

Protect your values.



members of svt group

AIK



flamro

ROLFKUHNGBH



Passive Fire Protection for Rolling Stock

Safety made to measure – reliable at any speed



Contents

svt: Smart Solutions for All Your Needs	3
Fire Protection Requirements	4-7
Lightweight Design, Alternative Energy Sources and Particle Impact Test	8-9
Application Areas	10-11
Materials and Their Properties in Focus	12
Coatings	13-14
Foams and Fabrics	15-17
Potting Compounds	18-19
Sealing Profiles/Gaskets and Cartridge Material	20-22
Boards and Adhesives	23-24
Container and Packaging Sizes at a Glance	25
Research and Development	26
References	27

Rolling Stock

High-performance fire protection at any speed



Battery Applications

Fire protection that keeps pace with a fast-growing (e-mobility) market



Aviation Industry

Fire protection for all types of aircraft and air traffic environments



Ships & Offshore

Fire protection systems for the specific requirements of ships and offshore facilities



»Rail 4.0 increases mobility at zero emission. Therefore, smart climate protection is not about restraint or doing without, but about choosing options that are both sustainable and perfectly convincing. The German railway industry drives this mobility revolution as a global innovation leader. Research, development, specialisation, partnership, inspiration, experience – it's often the hidden champions of the medium-sized railway industry that set the course for the green mobility of the future. In other words: Climate protection needs climate industry.«

Dr. Ben Möbius, Managing Director of VDB

svt: Smart Solutions for All Your Needs

svt Products GmbH is the global distribution centre of the svt Group, i. e. it pools the international sales activities of the Group's highly specialised manufacturers comprised of svt, Rolf Kuhn, Flamro, Odice, Securo, AIK and DDL. The company offers Europe's most extensive portfolio of certified products, systems and materials in passive fire protection with a wide range of renowned brands that are sold in over 60 countries across the globe.

The company's portfolio of fire protection brands includes, to name but a few, FLAMRO®, FLEXILODICE®, PYRO-SAFE® and ROKU®. They are designed for use in the fields of building construction, industrial construction, infrastructure, energy, aviation, shipbuilding and offshore construction, rolling stock, doors and glazing as well as batteries. All fire protection solutions sold by svt Products GmbH are quality-assured like all other svt products: They undergo thorough in-house research and development at both company and Group level so that continuous product evolution is a matter of course.

Excellence at a glance – the svt Group of Companies portrayed on film.



Doors & Glazing

Fire protection solutions for doors, glazing units and façades



Renewable Energies

Protection for buildings and plant engineering systems against fire, gas, electricity, liquids, etc.



Energy Industry

Seamless fire protection for facilities and systems



Construction Projects

Complete solutions for building services and through-penetration seals

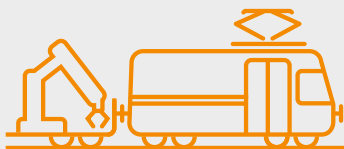


Full Service – Full Safety

svt Products GmbH is a full-service provider of reliable passive fire protection solutions for rolling stock. Drawing on profound industry experience, we are committed to helping our railway clients get right on track for full safety even at full speed: Whether it is long-distance or commuter trains, metros or trams, monorail trains, high-speed trains or work trains – our high-performance materials cover all areas requiring protection! The extensive product and service portfolio is one of our strengths, and that strength works for you: We offer not only fire protection coatings for application to the underbody of rail vehicles, but also provide high-quality solutions for safe cable management, fire barriers and numerous other elements and areas.



**Long-distance
Trains**



Work Trains



Commuter Trains



**High-speed
Trains**



**Metros &
Trams**

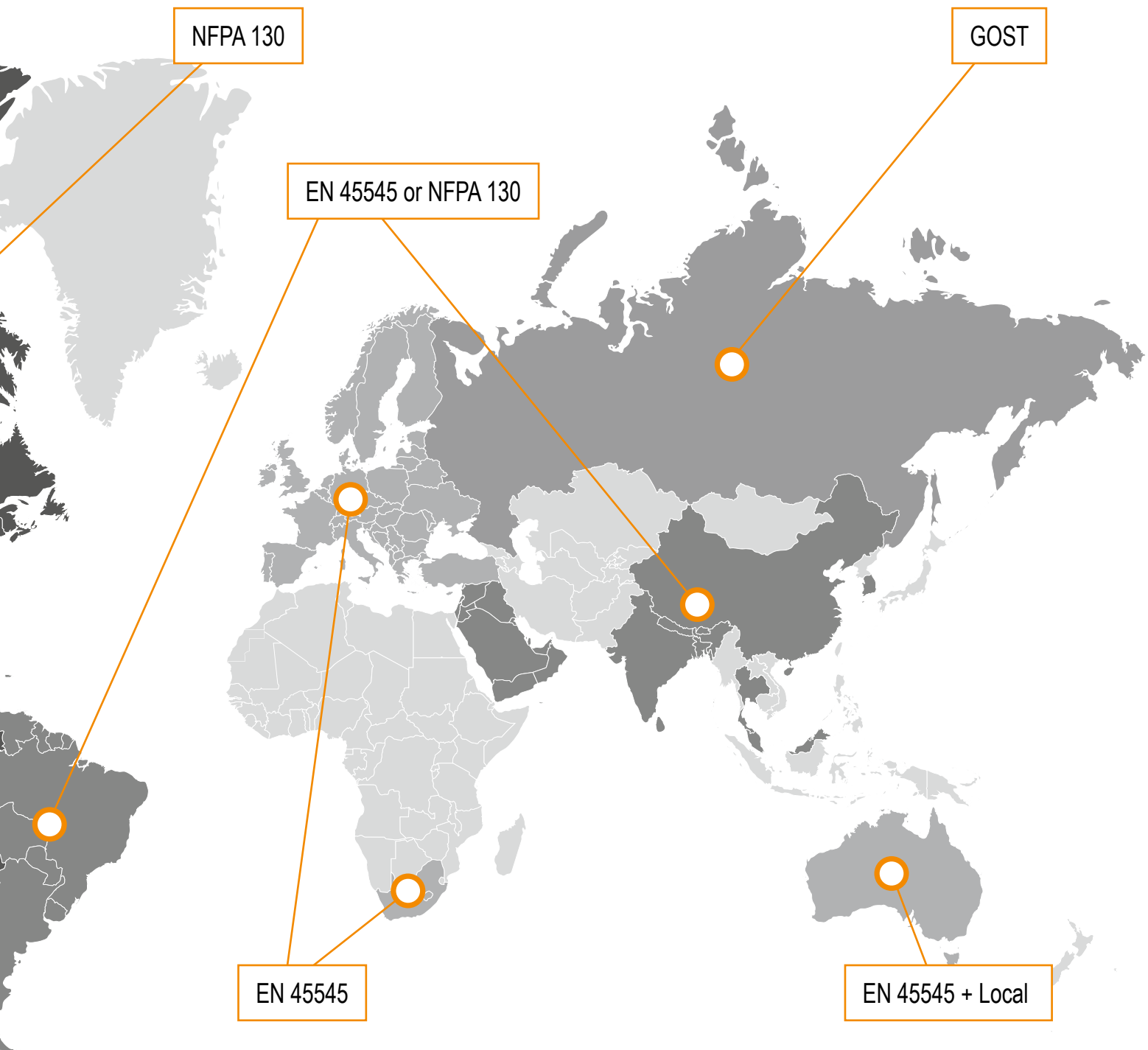


Monorail



Fire Protection Worldwide

We boast many years of experience in passive fire protection, which has earned us the trust of clients worldwide. Every day we receive enquiries and requests for solutions that suit specific settings and requirements, both at home in Germany and abroad. As we strive to meet all needs with unwavering reliability, we study the particulars of each case while keeping up to date with all relevant standards and country-specific regulations. Our commitment is also formally recognised because we have our products undergo regular testing to obtain third-party certification and classification in accordance with all pertinent standards. We care about providing long-term protection; therefore, all our products are designed with the future in mind: They exhibit excellent overall durability and resistance to both climatic influences and chemicals. With fire protection solutions from svt Products GmbH on board, everyone and everything is safe along the way – and across the globe.



Fire Protection Testing of Materials

Whether it is cables, seat upholstery, tiny add-on components or coatings – all materials intended for installation or use on a rail vehicle must be subjected to extensive fire protection testing before they are allowed on board. Such tests are designed to identify the behaviour of materials and their constituents in light of the hazards they present during combustion. Fire protection is assessed based on the degree to which such elements meet the applicable set of requirements. These requirements depend on the recognised standard(s) to be used as a reference as well as on the type and area of use of the rail vehicle. The following international standards are relevant in this regard:

- DIN EN 45545-2
- British Standard (BS)
- NFPA 130 (ASTM E162 / E662)
- GOST

For example, if standard EN 45545-2 is applied (which is used as a reference in many parts of the world), materials are tested in accordance with the so-called **FIRST** principle. FIRST provides for a series of individual tests to be conducted in which the following properties are assessed:

Flame spread / Ignitability / Release of heat / Smoke emission / Toxic fume emission

It is only after completion of all individual tests that a material is assessed and classified for use on rolling stock based on its compliance with the pertinent limit values. Standard EN 45545-2 expresses these limit values in terms of hazard levels (HL) that are assigned depending on a rail vehicle's class of service (operation category) and class of design (design category). Exempted from this fire behaviour testing and classification requirement are materials that are recognised to meet the highest standards in terms of fire behaviour, e. g. materials classified as A1 (non-flammable) as per EN 13501-1: These materials present no fire hazard and are thus "fit by design" for use on rolling stock of any category.



Operation category	Design category			
	N Standard vehicles	A Automated vehicles (unstaffed)	D Double-decked vehicles	S Sleeping and couchette cars
1	HL 1	HL 1	HL 1	HL 2
2	HL 2	HL 2	HL 2	HL 2
3	HL 2	HL 2	HL 2	HL 3
4	HL 3	HL 3	HL 3	HL 3

The table above illustrates the assignment of hazard levels to a matrix composed of operation categories and design categories of rail vehicles. Hazard levels serve to classify the fire safety requirements to be met by materials. More than 90 % of the classified products supplied by the svt Group comply with the HL3 requirements and can thus be used on rolling stock of any design category. Our materials are tested to EN 45545-2 depending on the size of the exposed surface and the area of use in accordance with the requirements set out in the table below:

Exposed surface	(Intended) use	Requirement set
> 0,20m ²	Indoors	R1
> 0,20m ²	Outdoors	R7
≤ 0,20m ²	Indoors	R22
≤ 0,20m ²	Outdoors	R23

Fire Protection Testing of Fire Barriers

While materials fire testing is primarily concerned with ascertaining the behaviour of materials and their constituents, fire testing performed on components or systems (e. g. to EN 45545-3 or NFPA 130) focuses on ascertaining the behaviour of overall structures. Fire resistance testing of the latter type is conducted under realistically simulated scenario conditions so as to accurately determine the actual fire resistance of a structure with a view to ensuring the safety of passengers and staff on board in the event of a real fire. Fire resistance with this type of test is not classified in terms of hazard levels, but in terms of duration of fire resistance.

The following test criteria are of primary relevance in this regard:

- The “E” criterion (“étanchéité”) is used to measure space enclosure performance; it is concerned with the question of when a fire will spread from one area (fire compartment) to the next.
- The “I” criterion (“isolation”) is used to measure thermal insulation performance in the event of a fire: What is the maximum permissible temperature on the non-exposed side, i. e. the side facing away from the fire?

The requirements to be met by the fire barrier also depend on the category of service of the rail vehicle: The overall structure of a vehicle that passes through long tunnels and only allows lateral passenger evacuation in the event of a fire must meet more stringent fire safety requirements than, for example, a tram.



In the fire resistance test conducted to EN 45545-3 (as shown in the images below), FLAMMADUR® TE C was applied to an aluminium profile with a dry film thickness of 1200 µm. In order to replicate the most realistic conditions possible, the floor structure of a train was simulated with 18 mm thick plywood panel.



FLAMMADUR® TE C begins to react at a temperature of approx. 160 °C. It forms a solid carbon foam char with excellent insulating properties. This carbon foam char effectively protects the extruded aluminium profile in the event of a fire and thus reduces the passage of heat.



In this test, an EI 45 fire resistance was ascertained. Thanks to the material's fast foam formation, the aluminium profile and thus the entire floor structure were insulated in a very short period of time.

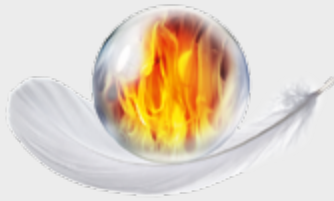
View the large-scale fire test documented in film.



Lightweight: Materials of the Future

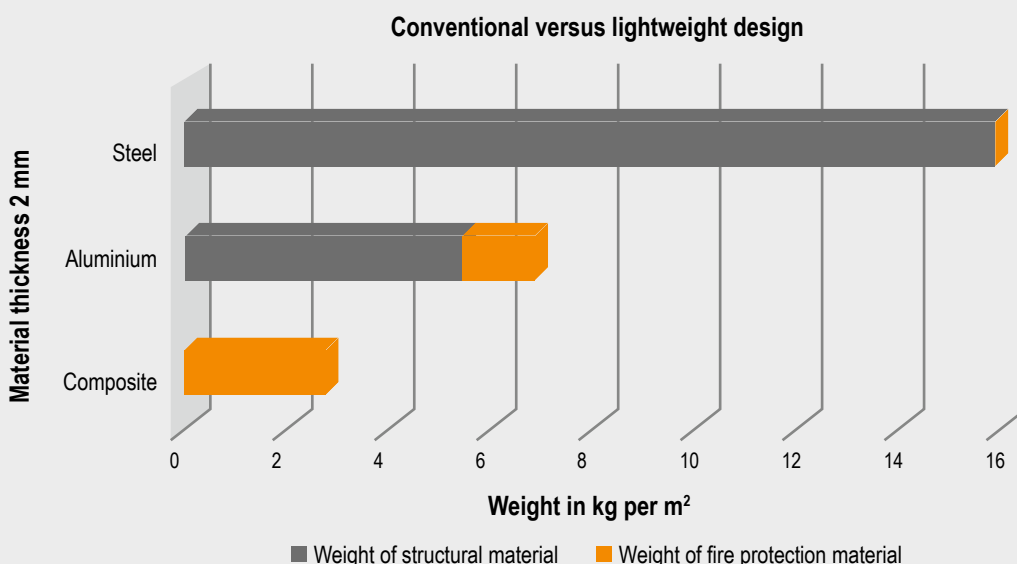
Lightweight construction has come to play a major role in the rolling stock industry as it sets the course for a lower-emission future. And for a good reason because every single extra kilogramme that must be structurally moved over a rail vehicle's lifecycle makes a (negative) difference! The manufacturers of the svt Group have taken ownership of this low-emission goal by developing products that reduce train overweight while protecting the vehicle's structure at both micro and macro level, as it were, so that passengers and staff on board are safe and can also be safely evacuated in the event of a fire.

One of svt's flagship innovations catering to lightweight design is SAERTEX LEO® Coated Fabric – a high-performance material developed in cooperation with the SAERTEX company in 2017. By pooling their core competencies, the two companies have developed a material that meets the most stringent of fire resistance requirements by combining a lightweight glass fibre fabric with a fire protection coating. And SAERTEX LEO® Coated Fabric has even more to offer because it provides the necessary and desired freedom of design in the engineering phase: The material can be used to protect load-bearing elements of the rail vehicle's body, floor systems, partition walls as well as other 2D and 3D interior designs.



svt has also obtained patents in respect of innovations developed for further lightweight application areas, thus helping to replace existing design principles by future-proof alternatives. In 2015 for example, svt was awarded a patent for bonding an intumescent material to organic sheets – a real milestone. Another patented svt development conceived for use in lightweight design combines excellent cooling and insulation properties, thus providing maximum protection in the event of a fire. Would you like to know more? Then please read on to page 17.

Our patents are visible evidence of development and innovation success, but they also testify to our overall commitment to helping the industry wheel into the future with less weight, a positive energy balance and, not to forget, with the same level of fire safety. The diagram below illustrates the immense weight reduction afforded by a change from conventional to properly protected lightweight structural materials on rolling stock. The use of aluminium, to give but one example, in conjunction with a high-performance fire protection coating offers many advantages over steel. Reliable fire protection materials are thus key to reducing weight ... and adding value!



Fire Protection Solutions for Alternative Energy Sources

The commitment to avoiding and phasing out fossil fuels is a global effort, and the transition from conventionally fuelled to battery- or hydrogen-powered vehicles is already in full swing. We at svt keep thinking ahead by developing reliable fire protection solutions that are designed to keep pace with tomorrow's mobility and safety needs.

For renewable energies also present a variety of hazards, such as the hazard of a battery fire. Therefore, we consider not only the hazard potential emanating from the propulsion modules of a rail vehicle, but also take into account the hazards associated with the steadily growing number of electrically powered micromobility equipment (especially on board of commuter trains), such as e-bikes and e-scooters.

Particle Impact Stress Test on Batteries

The development of fire protection materials and systems for tomorrow's electromobility needs and batteries is a highly complex multi-level process. Therefore, svt draws not only on Group-wide technical and technological know-how, but also maintains strong ties with external testing institutes. Thanks to a patented test method developed in-house by svt (with a view to enabling both effective and inexpensive testing and assessment of fire protection solutions), which is supplemented by premium options for carrying out the whole range of battery tests in state-of-the-art test centres, svt offers a unique expertise that leads to optimum fire protection solutions within short time frames. All tests are designed to ascertain the behaviour of samples in extreme conditions, including exposure to temperatures of up to 1400 °C and particle impact: The ultimate stress test for fire protection materials!

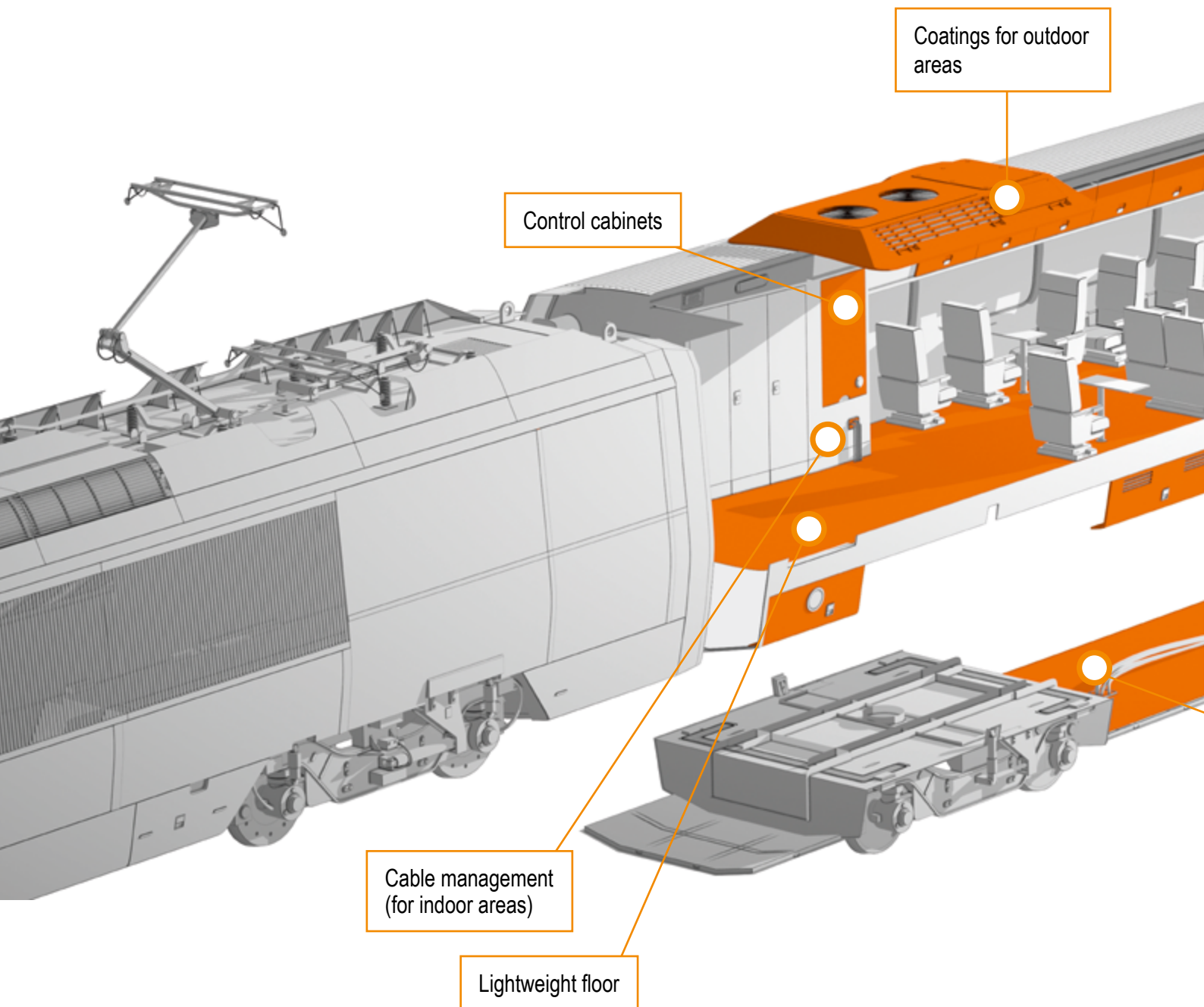


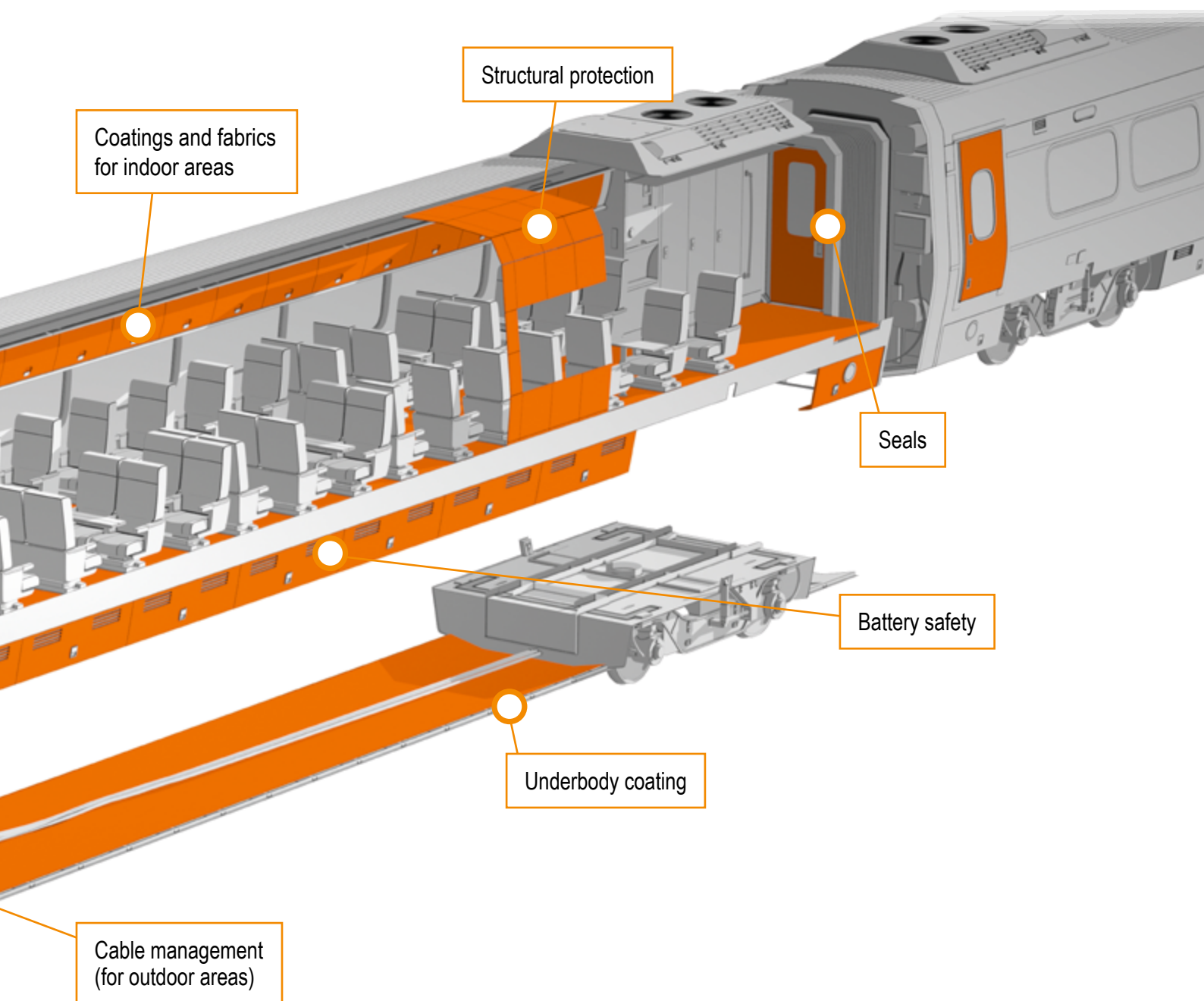
svt Battery Stress Test: The effect of particle impact captured on **video**.



Application Areas at a Glance

Whether it is protection of a train's or tram's underbody, preservation of its integrity or efficient cable management: Our high-performance fire protection products for rolling stock are versatile in use:





Next stop: Safety! Come on board and discover svt's high-performance fire protection solutions in a spot-on **video**.



Materials and their Properties in Focus

All svt materials impress not only with their excellent fire protection performance, but they also feature further valuable properties, such as short drying times and high climate resistance. This is evidenced by regular tests conducted at accredited institutes in accordance with well-established standards (DIN, ISO, UL, ASTM and British Standard) as well as by needs-based tests conducted on a case-by-case basis.

The icons below will help you to immediately identify the core properties of each svt fire protection product.



Early reaction temperature



Cooling material



Multi-approved/multi-certified



High layer thicknesses



Economical in use



Short drying times



Chemical resistance



Outdoor use, high climate resistance



VOC-free



Mechanical strength



Cable management



Strong and rapid foaming



Sound damping properties



Tailor-made



Low weight



High temperature resistance

Tailor-Made Fire Protection Products for Your Areas of Application

We at svt are proven experts for the specific fire protection requirements of rolling stock; therefore, we are proficient in meeting client needs on a case-by-case basis. As no two projects are exactly alike, we care about making wise choices when it comes to selecting technologies and modes of action. So you, too, can rest assured that we will listen to you attentively and that our steadily growing and customisable portfolio comprised of currently 1,000 products will also cater to YOUR specific fire protection needs.

1



3



2



Apart from one-component water-based fire protection coatings, we also offer two-component polyurethane-based coatings that can be used in both indoor and outdoor areas. Our coating systems are distinguished by their specific modes of action: For example, we can supply products with foam-forming and thus insulating properties as well as products with cooling properties.

Coatings

1. PYRO-SAFE® DG-SKN

PYRO-SAFE® DG-SKN is a water-based fire protection coating that forms a protective insulating layer at temperatures of and above 150 °C.

- Application area: Underbody coating for outdoor areas
- Approval/Certificate: EN 45545-2 HL3 R1/R7, and many more



2. PYRO-SAFE® DG-S

PYRO-SAFE® DG-S is a water-based fire protection coating with a VOC content significantly below the minimum limit value of 50 g/L, as defined by GS-11 (Green Seal Standard, Edition 3.1/2013).

- Application area: Indoors
- Approval/Certificate: EN 45545-2 HL3 R1/R7, and many more



3. PYRO-SAFE® FLAMMOTECT-A

PYRO-SAFE® Flammotect-AA is an endothermic, weather-resistant fire protection coating designed to safeguard the substrate by effective cooling.

- Application area: Indoors and outdoors, cable management
- Approval/Certificate: EN 45545-2 HL3 R1/R7, and many more





4. FLAMMADUR® TE C

FLAMMADUR® TE C is a two-component polyurethane-based material with intumescent properties designed to withstand extreme climatic conditions and mechanical stresses. This solvent-free system, which has a 100 % solid content, is extremely economical in use. Furthermore, FLAMMADUR® TE C can be applied in very high layer thicknesses in just one step. Thanks to its special properties, FLAMMADUR® TE C optimally adapts to the ever-increasing challenges our industrial clients face in terms of process technology and speed.

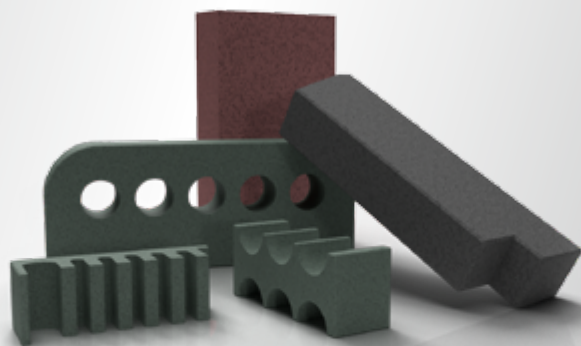
- Application area: Underbody coating for outdoor and indoor use
- Approval/Certificate: EN 45545-2 HL3 R1/R7, and many more



View the FLAMMADUR® TE C coating process in a spot-on **video**!



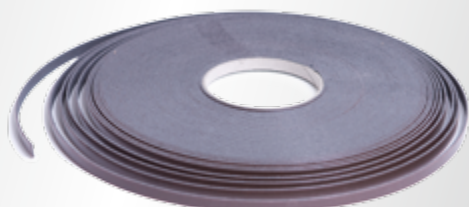
1



3



2



svt fire protection fabrics and foams are made of cooling or insulating materials. They are particularly designed for use in cable management environments and also serve to protect the interior structure of rail vehicles. Thanks to our in-house customisation options, moulded parts such as foam blocks or cut-to-size sheets are also available.

Foams and Fabrics

1. FLAMMADUR® F 500

FLAMMADUR® F 500 is a ready-to-use intumescent sealing system consisting of flexible polyurethane foam that can be moulded to suit specific client needs and on-site installation conditions. Our moulding know-how enables us to also supply foam parts with undercuts.

- Application area: Indoors, cable management
- Approval/Certificate: EN 45545-2 HL3 R22 / R23



2. KERAFIX® Flexpress 100

KERAFIX® Flexpress 100 is a flexible intumescent material based on exfoliated graphite that foams up with pressure under the impact of heat and begins to react early, namely at about 140 °C.

- Application area: Indoors, Cable management
- Approval/Certificate: EN 45545-2 HL3 R22 / R23



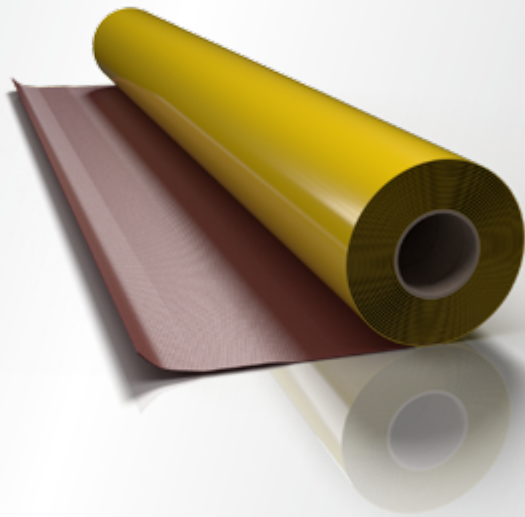
3. FLAMRO® BSS

FLAMRO® BSS is a ready-to-use intumescent material made of polyurethane soft foam. Due to its fast foam-forming action, it is excellently suitable for sealing through-penetrations of cables, cable bundles and cable support structures.

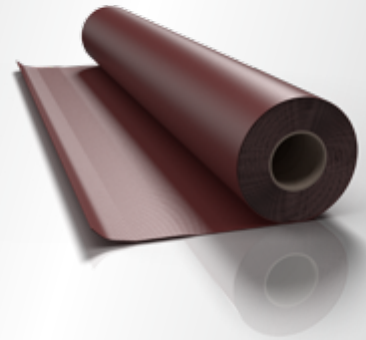
- Application area: Cable management
- Approval/Certificate: EN 45545-2 HL3 R22 / R23



4



6



4. PYRO-SAFE® DG-CR SK

PYRO-SAFE® DG-CR SK is a flexible composite material consisting of glass filament fabric. When exposed to fire, the material forms a thermally insulating and thus protective foam char layer on the inside.

- Application area: Indoors, cable management
- Approval/Certificate: EN 45545-2 HL3 R1/R7



5. ENEX-C by KTEX

ENEX-C consists of mineral coolants that are capable of absorbing large amounts of heat when exposed to levels above a definable activation temperature. The effect is based on the evaporation of hydrated minerals. These metal hydrates allow the material to absorb three times more energy than gypsum plasterboard.

- Application area: Indoors
- Approval/Certificate: EN 45545-2 HL3 R1/R7



6. PYRO-SAFE® DG-OA

PYRO-SAFE® DG-OA is a fire protection film made from intumescent material PYRO-SAFE® DG-S. The fire protection film features a very thin non-woven backing material as a carrier, for which reason it is easy to mould into the desired shape.

- Application area: Indoors
- Approval/Certificate: EN 45545-2 HL3 R1/R7



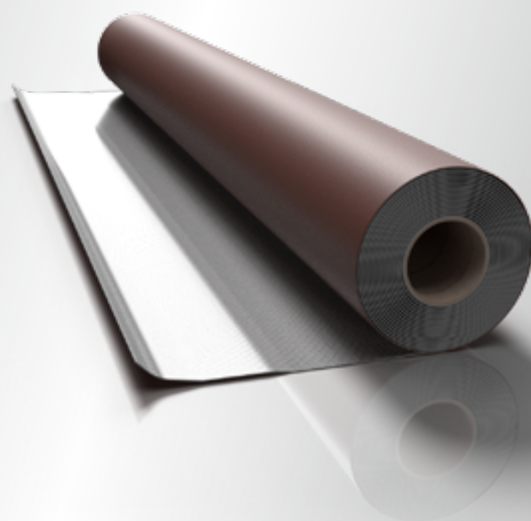
5

7

9



8



7. ROKU® Strip

ROKU® Strip is a flexible intumescent material based on exfoliated graphite that foams up with high pressure under the impact of heat to form a very stable, pressure-resistant protective foam char.

- Application area: Indoors, cable management
- Approval/Certificate: EN 45545-2 HL3 R22 / R23



8. SUPERWOOL® Paper by Odice

SUPERWOOL® Paper is an excellent thermal insulator with low thickness. It is easy to use and exhibits strong resistance to tearing.

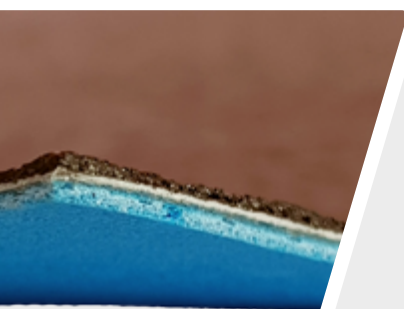
- Application area: Indoors, cable management
- Approval/Certificate: EN 45545-2 HL3 R1 / R7



9. SAERTEX LEO® COATED FABRIC

SAERTEX LEO® COATED FABRIC is a glass fibre fabric with an integrated intumescent fire protection coating that forms an insulating layer in the event of a fire. The material, which features a unique combination of lightweight design and fire protection properties enabling it to meet the most stringent fire protection requirements, can be incorporated into any monolithic or sandwich composite structure.

- Application area: Outdoors, indoors
- Approval/Certificate: EN 45545-2 HL1-HL3 R1 / R7 (depending on the assembly structure)



A big plus for special needs in fire protection – intumescence PLUS cooling

By joining cooling and insulating fabrics in a special method, we have been able to develop an effective composite material that has been awarded official approval to EN 45545-2 HL3 as it meets the most stringent of fire protection requirements.

Our potting compound systems, from which we can also produce moulded parts to the client's specifications, are not only capable of withstanding extreme weather conditions, but are also resistant to oils, chemicals as well as operating supplies. Furthermore, they meet the requirements for gas tightness.



Potting Compounds

1. FLAMMADUR® A 365

FLAMMADUR® A 365 is a two-component polyurethane-based material with intumescent properties that is particularly suitable for sealing cable through-penetrations in outdoor areas. The system, which is pressure-, gas- and watertight, forms a stable insulating foam char under the impact of heat. Moulded parts are available to suit specific client needs and on-site installation conditions.

- Application area: Cable management
- Approval/Certificate: EN 45545-2 HL3 R1 / R7/ R17



By the way, we supply not only potting compounds for vertical cable through-penetrations as needed, but are also experts in providing custom-moulded parts for horizontal cable through-penetrations and other settings based on client drawings. For more details about the application of FLAMMADUR® A365, please watch the installation **video** linked to the **QR-code** above.



2



3



4

2. GEAQUELLO® E 824

GEAQUELLO® E 824 is an aqueous solution of colloidal silicic acid; it is used in the creation of the lost formwork (assembly of retainer modules) required by the FLAMMADUR® A 365 system.

- Application area: Potting system FLAMMADUR® A 365

System component FLAMMADUR® A 365

3. GEAQUELLO® R 312 / R 380

GEAQUELLO® R 312 / R 380 are swell modules designed for insertion into vertical and horizontal spigots to form the front/end walls in the FLAMMADUR® A 365 system. After assembly, impregnation fluid GEAQUELLO® E 824 must be applied to the swell modules to make them expand and thus protect the system.

- Application area: Potting system FLAMMADUR® A 365

System component FLAMMADUR® A 365

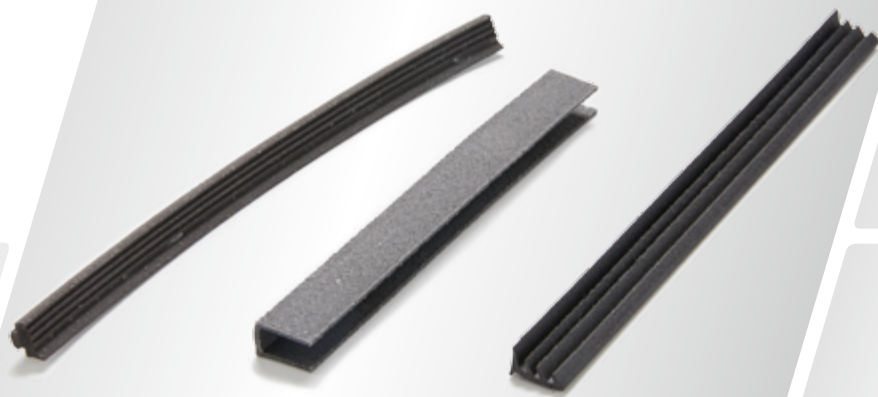
4. FLAMMADUR® E 292

FLAMMADUR® E 292 is a flame-resistant two-component sealing compound. The material is flexible and insensitive to moisture/humidity after curing. It is designed for use in the temperature range from -40 °C to +90 °C.

- Application area: Outdoors
- Approval/Certificate: UL 94 V0



With tailor-made sealing profiles/gaskets available in both extruded and coextruded form as well as a variety of fire protection compounds in cartridges, we offer flexible solutions that reliably prevent fire and its spread. In the event of a fire, the intumescent materials will swell and foam up, thus forming a strong protective barrier to fire propagation.



Sealing Profiles/Gaskets and Cartridge Materials

1. KERAFIX® Everseal

The products of the KERAFIX® Everseal series are intumescent materials based on exfoliated graphite that foam up under the influence of heat. The KERAFIX® Everseal-Serie includes TPE- and PVC-based variants that can be supplied in extruded and coextruded form. When exposed to heat, the seals/gaskets will swell to form a pressure-resistant foam body that is capable of sealing gaps and joints.

- Application area: Seals
- Approval/Certificate: Upon request, depending on the geometry



2. FLAMMADUR® TE S

FLAMMADUR® TE S is a one-component intumescent sealing compound that is particularly suitable for use in outdoor areas. The material, which is extremely resistant to weathering, seals openings reliably, thus preventing fire from spreading.

- Application area: Seals, outdoors
- Approval/Certificate: EN 45545-2 HL3 R22 / R23



3. PYRO-SAFE® DG-SC

PYRO-SAFE® DG-SC which is based on fire coating PYRO-SAFE® DG-S, is a dispersion-based intumescent fire protection putty designed for universal indoor and outdoor use. When exposed to heat, the material forms a solid, thermally insulating foam body; it is resistant to moisture/humidity, weathering and UV radiation.

- Application area: Seals
- Approval/Certificate: Available upon request





4. ROKU® 1000

ROKU® 1000 sealant is a one-component intumescent building material for universal use. The material, which is drip-free, foams up with high pressure under the impact of heat to form a very stable, pressure-resistant protective foam barrier (char).

- Application area: Seals, indoors
- Approval/Certificate: Available upon request



5. FLAMMADUR® A 365 T

FLAMMADUR® A 365 T can be used for fire-safe and pressure-resistant sealing of cable and pipe penetrations or as an additional cover to seal residual gaps in FLAMMADUR® A 365 mouldings.

- Application area: Cable management
- Approval/Certificate: EN 45545-2 HL3 R22 / R23



6. FIRESTOP 700

FIRESTOP 700 is a one-component liquid silicone putty with a neutral cross-linking system. It is used for sealing fire-rated cable and pipe penetrations.

- Application area: Cable management
- Approval/Certificate: EN 45545-2 HL3 R22 / R23





7. ACRYLODICE F

ACRYLODICE F is a fire-resistant one-component sealant formulated as an acrylic emulsion with intumescent properties.

- Application area: Cable management.
- Approval/Certificate: EN 45545-2 HL3 R22 / R23



8. VENTILODICE® V & VC by Odice

VENTILODICE® V & VC are ventilation grilles that are available in various sizes. In the event of a fire, they ensure fast sealing of the air vents, thus preventing the passage of flames, smoke and gases.

- Application area: Indoors
- Approval/Certificate: EN 45545-2 HL1 R22 / R23



1



2



Our boards and adhesives, which are based on gypsum, calcium silicate or e. g. water glass, undergo an endothermic reaction in a fire, i. e. they absorb energy and release bound water in the process. Thanks to these properties, only a small amount of heat will be transferred to the non-exposed side.

Boards and Adhesives

1. KERAFIX® Coolmax

KERAFIX® Coolmax are sandwich elements that are bonded together by one or several layers of an inorganic adhesive. In the event of a fire, the material delivers excellent cooling performance.

- Application area: Indoors
- Approval/Certificate: Classification A1 (non-flammable) as per DIN EN 13501-1



2. ROKU® Kleber T-NV, T-MV und T-HV

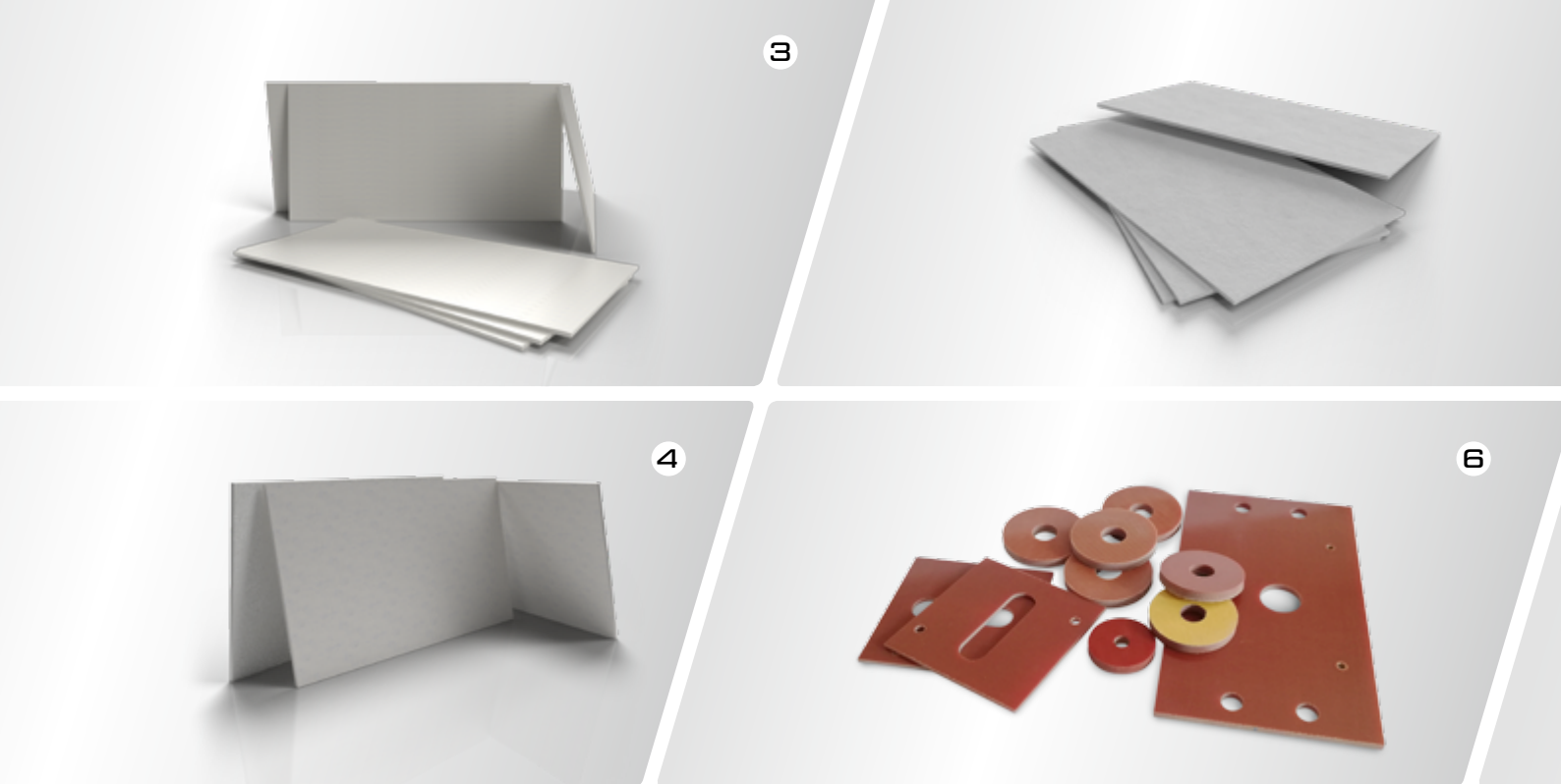
ROKU® Kleber T-NV, T-MV und T-HV are low-viscous to high-viscous glues based on an aqueous sodium silicate solution. After hardening, the glue excellent heat stability up to +800 °C.

- Application area: Indoors
- Approval/Certificate: Classification A1 (non-flammable) as per DIN EN 13501-1



Your tailor-made fire protection board – engineered with tailor-made technology

Whether it's customised single parts, serially manufactured or special components, whether it's small, medium or large-scale materials, whether it's bulky or filigree components – our cut-to-size board materials leave nothing to be desired. Our state-of-the-art machinery with its centrepiece – the water jet cutting device – is highly flexible so that we can work materials in many different ways.



3. ROKU® S 1100

ROKU® S 1100 is a cement-bonded silicate fire protection panel; it is purely mineral and asbestos-free. The panels are easy to install and versatile in use.

- Application area: Indoors
- Approval/Certificate: Classification A1 (non-flammable) as per DIN EN 13501-1



4. ROKU® Sil

ROKU® Sil is a non-flammable, asbestos-free construction panel. It absorbs humidity and, after drying out, regains its original thickness while maintaining long-term performance capability.

- Application area: Indoors
- Approval/Certificate: Classification A1 (non-flammable) as per DIN EN 13501-1



5. ROKU® V8 Gypsum Board

Die ROKU® V8 gypsum boards are made from various types of plaster with an admixture of cellulose fibres. The boards are extremely resilient, they are recognised as harmless from a building biology point of view, and they exhibit high edge stability.

- Application area: Indoors
- Approval/Certificate: Classification A1 (non-flammable) as per DIN EN 13501-1



6. MORTON® by Odice

MORTON® a laminated composite material made from glass fibres and phenolic resin, exhibits specific fire resistance properties. The material comes in cut-to-size sheets or strips.

- Application area: Indoors
- Approval/Certificate: EN 45545-2 HL3 R1/R7, and many more

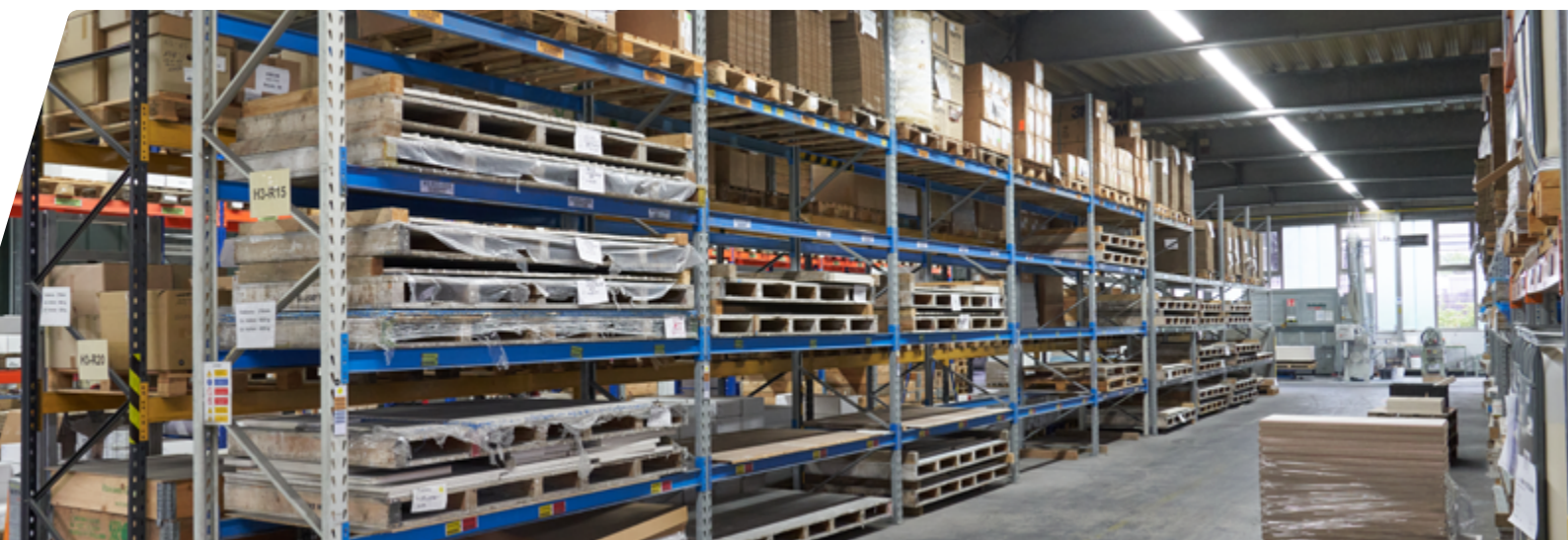




Container and Packaging Sizes at a Glance

Our portfolio of fire protection products and solutions is wide-ranging, and so is the array of supply options: In addition to the popular standard container size (20 kg) for coating materials, we offer special container and packaging sizes upon request. Thanks to our state-of-the-art manufacturing facilities, we can also deliver materials of any size and dimension to suit your needs.

For an **overview** of our standard container and packaging sizes along with all article numbers, please scan the QR code provided below.





Our Research, Our Development – Your Product, Your Benefit

Our clients expect the best, and rightly so! Therefore, we boast several locations where ongoing research, development and production activities are conducted with a view to creating market-relevant innovations and extensions to existing systems. The same applies in the field of client-specific solutions: We are constantly expanding our range of products and services, with a special focus on rolling stock, ships and offshore facilities, (renewable) energy and other industry environments. It goes without saying that our solutions meet all applicable fire protection requirements; furthermore, they are fit for use on flammable substrates and exhibit excellent weather resistance.

In-house Fire Testing Facilities for Seamless Safety

With six in-house fire testing furnaces and numerous service centres in place, we deliver on what we promise, so each client can rightly expect us to provide the optimum solution in terms of efficiency, safety and fast response whenever and wherever needed. Regular quality control and inspection also matter to us, as does know-how transfer with scientific research institutes and universities. These priorities together form the strong foundation on which the innovation and progress of our Group are built.

Enhanced Expertise

svt has partnered with TÜV Rheinland, thus complementing long-grown in-house expertise with external specialist services. Together, we not only develop solutions geared to ensuring overall system safety, but we also subject systems to extensive fire protection testing in one of Germany's most advanced test centres. The tests are performed in accordance with a broad range of national and international standards and requirements.

Read the **Press Release** to know more!



Moving Forward Together: References Worldwide

The svt Group of Companies has made a name for itself as a leading full-service provider in the field of passive structural fire protection. In the field of rolling stock alone, we have already successfully implemented more than 100 projects. Here is a small selection:

Desiro Thameslink, British Class 700, Siemens

- Coating of the aluminium underframe (outside surface)
- Implemented in: London / Great Britain



Innovia Monorail 300, Bombardier

- Coating of the aluminium underframe (outside surface)
- Implemented in: Brazil, Saudi Arabia



CalTrain, KISS class, Stadler

- Underbody coating
- Implemented in: USA



Chengdu Linie 5, CRR

- Cable management
- Surface protection indoors
- Implemented in: China



Metro Warsaw, Škoda Transportation

- Coating for exterior application
- Implemented in: Poland



Protect your values.



members of svt group

AIK



flamro

ROLFKUHNGBH

svt Products GmbH

Gluesinger Strasse 86
21217 Seevetal
Germany
T +49 4105 4090-14
E industry@svt.de
W svt-global.com