



STERLING® ZeroFire Optima 600

High performance, One component, solvent-borne, intumescent Coating for protection of structural steel against cellulosic fires.

Description:

Sterling® ZeroFire Optima 600 is a one component, solvent borne, very low VOC, high solids intumescent coating specially formulated and design for fire protection of structural steel exposed to cellulosic fire. Can be used as a mid-coat or finish coat in atmospheric environments.

Sterling® ZeroFire Optima 600 is optimised for up to 180 minutes for the protection of structural steel against cellulosic fires. It is suitable for in-shop and onsite applications.

Application Includes:

To provide up to 3 hours fire protection on 'I' sections beams (including cellular beams), columns and hollow sections. Suitable for both off-site and on-site application due to its ease of use, fast drying and handling properties. Can be used over a wide range of approved priming system. As a repair and touch up coating for damaged areas of freshly applied **Sterling® ZeroFire Optima 600**.

Features & Benefits:

Provides up to 180 minutes protection from cellulosic fires
Free of halogenated flame retardants and borate compounds

On-site application
Up to 1.5mm (1500 micron) DFT in a single coat
Suitable for C1, C2 and C3 internal environments (ISO 12944) ;
for dry internal (C1) environments no topcoat is required

Storage & Shelf Life:

12 months from the date of manufacturing when stored in unopened sealed and dry condition at a temperature range from +10°C to 30°C

Packaging:

Sterling® ZeroFire Optima 600 is supplied in 20 Kg Pail.

Limitations:

This product is intended for use only by professional applicators in industrial situations in accordance with the advice given on this sheet, the Safety Data Sheet and the container(s), and should not be used without reference to the Safety Data Sheet (SDS). All work involving the application and use of this product should be performed in compliance with all relevant national, Health, Safety & Environmental standards and regulations. In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation. If in doubt regarding the suitability of use of this product, consult STIPL technical representative for further advice.

be used for general degreasing or preparation of the surface for painting due to the risk of spreading dissolved hydrocarbon contamination. Paint thinners can be used to treat small localised areas of contamination such as dye penetration inks and marker pens. Use clean, white cotton cloths that are turned and replaced

Application Instructions:

Stir thoroughly until homogeneous and free of lumps
Must be protected from freezing at all times during storage and/or transport

Application Equipment's

Airless spray
Nozzle angle- 20° – 50°, depending on shape of steel parts
Nozzle orifice - Approx. 0.43 – 0.53 mm (0.017 – 0.021 in)
Nozzle pressure- 20.0 MPa (approx. 200 bar; 2901 p.s.i.)

Notes: - All filters, including surge bottle and gun filters to be removed.
External fluid uptake pipe filter is recommended

Brush/roller - For small areas only (touch up and repair)

Typical Properties at 20°C

Number of components	One
Mass density	Approx.- 1.47 kg/L
Volume solids	≥ 68%
VOC (Supplied)	ASTM D 6886: less than 50 g/L
Recommended dry film thickness	700- 1500 micron per coat
Theoretical spreading rate	0.43 m ² /l for 1500 micron (20 ft ²)
Dry to touch	2 hours
Over coating Interval	Minimum: 16 hours Maximum: Unlimited

Recommended substrate conditions and temperatures

Approved primer must be sound, dry and free from any contamination

Substrate temperature and application conditions

- Substrate temperature during application and curing should be between 10°C-40°C
- Substrate temperature during application and curing should be at least 3°C above dew point
- Ambient temperature during application and curing should be between 10°C - 40°C
- Relative humidity during application and curing should not exceed 80%

Note: Over application will extend drying/curing times, Care should be taken in areas such as flange/web interfaces as excessive film build can result in small hairline cracks. This cracking will not affect the fire performance of the material.

Surface preparation

The required quality of surface preparation can vary depending on the area of use, expected durability and if applicable, project specification. Metal surface preparation refers to requirements for preparation prior to application of approved primers. All steel must be physically clean,

often. Do not bundle used solvent saturated cloths. Place used cloths into water.

Process sequence

Surface preparation and coating should normally be commenced only after all welding, degreasing, removal of sharp edges, weld spatter and treatment of welds is complete. It is important that all hot work is completed before coating commences.

Carbon steel

Metal finishing Surface laminations and sharp edges should be removed, sharp edges must be rounded off smooth prior to priming. Weld spatter, or flux, dust and spent abrasive and all contamination must also be removed before primer application. Ensure substrate is clean and dry before painting.

Abrasive blast cleaning

Abrasive blasting should not take place under adverse ambient conditions, when relative humidity exceeds 85 % or when the steel temperature is less than 3°C above ambient dew point. Apply the approved primer before degradation of the surface occurs.

Cleanliness

After pre-treatment is complete, the surface shall be dry abrasive blast cleaned to Sa 2½ (ISO 8501-1) using abrasive media suitable to achieve a sharp and angular surface profile.

Surface profile

Measure the achieved profile with surface replication tape to ISO 8503-5 or by surface roughness stylus instrument to ISO 8503-4. Achieved surface roughness should be as required by specified primer. The recommended surface profile is 50-75 micron, grade Fine to Medium G; Ry 5 (ISO 8503-1). However, this profile should not be less than figures stated below for carbon steel and alloys. Finished surfaces shall be dull, profiled and show no areas of shiny metal. Do not handle the prepared surface with bare hands.

Compressed air quality

To avoid contaminating the substrate, the dryness and cleanliness of the compressed air supply used for blast cleaning should be verified by testing the air on a white blotter as per ASTM D4285.

Dust contamination

At the completion of abrasive blasting remove residues of abrasive media and inspect for surface particulate contamination. Maximum contamination level is rating 1 (ISO 8502-3) as per Figure 1 of the standard for dust size no greater than class 2.

Hand and Power Tool Cleaning

Power tool cleaning is only recommended for small areas of repair, typically less than 1 m² in size where abrasive blasting is expected to create more damage to the coating system than actual benefit to the performance of the coating system. Power tool cleaning to St 3 (ISO 8501-1). Removal of all loose mill scale, loose rust, loose paint and

Health & Safety Instructions:

Sterling® ZeroFire Optima 600 is non-toxic but ingestion is to avoid. If contact with eyes occurs, wash well immediately with water and seek medical advice. Protect your health while working with this material, always use safety goggles, gloves and safety clothing. When handling hazardous materials or pressurized materials, or during any application that may result in spills, splashes or airborne particles, a full face shield is strongly recommended. Protect yourself and others on the jobsite.

dry and free from mud, concrete slurry, grease, zinc salts and other forms of contamination. Complete washing down of steelwork may be necessary. Oil & grease should be removed in accordance with manufacture guideline. Paint solvents (thinners) shall not other loose detrimental foreign matter to a bare metal finish with a surface profile. Bolts and fixtures General guidance notes from ASFP recommends that bolt heads should have the same resistance to fire exposure as the steel section. Continuous linear fixtures (brackets and angles) should be considered as part of the main beam and duly protected from fire.

Coated surfaces

Verification of existing coatings including primers

This product must always be applied over a primer approved by STIPL. When the surface is an existing coating, verify with technical data sheet and application guide of the involved products, both over coatability and the given

maximum overcoating interval. Only approved and qualified primers can be used in conjunction with this product. It is the application contractor's responsibility to ensure that only approved primers are used.

The applied primer should be:

Dry and cured enough to stand for overcoating, as per minimum overcoating time stated on manufacturer's TDS

Strongly adhered to the steel substrate

Free from any damage, defects or contamination (including oil, grease, soluble salts and dust)

Uniform in thickness and within the recommended DFT range. It is important to apply the approved primer systems carefully according to the specified DFT as over thickness could affect the performance of the passive fire protection system. Should the primer's suitability for overcoating be in doubt in any way, for example, primer type unknown, primer not approved, excessive dry film thickness, surface contamination, surface glossiness etc., STIPL must be consulted prior to the application of this product. A primer without a matt finish may require sanding to improve hold up for the first coat of intumescent. Contamination on primer may lead to slipping of intumescent during first coat application. It is the responsibility of the applicator to assess the condition of the primer coating before intumescent is applied. An on-site evaluation patch must be made to confirm surface preparation and adhesion before main application work commences.

Primer system maximum dry film thickness (DFT)

The typical primer thickness is 75 micron. Primer DFT may vary in relation to the corrosive category and recommended total DFT required for corrosion protection with topcoat in consideration of ISO 12944-2/5. The maximum recommended dry film thickness of the primer system is 150 micron depending on the type of product used. If the maximum primer thickness exceeds the recommended DFT, consult with STIPL technical representative. Reduction of high primer thickness Areas of high primer thickness should be reduced to the recommended thickness as per the above guideline using medium grade sandpaper, grinding or other suitable methods followed by fresh water washing to remove dust/contaminants. Frequent changes of abrasive paper to be made to avoid polishing the surface. Abrasive sweep blasting followed by thorough cleaning/vacuuming can also be used. Ensure the surface is clean and dry before application of this product.

Over coating Organic primers/intermediates

This product must always be applied over a primer approved by STIPL. When the surface is an existing coating, verify with technical data sheet and application guide of the involved products, both overcoatability and the given maximum overcoating interval. Only approved and qualified primers can be used in conjunction with this product. It is the application contractor's responsibility to ensure that only approved primers are used. For the current list of approved primers please

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Consider property in proximity of the application area to prevent loss or damage. Protect your jobsite from unauthorized persons. Store all materials and equipment safely and out of reach of children and animals.

Observe container labels, SDS, applicable laws and regulations and all instructions before using the product and equipment. In case one of the components comes in contact with the skin, wash thoroughly with soap and water. Provide adequate ventilation in volume and pattern in working area.

Additional Information: Techno Builders Solutions® By Sterling Technotrade India Pvt.Ltd -The Specialist Construction Chemicals Company® range of associated products includes high performance concrete Admixtures, Adhesives, Protective Coatings, Concrete Repairs, Industrial Flooring, Grouts & Anchors, Joint Sealants, Surface Treatments, curing compounds, repair mortars, release agents, Grinding Aids & Waterproofing.

*Separate datasheet are available on these products.

Disclaimer: The product information & application details given by the company & its agents has been provided in good faith & meant to serve only as a general guideline during usage. Users are advised to carry out tests & take trials to ensure on the suitability of products meeting their requirement prior to full scale usage of our products. Since the correct identification of the problems, quality of other materials used and the on-site workmanship are factors beyond our control, there are no expressed or implied guarantee / warranty as to the results obtained. The company does not assume any liability or consequential damage for unsatisfactory results, arising from the use of our products.

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contact your local STIPL technical representative. The applied primer should be:

- Dry and cured enough to stand for overcoating, as per minimum overcoating time stated on manufacturer's TDS
- Strongly adhered to the steel substrate
- Free from any damage, defects or contamination (including oil, grease, soluble salts and dust)
- Uniform in thickness and within the recommended DFT range.

It is important to apply the approved primer systems carefully according to the specified DFT as over thickness could affect the performance of the passive fire protection system. Should the primer's suitability for overcoating be in doubt in any way, for example, primer type unknown, primer not approved, excessive dry film thickness, surface contamination, surface glossiness etc, STIPL must be consulted prior to the application of this product. A primer without a matt finish may require sanding to improve hold up for the first coat of intumescent. Contamination on primer may lead to slipping of intumescent during first coat application. It is the responsibility of the applicator to assess the condition of the primer coating before intumescent is applied. An on-site evaluation patch must be made to confirm surface preparation and adhesion before main application work commences. When applied on coatings past maximum intercoating interval light abrading may be required to achieve proper intercoat adhesion. Clean, dry and undamaged compatible coating (ISO 12944-4 6.1.4) Areas with breakdown, damage, etc. must be prepared to the specified standard of blast cleaning to Sa 2½ (ISO 8501-1) or power tool cleaning to minimum St 3 (for small areas) and a coat of primer touched up before the product is applied.

Compatibility of intumescent coatings with zinc rich primers

The product must not be applied directly over zinc primers. An epoxy tie coat must be applied prior to the application of the Sterling® ZeroFire Pro 550 system. The recommended STIPL approved tie coat is TechnoSeal® PrimePlus or TechnoSeal® EP 100 applied at a DFT of 25-40 micron. Zinc rich primers, usually based on epoxy resin or silicate binders, are often used as corrosion protection coatings on structural steelwork. Weathering or prolonged exposure of the zinc primer will lead to the formation of zinc salts (white rust) on the surface of the coating which is detrimental to adhesion. Zinc salts must be removed prior to application of the epoxy tie coat. Hard bristle brushes, careful sanding and/or high pressure water washing at a minimum of 170 bar (2500 psi) to remove zinc salts. An epoxy tie coat may be applied over the epoxy zinc primer to prevent salts forming.

Application

Environmental conditions

Intumescent coatings require a greater degree of environmental monitoring than conventional coatings. Intumescent coatings are moisture sensitive and must be protected against high humidity, rain and consequent water ponding both during application, transportation and during storage prior to being erected at site. Otherwise blistering/delamination will occur. Where a topcoat is specified, application must occur as soon as the final coat of this product is fully through dry. During transportation or construction, exposed Sterling® ZeroFire Pro 550 must be protected from weather with a topcoat.

Acceptable environmental conditions

Before application, test the atmospheric conditions in the vicinity of the substrate for the dew formation according to ISO 8502-4.

Air temperature - 5 - 40°C

Substrate temperature- 5 - 40°C

Relative Humidity (RH) - 10 - 85 %