 g/m² of **IRUFIRE INTEGRAL B-s1,d0 AQUA INT.** This process can be done with 1 to 2 coats.

DRYING, CURING AND SANDING

In case of applying 2 coats, let the first layer cure overnight (16-20 h.) to promote adhesion and sand with 280-320 grit sandpaper. Allow to cure for at least 16-20 hours behor handling.

EU Ecolabel www.ecolabel.eu

GENERAL PROPERTIES

- Completely halogen-free process (chlorinated or brominated compounds).
- Excellent wetting properties, transparency, thixotropy, smoothness, surface hardness and uniform appearance.
- High resistance to abrasion, scuffs and scratches.
- No yellowing: the acrylic–aliphatic nature of the products that make up the process makes it unalterable under light exposure.
- Very good touch and silkiness.

DEGREES OF GLOSS

Various degrees of gloss.

COLOURS

Clear or pigmented. Compatible with the range "URAPAST W-900" for formulating paints according to various colour charts (RAL, NCS, etc). Included in the KOLORE tinting system.

kolore

TESTING

The process has been tested applied on fire retardant treated pine (classified as B-s1,d0 in accordance with European Standard UNE 13501-1 (Euroclasses)).

Testing was carried out at AFITI (Report 4079T20-2).

AFITI

RESULT

Fire classification B-s1,d0 (as per EN 13501-1 (Euroclasses))

IRUFIRE REAL FLOORING Bfl-s1 AQUA

Process based on acrylic two-component products, a acrylic base and polyurethane finish, developed to obtain varnished wooden indoor floors and parquet.

Start with wood **Dfl-s1** >>> FIREPROOFING PROCESS **IRURENA** >>> Achieve classification **Bfl-s1**

SUBSTRATE

All types of wood based substrates for interior flooring coating (density 510 kg/m³ or higher), or substrates classified as A2-s1,d0 or A1.

* Do not apply to products with moisture content exceeding 12%.

INITIAL STEP

Prepare the wood by sanding. It is recommended to refine with fine grain to obtain greater filling and coverage. Remove traces of dirt, grease, remains from sanding, etc. the microcement must be dry, humidity less than 2.5%

MIXTURE

IRUFIRE FLOORING PRIMER IFAP-1 AQUA (10:1 by volume with **HARDENER IRUFIRE FLOORING).**

IRUFIRE FLOORING PRIMER IFAP-1 AQUA (10:1 by volume with **HARDENER IRUFIRE FLOORING).**

APPLICATION EQUIPMENT

Brush and roller.

1ST COAT – BASECOAT

Apply 80-90 g/m² of wet **IRUFIRE FLOORING PRIMER IFAP-1 AQUA** (10:1 by volume with **HARDENER IRUFIRE FLOORING**).

DRYING, CURING AND SANDING

Allow to cure for at least 6 hours. For the best quality, it is preferable to allow 16 hours. Drying time depends on the substrate type and environmental conditions.

Drying is influenced by the type of substrate and environmental conditions. It is recommended to heat and provide some ventilation to the premises to ensure the evaporation of water and obtain a good film formation

Sand with vibrating, orbital, polishing machines or by hand. Carry out sof sanding with fine sandpaper (280 or higher grit).The use of sandpaper with stearate or mesh minimizes the clogging of the same.

2ND COAT - TOPCOAT

Apply the 2 oats of 70-80 g/m² of **IRUFIRE FLOORING TOPCOAT IFAT-1 AQUA** finish (mix 10:1 with **HARDENER IRUFIRE FLOORING**) with an interval of 16 hours.

DRYING AND FINAL CURING

To obtain an optimum quality of varnishing, the temperature during the application and drying must be controlled to be kept at 15-30 ºC and the relative humidity below 70%. After application of the las coat, allow to cure at least 48 hours to obtain adequate scratch resistance.

GENERAL PROPERTIES

- Completely halogen-free process (chlorinated or brominated compounds).
- Excellent wetting properties, transparency, thixotropy, smoothness, surface hardness and uniform appearance.
- Excellent resistance to abrasion, scuffs, scratches and heel marks.
- High anti-tannin efficacy in problematic woods.

DEGREES OF GLOSS

Various degrees of gloss.

COLOUR

Clear.

TESTING

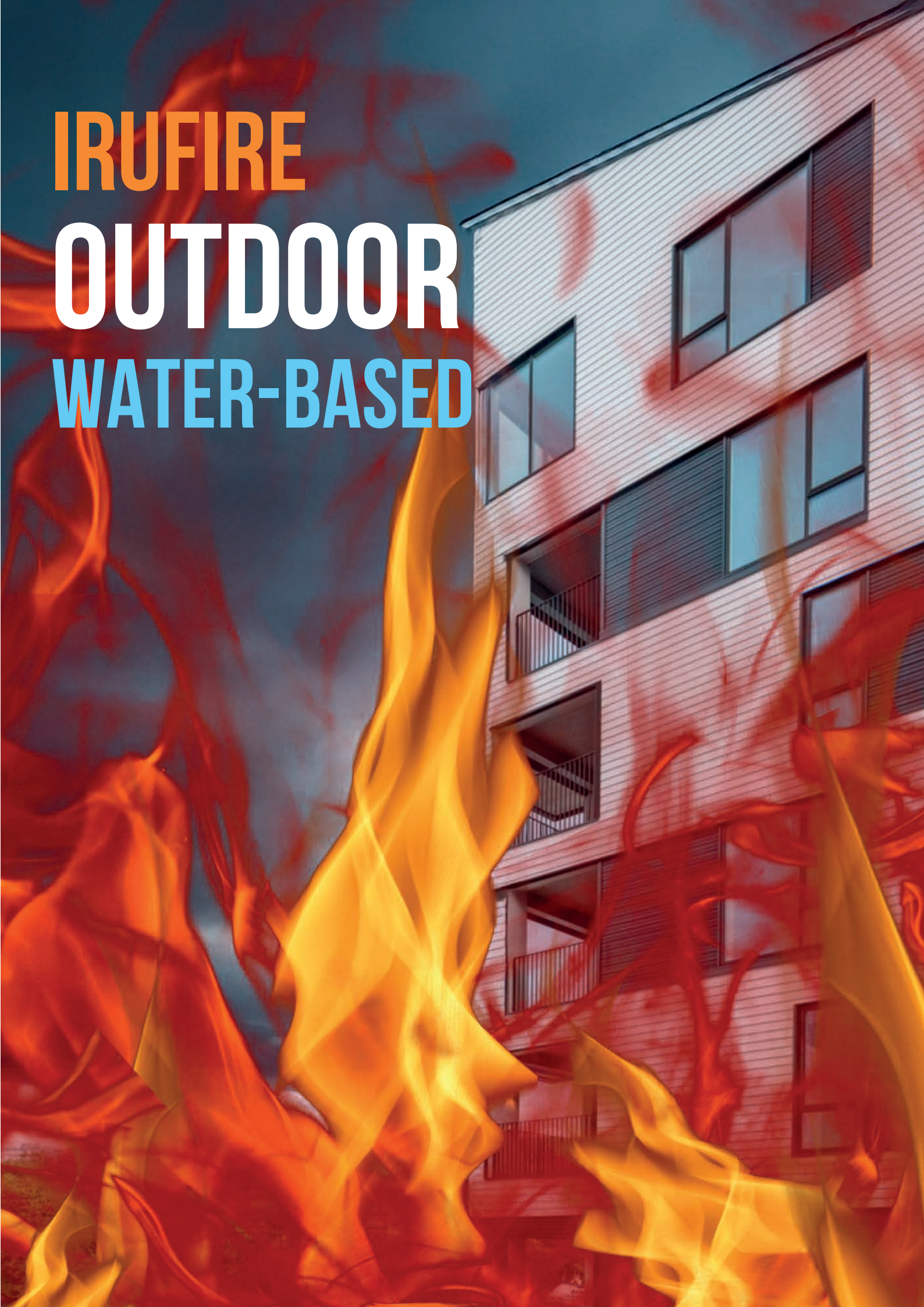
The process has been tested on chipboard that complies with the requirements for a “standard substrate” as defined in EN 13238 and classified as D-s2,d0.

Testing was carried out at AFITI (Report 4176T20-2).

AFITI

RESULT

Fire classification B-s1,d0
(as per EN 13501-1 (Euroclasses))


IRUFIRE
OUTDOOR
WATER-BASED

IRUFIRE REAL & INTEGRAL C-s1,d0 AQUA EXT

Process based on single-component water-based acrylic products, developed to produce pigmented coatings suitable for use on wood surfaces and their derivatives, for indoor or outdoor applications.

Start with wood **D-s2,d0** >>> FIREPROOFING PROCESS **IRURENA** >>> Achieve classification **C-s1,d0**

SUBSTRATE

For indoor use, suitable for all types of wood substrates, their derivatives (density 338 kg/m³ or higher), or substrates classified as A2-s1,d0 or A1.

For outdoor use, avoid woods with unknown behaviour, woods that inherently possess low durability in extreme conditions, or those rich in tannins or extractives.

* Do not apply to products with moisture content exceeding 15%.

INITIAL STEP

Sand the wood with fine grit sandpaper (240-280) for greater coverage. Remove any traces of dirt, grease, sanding residue, etc.

APPLICATION EQUIPMENT

Spray equipment, brush and roller.

1ST COAT – PRIMER

Apply 135-165 g/m² of wet **IRUFIRE PRIMER AQUA EXT- 1** to the back side as the first coat. Then apply 380-420 g/m² of wet **IRUFIRE PRIMER AQUA EXT-1** to the exposed face, allowing 1-4 hours between coats. Do not apply in cold, damp environments.

DRYING, CURING AND SANDING

Allow to cure for at least 2-6 hours. It is advisable to sand lightly (280-320 grit) if left for more than 16 hours. Drying time depends on the substrate type and environmental conditions.

2ND COAT - TOP COAT

Apply 1 wet coat of 135-165 g/m² of **IRUFIRE TOPCOAT AQUA EXT-1 (colour).**

DRYING AND FINAL CURING

Allow to cure for at least 24-48 hours.

GENERAL PROPERTIES

- Completely halogen-free process (chlorinated or brominated compounds).
- Effective protection against atmospheric elements (weather).
- Excellent elasticity and adhesion properties on wood, as well as high colour stability.
- Fast drying.
- Odourless when applying.

DEGREES OF GLOSS

Semi gloss.

COLOUR

Colours (pigmented). Compatible with the "URAPAST W-900" range for formulating paints according to various colour charts (RAL, NCS, etc.).

TESTING

The process has been tested on plywood board that meets the requirements for a "standard substrate" as defined in EN 13238 "Fire reaction tests for construction products. Conditioning procedure and general rules for selecting substrates".

Testing was carried out at FCBA (Report 23/RC-25-v2-fs).

RESULT

Fire classification C-s1,d0 (as per EN 13501-1 (Euroclasses))

APPLICATIONS

SINCE 1969
IRURENA
WOOD COATINGS

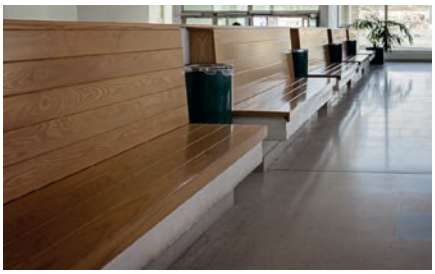
The IRURENA coatings are applied to walls and ceilings, and to furniture of different centres or institutions.

HOUSING

NEW BUILDING

HOTELS

PUBLIC WORKS



AMPHITHEATRES

SCHOOLS

SPORTS CENTERS

HOSPITALS

AIRPORTS

OFFICES

RESTAURANTS

RESIDENCES

MUSEUMS

UNIVERSITIES

HOSTELS AND BUNGALOWS

HOUSING FACADES

BUILDING FACADES

CEILINGS

FREQUENTLY ASKED QUESTIONS

SINCE 1969
IRURENA
WOOD COATINGS

Why impregnated wood with fire retardant?
To reduce its flammability and avoid the probability of fire spreading.

There are woods that burn more easily than others, why?
Many reasons. First, the different species of wood have different densities, the lighter ones have a larger volume of pores which allow greater mobility of gases, some flammable, when released. Secondly, the moisture content of each species also has its influence, a higher water content decreases combustibility.

What are the classifications and the market reality?
The documentation provided by the manufacturer of the system must be clear, easy to understand, assimilate and above all, truthful.

When is the concept of REACTION applied and when that of RESISTANCE?
The reaction to fire shows the behaviour of the material when exposed to a direct flame, while the resistance to fire measures the time during which a building system is able to resist fire.

Smoke levels are quantified as s1, s2 and s3 according to their density. How important is it that they are exempt from halogen compounds (chlorinated and brominated)?
In addition to smoke opacity, affecting visibility during a fire, another equally important factor is their toxicity.

For many years, and still today, substances containing halogenated compounds have been used which, in contact with fire, decompose and eventually generate hydrochloric and hidrobromic acids, very abrasive to the respiratory system. One must remember that over half of deaths in fires are due to gases and fumes released.

Which classification according to Euroclasses is sufficient for the european standard?
The minimum requirement will be defined by the legislation of each of country, which above the regional difference, must comply with the European Directives.

What to consider in these fire retardant varnish processes and systems?
It is very important to respect both the grammages and the drying/curing times of the various products that compose the process.

Is it feasible to harmonize the transparency of the process, the appearance, colour and brightness, with protection agains fire?
Until recently, fire retardant processes for wood with high fire protection and acceptable transparency did not exist. Involving raw material manufacturers and through a proper formulation of the products developments are being made with ever better performance.

IRURENA. OCT. 2025

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