ISF TECHNICAL DATA SHEET

Euro-Fire EF1 Flame Retardant System

FEATURES

- Maintaining system to Euro Class B-s1,d0
- Upgrading system on ALL timbers to Euro Class B-s1,d0
- Two pack PU Acrylic system
- Good flow & excellent film clarity
- Available in Clear & Promatch systems

USES	Interior wooden structures, panels, walls & ceilings.
TOPCOAT	Euro-Fire EF1 Clear Topcoat Euro-Fire EF1 Promatch Topcoat
BASECOAT	Euro-Fire EF1 Clear Basecoat Euro-Fire EF1 White Basecoat Euro-Fire EF1 Grey Basecoat Euro-Fire EF1 Black Basecoat Euro-Fire EF1 Promatch Basecoat
ISOLATOR	Euro-Fire EF1 Clear Isolator (See below 'System Guidance')
THINNER FOR SYSTEM	Euro-Fire EFT Thinners
CLEANER FOR EQUIPMENT	ISF Spray Gun & Brush Cleaner
APPLICATION EQUIPMENT	Conventional airless / air mix or HVLP spray equipment Wet Film Gauge or Scales for film weight checks
MIX RATIO / POT LIFE	Euro-Fire EF1 Basecoat & Topcoat - 10:1 by volume (24 hours Pot life) Euro-Fire EF1 Clear Isolator - 5:1 by volume (4 hours Pot life)

INFORMATION

Stir & Mix the products well prior to use. Once mixed with Euro-Fire EF1 Catalyst the viscosity may be adjusted with Euro-Fire EFT Thinners by up to 10%.

Do not apply on substrates containing >12% Moisture content

Euro-Fire EF1 Topcoat Clear is available in any gloss level from DEAD MATT through to 85%.
Euro-Fire EF1 Topcoat Promatch is also available in any colour through the gloss levels as above.

Euro-Fire EF1 Clear Basecoat & Clear Topcoats can be tinted using ISF Light Fast Woodstain (300 Range Solvent) to a concentration of no more than 5% volume to help with colour shading.

- The product inhibits excellent wetting properties, transparency, smoothness, and appearance.
- Good resistance to abrasion, rubbing and scratching as associated with characteristics of a PU Acrylic.
- The Acrylic-aliphatic nature of the product is characterised by an excellent yellowing resistance.
- HFR (Halogenated Flame Retardants) compounds are not used within these products.

APPLICATION PROCESSES

Maintain System:

The below system process enables the maintaining of the European fire reaction classification B-s1,d0 of fire retarded wooden substrates classified as B according to UNE-EN 13501-1:2019 standard.

Apply 70-120 gr/m² (50-100 microns WFT) of Euro-Fire EF1 Basecoat Clear, White, Grey or Black.
Allow to cure overnight (24 hours) and lightly sand with 320 grit sandpaper.
Blow over with pressurized air / Tak rag accordingly.
Apply 70-100 gr/m² (50-75 microns WFT) of Euro-Fire EF1 Topcoat Clear or Promatch.

Maintain Coverage:

Euro-Fire EF1 Clear Basecoat - Approx 9-11 sqm/lt
Euro-Fire EF1 Clear Topcoat - Approx 10-12 sqm/lt
Euro-Fire EF1 Promatch Topcoat - Approx 10-12 sqm/lt

Upgrade System:

The below system process enables the upgrade fire reaction B-s1,d0 classification of ALL non-fire retarded wooden supports classified as D-s2,d0 with a density equal to or higher than 510kg/m³. The same classification B-s1,d0 is obtained for this process applied on any metallic substrate or any A2-s1,d0 classified substrate (fiber cement, calcium silicate board or gypsum plasterboard type). Adhesion tests must be carried out on the different supports.

Apply 60-80 gr/m² (55-85 microns WFT) of Euro-Fire EF1 Clear Isolator *(Advised for optimal performance).*
Allow 2-3 hours to fully dry – *No requirement to denib unless left longer than 16 hours.*
Apply 180-210 gr/m² (125-150 microns WFT) of Euro-Fire EF1 Basecoat Clear, White, Grey or Black.
Allow 1-2 hours to flash off - *If left longer than 4-6 hours after the application of the first "Euro-Fire EF1" Basecoat, a light denib with 320 grit sandpaper is required.*
Apply 180-210 gr/m² (125-150 microns WFT) of Euro-Fire EF1 Basecoat Clear, White, Grey or Black.
Allow to cure overnight (24 hours) and lightly sand with 320 grit sandpaper.
Blow over with pressurized air / Tak rag accordingly.
Apply 70-100 gr/m² (50-75 microns WFT) of Euro-Fire EF1 Topcoat Clear or Promatch.

Upgrading Coverage:

Euro-Fire EF1 Clear Isolator - Approx 10-12 sqm/lt
Euro-Fire EF1 Clear Basecoat - Approx 2-3 sqm/lt (Total)
Euro-Fire EF1 Clear Topcoat - Approx 10-12 sqm/lt
Euro-Fire EF1 Promatch Topcoat - Approx 10-12 sqm/lt

**Please note the above coverage rates are an approximation and will vary through different systems*

Euro-Fire EF1 Clear Isolator:

The clarity of the process is influenced by the Euro-Fire EF1 Basecoat as this contains the Fire Additive ingredients, however the influence of other factors must also be considered:

- Moisture content of the timber substrate.
- Natural tannin content for the timber species.
- Impregnated timber using dyes or pigments.

Wood is naturally hygroscopic, so it gains or loses water moisture as the surrounding air's relative humidity (RH) changes. The presence of moisture within the timber may have different origins: improper drying or conditioning, the use of water-based glues in veneered panels, water-based stains, etc.

To compound this further the chemical nature of the Euro-Fire EF1 Basecoat is also hygroscopic so we have two areas which work in the very same way. Unfortunately, though these factors are extremely affective in the event of a fire, we must be able to control this influence within the finished aspect.

Excessive moisture or tannin extract encountering the Euro-Fire EF1 Basecoat will result in a 'Blushing' effect within the coating finish. In most cases this will only become evident sometime after the final installation when the finished panels have acclimated to the surrounding conditions.

With the Euro-Fire EF1 Clear Isolator we prevent this contact so the initial clarity of the coating and the clarity during the lifetime of the coated product will be improved. Furthermore, the Euro-Fire EF1 Clear Isolator enhances the timber colour better than the Euro-Fire EF1 basecoat so the aspect for darker timbers will be improved.

It is strongly advised, for optimal performance, that a full even coat of EF1 Isolator is applied to ALL surfaces, including edges, to ensure the Timber is fully encapsulated helping to reduce any ingression of moisture. Final fixing positions should be noted where possible avoiding direct contact with external brickwork or areas prone to damp conditions.

Please feel free to discuss the above in more detail with your local ISF Sales representative or the ISF Technical Support Team.

Classification of tested substrate achieved:
Euro-Fire EF1 Upgrade system + Isolator (without Air-Gap): B-s2,d0.

Euro-Fire EF1 – Life span:

To quote a life span for a coating system is very difficult as you need to consider many factors based on the 'Wear & Tear' at the end location.

Acrylic products have excellent wear resistance and are used for coating tabletops, worktops, etc. and their life span is many years, and this behaviour is obtained for surfaces which are suffering constant abrasion and cleaning.

So, an acrylic topcoat such as EF1 EURO-FIRE TOPCOAT applied on a wall or ceiling, where it will suffer considerably less abrasion and cleaning would last much longer.

Based on this assumption it could be stated that an 'indefinite Life span' should be expected however cleaning procedures must be maintained as per the Technical Data avoiding the use of harsh bleach-based products.

With respect to the additive's reaction to fire, there is no requirement to re-coat after a set period of time to maintain this, providing the surface has not been physically damaged.

*Note - In the case of damage to the surface, then it would be recommended to re-apply the FULL system:

EXTENDED TESTING

Euro-Fire EF1 – Air-Gaps:

The below results are based on the current system application weights above for (Maintain & Upgrade) with the **face side coated only.** There is no requirement to coat the rear side of the panels to achieve the rating below.

Maintaining (40 mm air-gap) with steel fixing: B-s1,d0.
Maintaining (80 mm air-gap / free standing) with steel fixing: B-s1,d0.
Maintaining (40 mm air-gap) with wooden fixing (fire treated): B-s1,d0.

Upgrading (40 mm air-gap) with steel fixing: B-s2,d0.
Upgrading (80 mm air-gap / free standing) with steel fixing: B-s2,d0.

*Upgrading (40 mm air-gap) with a wooden fixing non-fire treated: will only achieve a C-s2-d0 so it is advised that either Steel fixings are used, or the wooden fixings are of a Euro Class B spec or coated with 1 coat of the Euro-Fire EF1 basecoat.

Euro-Fire EF1 – Veneer:

To obtain a 'B', 'C' or 'D' classification, EN ISO 11925-2 and EN 13823 standards must be performed. The results obtained will designate the classification, depending on the criteria specified in the EN 13501-1 standard.

Taking into consideration the information described above, ISF Group Ltd selected 'FIMAPAN' particle board as a standard substrate to perform the different fire tests according to the Euro classes. This substrate fulfils the different conditions which appear in the standard EN 13238 to be a standard substrate highlighted in the table 'List of standard substrates for wall and ceiling surface products' and 'Rules applying to standard substrates for wall and ceiling surface products.

FIMAPAN particle board is a non-fire-retardant treated board with a thickness of 12 mm, a density of 710kg/m3, and classified as D-s2,d0 (verified compliance within the EN 13238 standard).

Moreover, according to what the standard specifies, this standard substrate (particle board) represents ALL wooden substrates with a density greater than 510kg/m^3 and any substrate classified as A1 and A2-s1, d0. To satisfy independent enquires we have 'Formal tested' an Oak Veneered substrate to ensure our system does meet the above standard criteria.

Classification of tested substrate achieved:
Euro-Fire EF1 Upgrade system (without Air-Gap): B-s2,d0.

FURTHER INFORMATION

Final check points before, during & after use:

- Proper mixing of the products and mixture.
- Ensure 'Pump' filters are not finer than 150 microns.
- Use the recommended quantity of hardener (no lower proportion).
- Avoid diluting the mixture of the basecoat with thinner proportions >10%.
- Low moisture content of the timber <12%.
- Allow proper drying times when using Water Borne glues or stains.
- Application of the isolator to encapsulate the timber.
- Apply the product's homogeneously / evenly over the surface.
- Avoid application of the topcoat >24 hours application of the basecoat.
- Maintained Relative Humidity (RH) of 40% – 70%.
- Avoid contact with water of the applied pieces (also packaged pieces).
- The surface area where the panels are to be placed must be dry.
- Re-apply the coating to any cut edges that are trimmed on site.

CLEANING AND MAINTENANCE

General Cleaning:

It is recommended that when required the finished surface should only be wiped with a soft lint free polishing cloth to remove any light surface dust residue.
If required the cloth may be dampened, not soaked, with a little warm water.
Neutral cleaning detergents with low amounts of alcohol or waxes can also be used (test area would be advised).
Then simply buff up the surface with a clean dry polishing cloth.

Caution:

Never leave the surface exposed to water or any other substance for long periods of time, always wipe up any spillages immediately.
Do not use any household cleaners such as bleaches, strong detergents, or any abrasive type cleaners as this could permanently damage the finished lacquered surface beyond repair.
Polishes or waxes should also be avoided as they can build up on the surface of the lacquer finish and potentially soak into any open grain areas of the timber substrate which could have adverse effects on the fire rated surface should a fire occur.

Should any stubborn stains need to be removed it is advisable to contact the ISF Technical Team using the below contact details for further advice regarding additional cleaning requirements.

To meet the guidance of the drying times stated below the operation Temperatures of both the environment and product will need to be within 18°C - 20°C.

Lower or higher Temperatures of either the environment or product will have an impact on the stated drying times. Please speak with the Technical Team on how to manage any adverse changes.

Storage Temperatures should be maintained above 5°C.

All test reports are available on request or via our website www.isf.co.uk

ISF Group Ltd recommend that you read our Appendix & Disclaimer also available on request or via our website www.isf.co.uk before commencement of any projects.

Coverage	Touch Dry	Recoat Time	Max Fire Resistance	Pot Life	Mix Ratio	Shelf Life	Pack Size
As above	20 mins	As above	>60 days	As above	As above	12 months	5 litres

HARDNESS

★★★★☆

ENVIRONMENTALLY FRIENDLY

★★★☆☆

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