



FOR ON-SITE & OFF-SITE
APPLICATION

SYSTEM S

decorative fire protection
FOR STRUCTURAL STEEL
external and internal use

Nullifire[®]

TAKING THE LEAD IN BETTER FIRE PROTECTION

Innovative, thin-film
Nullfire System S
intumescent Basecoats
offer fast applied,
robust fire protection
and decoration for
structural steelwork



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PROTECTION AND DECORATION

The Nullfire System S range of intumescent Basecoats provide unrivalled choice, performance and reliability for the protection of all forms of structural steelwork.

- Independently tested and certified to BS476 Part 20-21: 1987 and ASFP 'Yellow Book' approved 30,60,90 and 120 minutes protection

HI-BUILD TECHNOLOGY

- Maximum protection from a space-saving thin film with many applications requiring only a single coat

ON-SITE AND OFF-SITE APPLICATION

All System S solvent-based products – S605, S606 and S706 – are also available for off-site application.

Depending upon the project, off-site application can provide valuable benefits by eliminating delays and disruption to other trades during application and curing.

- Avoiding wet trade constraints on site, including delays and proximity issues in connection with other trades or the general public
- Eliminating possible health and safety issues associated with on-site application

In addition, off-site application under factory conditions can offer greater control over consistency of finish, with fewer site quality control checks required.

For expert advice on the most cost-effective solution – on-site or off-site – for a particular project, contact Nullfire: Tel 024 7685 5000.

VERSATILE SYSTEM WITH PROVEN PERFORMANCE

Nullfire has pioneered the use of intumescent coatings for the decorative fire protection of structural steelwork for a generation.

System S Basecoats provide a durable and attractive surface, similar to a paint finish. However, in a fire, they expand to many times their original film thickness. This provides an insulating foam-like coating or 'char' to protect steelwork against heat build-up and the effects of fire.

SMOOTH, ROBUST FINISH

System S intumescent Basecoats provide an ideal base for decorative top seals. Enabling the architect to use the structural steelwork as an integral part of the building design.

- The robust quality of the surface also means a top seal is not required in non-decorative areas of C1 and some C2 buildings

		On-Site and Off-Site		
		S605 Solvent-Based Intumescent Basecoat	S606 Solvent-Based Intumescent Basecoat	S706 Solvent-Based Intumescent Basecoat
Properties	Area of Use	Internal or External	Internal or Semi-exposed	Internal or Semi-exposed
	Specific Gravity S.G	1.36	1.36	1.39
	Volume Solids	68%	68%	70-72%
	Flash Points	30°C	30°C	30°C
	Colour	Very pale green	Pale pink or White	White
Technical	Preparation	Onto clean dry compatible primer	Onto clean dry compatible primer	Onto clean dry compatible primer
	WFT/Coat µm	Brush: <375 Spray: <1100	Brush: <375 Spray: <1100	Brush: <750 Spray: <1500
	DFT/Coat µm	Brush: <255 Spray: <748	Brush: <255 Spray: <748	Brush: <525 Spray: <1050
	Drying Times	*24 hours between coats at >10°C	*24 hours between coats at >10°C	*24 hours between coats at >10°C
	Over Coating	Minimum 3 days at >10°C before top coat. Heavy loadings may need longer	Minimum 3 days at >10°C before top coat. Heavy loadings may need longer	Minimum 2 days at >10°C before top coat. Heavy loadings may need longer
	Fire Performance	30, 60, 90 and 120 minutes	30, 60, 90 and 120 minutes	30, 60 and 90 minutes
	Steel Section	Universal and hollow sections	Universal and hollow sections, wind bracing and 3-sided SHS	Universal sections only
	Certification	BS476: Part20/21:1987, ASFP Yellow Book approved	BS476: Part20/21:1987, ASFP Yellow Book approved	BS476: Part20/21:1987, ASFP Yellow Book approved
Top Seal Requirement	Over Coating	Can be left without top seal for 12 months	Can be left without top seal for 3 months	Can be left without top seal for 2 months
	Building Classification	C1, C2 and C3 buildings	C1, C2 and C3 buildings	C1, C2 and C3 buildings
General	Application Method	Airless spray, short pile roller or brush	Airless spray, short pile roller or brush	Airless spray, short pile roller or brush
	Container Size	25kg drum	25kg drum	25kg drum

Typically System S Basecoats form part of a 3-layer application:

Primer

To protect the steel against corrosion and prepare the surface. This provides a key for the application of the basecoat.

Basecoat

Applied to a measured thickness to provide the specified level of fire protection.

Top Seal

A hard decorative finish to seal in the basecoat and provide an attractive, high quality appearance.

C1, C2, C3 Building Classification

Guidance to the corrosion protection of steelwork, from 'The Prevention of Corrosion on Structural Steelwork' published by Corus.

C1: Very low corrosion risk, warm dry interior application, for example offices, shops, residences, schools, hospitals, airports

C2: Low corrosion risk, steelwork exposed to moisture, for example sports halls, exhibition halls, vehicle depots

C3: Medium corrosion risk, steelwork exposed to moisture and pollution, for example food processing, dairies, breweries etc.

For further information on C1, C2 and C3 Building Classifications and applications outside this range, for example stadia, swimming pools, chemical plants and other areas where steelwork is exposed to high levels of moisture or corrosive pollutants, please consult Nullifire Technical Services Department.

EXCEPTIONAL, SUSTAINABLE APPEARANCE

Top seal for System S (where required) is available in a range of RAL or BS4800 colours. It contains no fibres, and is therefore suitable for areas where delicate electronic instruments are manufactured or used. The satin finish is easy to maintain by simply wiping clean with a damp cloth.

NOTE: Although the risk of damage to the intumescent coating is minimal, a repair kit is available for making good any damaged areas on site without detracting from the System S finish or performance.

***NOTE:** Drying times significantly reduced for off-site product. Refer to Technical Data Sheet.

On-Site	
S607HB Water-Bourne Intumescent Basecoat	System E High Performance Epoxy Intumescent Coating
Internal	Internal or External
1.39	1.1
62%	100%
>55°C	100°C
White	Blue
Onto clean dry compatible primer	Onto clean dry compatible primer
Brush: <1000 Spray: <1600	4-5mm
Brush: <620 Spray: <992	4-5mm
24 hours between coats at >10°C	Less than 24 hours
Minimum 24 hours at >10°C before top coat	Maximum 48 hours before top coat
30, 60 and 90 minutes	Upto 3 hours cellulosic. Upto 4 hours hydrocarbon
Universal and hollow sections	Universal and hollow sections
BS476: Part20/21:1987, ASFP Yellow Book approved	BS476: Part20/21:1987, UL, IMO and Lloyds certificated
Top seal within 1 month	Refer to Nullfire technical department
C1, C2 and C3 buildings	Refer to Nullfire technical department
Airless spray, short pile roller or brush	Airless spray, trowel and casting
25kg drum	22.7kg kits

NOTE: Average drying times based on typical DFT. For building classification outside of this range please refer to Nullfire's technical services department.

SYSTEM E

HIGH PERFORMANCE, BLAST RESISTANT COATING

Nullfire System E is a 2-part high performance epoxy intumescent coating specifically developed to protect structural steelwork, bulkhead and deckhead structures in the event of hydrocarbon fires.

Originally developed for the offshore and petrochemical industries, System E has been independently tested and certified to the highest standards:

- Tested to the hydrocarbon curve for up to 4 hours protection
- Tested to BS 476: Part 20/21: 1987 for up to 3 hours
- Blast tested up to 155kPa
- Tested to UL 1709 hydrocarbon test, which incorporates accelerated weathering
- Lloyd's certified
- Jet fire tested

Hydrocarbon fires

Hydrocarbon fires are caused by burning hydrocarbon fuels such as petrol, diesel, petro-chemicals and gases. These types of fire burn much faster and at much higher temperatures than the typical cellulosic fire.

The rapid and massive temperature increase as the fuel ignites tends to drop away quickly (depending on the quantity of fuel involved).

However it also causes a high level of pressure (blast erosion), sufficient to destroy traditional thin film intumescent, as well as most other methods of structural steelwork protection.

By contrast, System E will withstand both the intense heat and the pressure.

Easy application

Like other intumescent, System E may be applied by conventional airless spray. The system can also be trowelled onto the substrate for small areas.

Robust, hardwearing finish

System E provides a robust, hardwearing, impact resistant finish.

For aesthetic effect, this can be coated with a range of decorative top seals.

APPLICATION

System S Basecoats are ready for use (requiring no thinning) and easy to spray.

Conventional airless manual or automated spray systems may be used. They may also be applied by roller or brush, using a 'laying on' technique to avoid heavy brush marks.

PERFORMANCE

For coating thickness, material quality and fire performance, please refer to Nullfire loading tables.

Further information

For further detailed information regarding any aspect of System E, please contact Nullfire technical Services Department.





PRIMER AND TOP SEAL COMPATIBILITY

It is vital that both the Primer and Top Seal are compatible with the Basecoat to ensure the integrity of the system in terms of fire performance and longevity.

A fully tested range of Nullfire Primers and decorative Top Seals is available. Please see the Nullfire Primers and Top Seals Brochure for details.

In addition, Nullfire has tested and approved a range of general top seals and primer types for compatibility with System S Basecoats. It is vital to check over-coat periods and other relevant data with the coating manufacturer.

If you have any concern regarding the compatibility of specific primers or top seals with System S Basecoats, please contact Nullfire Technical Services Department.

CALCULATING PRODUCT REQUIREMENTS

The type and quantity of product required is determined by a number of key factors:

- **Fire rating required**
30, 60, 90, or 120 minutes
- **Type of section**
Universal, hollow, beams or columns
- **Steel exposure**
3-sided or 4-sided, etc
- **Location**
Internal, semi-exposed or external
- **Section material**
Cast iron or steel
- **Size and weight of section**
Hp/A

Section Factor

The Hp/A value is known as the 'section factor' of the steel section. The section factor is directly related to the heating rate of the steel section under a fire condition.

The Hp/A value can be calculated from the size of the section. For example:

Hp = The perimeter of the steel exposed to the fire

A = The cross sectional area of the section

The larger the surface area relative to the cross sectional area, the higher the Hp/A value. The higher the Hp/A value, the more material required.

Therefore, as a general rule: The thicker the section, the slower it is to heat up, and consequently the less thickness of material required.

Loading tables

Loading tables for all Nullfire System S Basecoats are available. These provide all the relevant information regarding section factors, material thickness and performance. Please refer any factors outside the given range to Nullfire Technical Services Department.



NOTE: Applicable to areas accessible for inspection only. Those parts of the structure to which access cannot be gained, for example areas made inaccessible by subsequent construction work, are outside the scope of Nullfire inspection and verification.

COMPREHENSIVE TECHNICAL SUPPORT

Nullfire System S is backed by full technical information, including

- Loading tables
- Technical Data Sheets
- Fire engineering support
- Materials estimating program
- Application and product training

Expert support and assistance is available for every stage of a project, from product selection and specification to installation and verification.

CONTRACTS SUPPORT

Nullfire operates a unique team of fully trained contract support engineers. They are available to assist in project management and schedule planning to meet project time scales. They also provide on-site or off-site inspection* to ensure correct application of all Nullfire products.

For information or assistance, contact Nullfire today:

Tel: 024 7685 5000

Fax: 024 7646 9547

Email: protect@nullfire.com

Nullifire[®]

SPECIALIST EXPERTISE YOU CAN RELY ON

Nullifire has been at the forefront of the development of intumescent fire protection systems for over 25 years. Totally focused on fire protection, the company has worked with the world's leading architects, providing fire protection solutions for many of the major buildings of our time.

Nullifire offers high performance, fire protective solutions for:

Steelwork

Decorative, durable off-site and on-site systems for interior and exterior steelwork

Timber

Decorative system in matt or satin clear finish and a full range of RAL and BS 4800 colours

Construction joints

Fire seals for joints, gaps and profiled metal sheeting

Service penetrations

Lightweight, flexible barriers to maintain compartmentation

Call Nullifire Technical Services Department for full details

Tel: 024 7685 5000

Fax: 024 7646 9547

Email: protect@nullifire.com

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