VANQUISH

HARDWARE PROTECTION

# TECHNICAL DATA

## FLEXIFIRE HS | FLEXIFIRE HP | FLEXIFIRE HE

ISO 9001 QUALITY MANAGEMENT

UKAS MANAGEMENT SYSTEMS

MADE IN BRITAIN

FLEXIFIRE

## 3rd party Accredited Hardware Protection

FlexiFire is a brand of Graphite-based intumescent, manufactured by Vanquish Hardware Protection Ltd. FlexiFire is the only graphite-based intumescent that has secured 3rd party accreditation through IFC (International Fire Consultants Ltd) specifically for hardware protection under the SDP20 Intumescent Seal & Hardware Protection Kits scheme.

IFC is a UKAS certified accreditation body and covers initial testing and includes audits to assess the consistency of production.

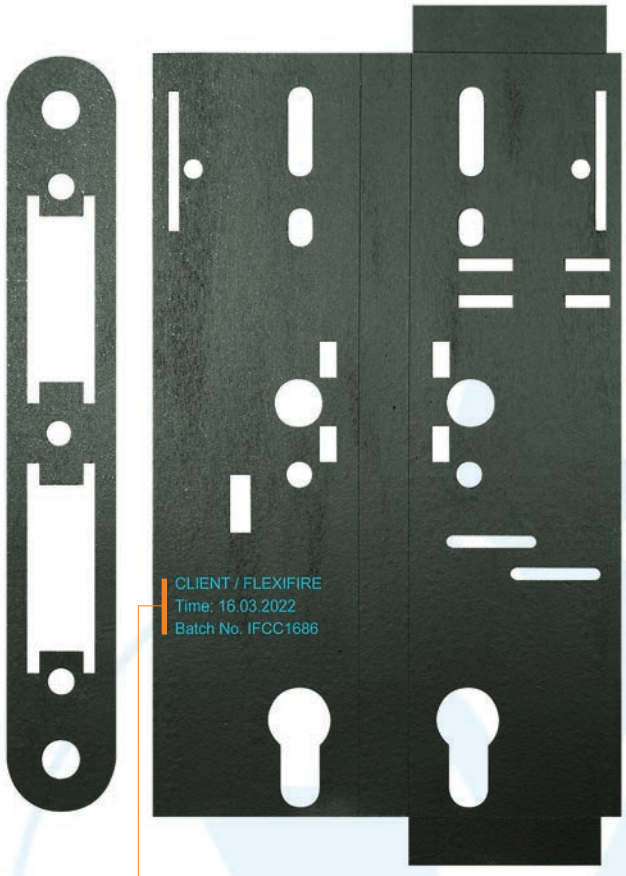
## The advantage of 3rd party accreditation

- Graphite Intumescent is not manufactured to the same specification across manufacturers. E.g. there is no minimum requirement for graphite content.
- Expansion ratios and activation temperatures of different compounds vary greatly which affects the insulation properties and the level of protection against heat transfer.
- All accredited products must be clearly printed on which ensures complete traceability after installation.
- The print must include, time and date of manufacture, the batch number of raw materials and the IFC certificate number.
- This ensures that rigorous quality control measures are followed and that FlexiFire will always react as stated by the manufacturer.
- The IFC certification provides a field of application based on test evidence, this includes 30 and 60 minute applications to BS EN 1643:1 standard.
- The IFC certificate number for FlexiFire is IFCC1686 and can be found on www.ifccertification.com

## How can this benefit you?

- Purchasing intumescent kits with full traceability print allows the end user to be confident that what they're fitting has been successfully tested to the relevant standards
- Fire door inspectors can easily identify the intumescent and check it's compliance to the test evidence
- Our manufacturing facilities are audited annually so strict production procedures must be followed
- Batch testing of all materials is carried out which ensures materials react as specified.

IFC Certification




**Example Certification Details**

1. Client / FlexiFire
2. Time / Date Stamp
3. Batch No. / IFC Certificate No.

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# FLEXIFIRE HS Technical Data

## Description

FlexiFire HS is an extruded flexible sheet PVC compound containing intercalated graphite. Upon heating it creates an intumescent thermal barrier, ideal for the use in hardware protection. The material is flexible for ease of application enabling it to mold to the shape of the hardware. FlexiFire HS is dark grey/ black in colour.

## Application

All ironmongery installed on a fire door must be fitted without compromising the integrity of the complete fire door assembly. FlexiFire HS is an ultra-thin, high-performance intumescent sheet that offers high levels of expansion and insulation, preventing heat transfer. Designed for use on ironmongery rebated into timber doorsets, such as:

- Locks and latches
- Flush bolts
- Concealed door closers

## Properties

- FlexiFire HS will expand up to 20 times its original volume
- When heated to approximately 180°C graphite located at the surface begins to exfoliate increasing progressively as the temperature increases.
- 0.8mm FlexiFire is suitable for 30 & 60 minute timber applications
- Excellent temperature insulation before and after exfoliation
- Safe to handle and easy to use (no PPE required)
- Completely non-toxic, non-fibrous and dust free
- Self extinguishing binder
- Totally inert
- Unaffected by moisture, humidity, atmospheric pollution and other common industrial and household chemical substances.

## Thickness

Manufactured in various thicknesses to meet customer requirements:

- 0.8mm (+0.1/-0.1mm)
- 1.0mm (+0.1/-0.1mm)
- 2.0mm (+0.1/-0.1mm)

*Custom thickness available upon request*

## Testing

FlexiFire HS has been extensively tested to the latest British and European standards as follows:

- BS476 part 22: 1987 - 30 and 60 minute rating
- BSEN 1634-1: 2014 - 30 and 60 minute rating

## Validation Testing

Every batch of FlexiFire HS material undergoes rigorous on-site validation testing to ensure it meets the minimum requirements as described below.

## Thickness Testing

Each batch of FlexiFire HS is measured for thickness using a calibrated vernier. The reading must not exceed the following tolerances:

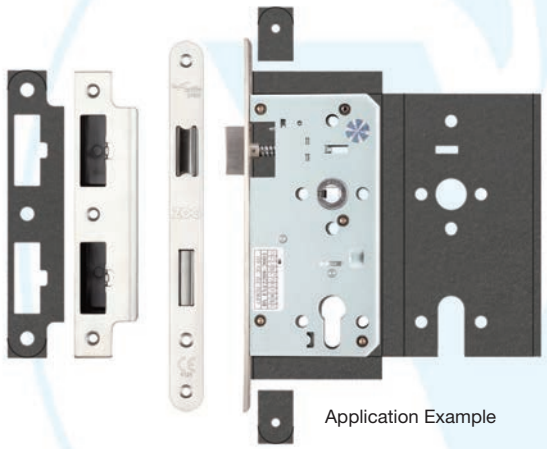
- 0.8mm (+0.1/-0.1mm)
- 1.0mm (+0.1/-0.1mm)
- 2.0mm (+0.1/-0.1mm)

## Expansion Testing

Every batch of FlexiFire HS will have two test samples cut enabling both the activation point and expansion ratio to be measured.

The tolerances of the test are set out below:

| | |
|---|---|
| **Activation Temperature** | 180° (+/-10°) |
| **Expansion Ratio** | >10x Volume |



Application Example

# FLEXIFIRE HP Technical Data

## Description

FlexiFire HP is an extruded flexible PVC compound containing intercalated graphite. Upon heating it creates an intumescent thermal barrier, ideal for the use in hardware protection. The material is flexible for ease of application enabling it to mold to the shape of the hardware. FlexiFire HP is dark grey/ black in colour.

## Application

All ironmongery installed on a fire door must be fitted without compromising the integrity of the complete fire door assembly. FlexiFire HP is an ultra-thin, high-performance intumescent that offers high levels of expansion and insulation. Flexifire HP has been designed for the following applications:

- Hinge pads
- Door viewers
- Graphite only seals

## Properties

- FlexiFire HP will expand up to 20 times its original volume
- When heated to approximately 180°C graphite located at the surface begins to exfoliate increasing progressively as the temperature increases.
- 0.8mm FlexiFire is suitable for 30 & 60 minute timber applications
- Excellent temperature insulation before and after exfoliation
- Safe to handle and easy to use (no PPE required)
- Completely non-toxic, non-fibrous and dust free
- Self extinguishing binder
- Totally inert
- Unaffected by moisture, humidity, atmospheric pollution and other common industrial and household chemical substances.

## Thickness

Manufactured in various thicknesses to meet customer requirements:

- 0.8mm (+0.1/-0.1mm)
- 1.0mm (+0.1/-0.1mm)
- 2.0mm (+0.1/-0.1mm)

*Custom thickness available upon request*

## Testing

FlexiFire HP has been extensively tested to the latest British and European standards as follows:

- BS476 part 22: 1987 - 30 and 60 minute rating
- BSEN 1634-1: 2014 - 30, 60, 90 & 120 minute rating

## Validation Testing

Every batch of FlexiFire HP manufactured undergoes rigorous on-site validation testing to ensure it meets the minimum requirements as described below.

## Thickness Testing

All manufactured batches of FlexiFire HP are measured for thickness using a calibrated vernier.
The reading must not exceed the following tolerances:

- 0.8mm (+0.1/-0.1mm)
- 1.0mm (+0.1/-0.1mm)
- 2.0mm (+0.1/-0.1mm)

## Expansion Testing

Two samples of FlexiFire HP will be taken from every batch produced, enabling both the activation point and expansion ratio to be measured. The tolerances of the test are set out below:

| | |
|---|---|
| **Activation Temperature** | 180° (+/-10°) |
| **Expansion Ratio** | >6x Volume |


Application Example

# FLEXIFIRE HE Technical Data

## Description

FlexiFire HE is an extruded flexible PVC compound containing our highest loading of intercalated graphite. Upon heating it creates a high expansion intumescent thermal barrier, with a strong resistant char. The material is flexible for ease of application enabling it to mold to the shape of the hardware. FlexiFire HE is dark grey/ black in colour.

## Application

All ironmongery installed on a fire door must be fitted without compromising the integrity of the complete fire door assembly. FlexiFire HE is a high-performance intumescent offering our highest level of expansion and insulation. Designed for use on ironmongery with a large aperture and requiring a strong insulating char, such as:

- Letterboxes
- Light fittings.

## Properties

- FlexiFire HE will expand up to 35 times its original volume
- When heated to approximately 180°C graphite located at the surface begins to exfoliate increasing progressively as the temperature increases.
- Excellent temperature insulation before and after exfoliation
- Strong resultant char
- Safe to handle and easy to use (no PPE required)
- Completely non-toxic, non-fibrous and dust free
- Self extinguishing binder
- Totally inert
- Unaffected by moisture, humidity, atmospheric pollution and other common industrial and household chemical substances.

## Thickness

Manufactured in various thicknesses to meet customer requirements:

- 0.8mm (+0.1/-0.1mm)
- 1.0mm (+0.1/-0.1mm)
- 2.0mm (+0.1/-0.1mm)

*Custom thickness available upon request*

## Testing

FlexiFire HE has been extensively tested to the latest British and European standards as follows:

- BS476 part 22: 1987 - 30 and 60 minute rating
- BSEN 1634-1: 2014 - 30 and 60 minute rating

## Validation Testing

Every batch of FlexiFire HE produced undergoes rigorous on-site validation testing to ensure it meets the minimum requirements as described below.

## Thickness Testing

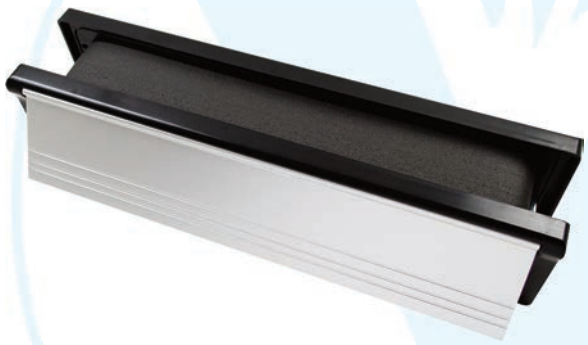
Every batch of FlexiFire HE produced is measured for thickness using a calibrated vernier. The reading must not exceed the following tolerances:

- 0.8mm (+0.1/-0.1mm)
- 1.0mm (+0.1/-0.1mm)
- 2.0mm (+0.1/-0.1mm)

## Expansion Testing

Two samples of FlexiFire HE will be taken from every batch produced, enabling both the activation point and expansion ratio to be measured. The tolerances of the test are set out below:

| | |
|---|---|
| **Activation Temperature** | 180° (+/-10°) |
| **Expansion Ratio** | >20x Volume |



Application Example

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FLEXIFIRE from: VANQUISH

HS HP HE

# Material Safety Data

## Composition/Information on Ingredients

**Chemical Nature:**
Thermoplastic element composition containing intercalated graphite in a synthetic compound with the addition of fillers and process oils. Supplied with an acrylic self-adhesive backing on request.

## Possible Hazards

Not subject to decree of hazardous substances.
**Critical hazard of Man and Environment:** Not Applicable.

## First Aid Measures

| | |
|---|---|
| **On skin contact:** | Not applicable. |
| **On contact with eyes:** | Not applicable. |
| **On ingestion:** | Not applicable. |
| **If inhaled:** | Not applicable in solid state. |

## Fire Fighting Measures

**Suitable Extinguishing Media:**
Water, foam, powders and dry extinguishing media.

**Special Protective Equipment:**
Suitable forms of PPE (Personal protective equipment). Avoid inhalation of smoke or fumes. In the event of a fire, contact the appropriate emergency services for assistance.

## Accidental Release Measures

**Personal Precaution:**
In the event of a fire ensure sufficient ventilation.

**Environmental Precaution:**
Do not discharge the product into drains or water courses, ensure materials are disposed of in accordance with Local Authority regulations and/or Government Legislation.

**Method for cleaning up:** No special measures necessary.

## Handling and Storage

| | |
|---|---|
| **Handling:** | No special requirements. |
| **Storage:** | Store dry in a cool place (not above 35°c). |

## Exposure Controls and Personal Protection

| | |
|---|---|
| **Respiratory protection:** | Not applicable. |
| **Hand Protection:** | Not applicable. |
| **Eye Protection:** | Not applicable. |
| **Skin Protection:** | Not applicable. |

## Physical and Chemical Properties

| | |
|---|---|
| **Form** | Solid |
| **Colour** | All colours |
| **Odour** | Acidic |
| **Density** | 1.3 specific gravity |

## Stability and Reactivity

**Temperature tolerance:** Thermal decomposition above 180°c.
**Hazardous decomposition Products:** Thermal decomposition fumes contain Hydrogen Chloride. However, the activated graphite is effective at removing aromatic particles from smoke emissions.

## Toxiological Information

**Acute Toxicity:** Not applicable in solid state.

## Ecological Information

**General Advice:** Observe the legal provisions regarding the prevention of ground water and surface water as well as air. Do not discharge products into natural waters without pre-treatment.

## Disposal Considerations

**Recommendations:** Disposal of by special means in accordance with local regulations e.g. suitable deposition.

## Transport Information

**Transport Hazards:** No regulations apply for the transport of this material. Not classified as hazardous for road, rail, sea or air transport.

## Regulatory Information

**Labelling according to EEC directives:**

| | |
|---|---|
| **National Legislation/Regulations** | Not applicable |
| **VbF Classifications** | None |
| **Water Hazard Class** | Not applicable |

## Additional Information

The information contained herein is based upon the present state of our knowledge. Recipients of our products must take responsibility for observing existing laws and regulations.