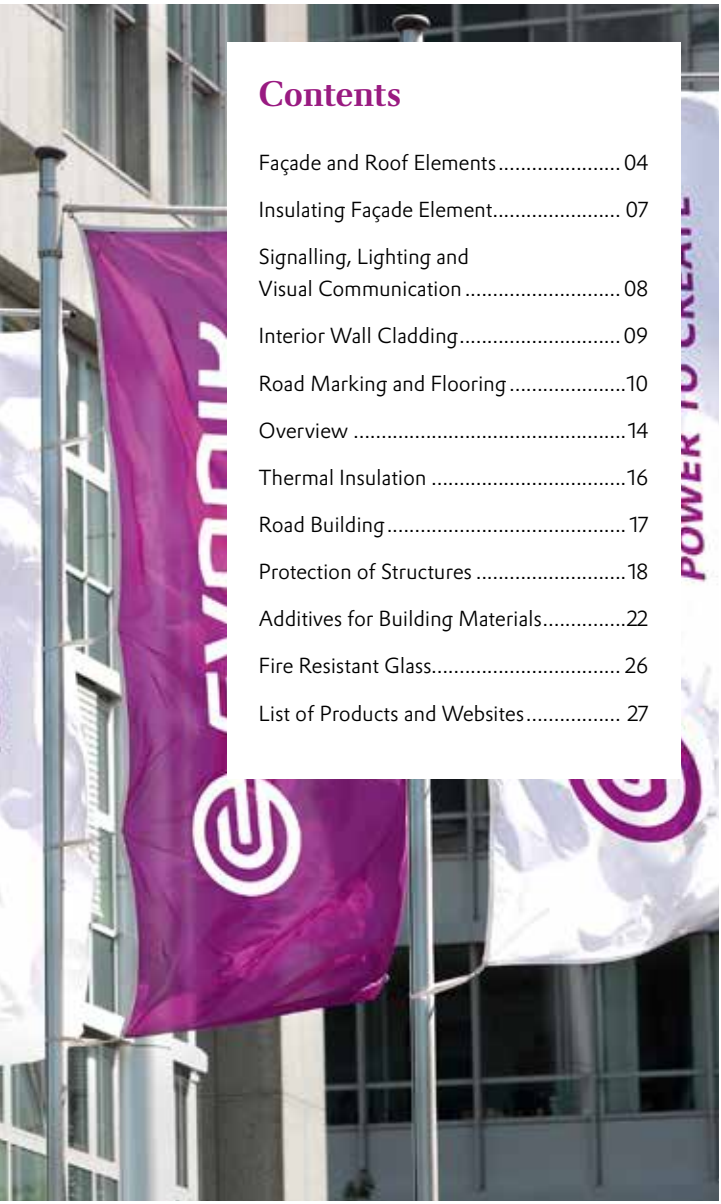
Evonik for the construction industry

EVONIK
POWER TO CREATE

From the roof to the foundation, and from protecting ancient national treasures to building the cities of the future, Evonik has products and solutions for use in almost all aspects of construction.

As one of the world's most innovative specialty chemicals companies, we are defined by our creativity, energy, and passion for our products and for our customers. Whether it be solving a customer's current problems, improving their existing products for the future, or finding new, innovative solutions to difficult challenges. We want to be your specialty chemicals partner in the construction industry.

Let us build a better world, together.



Contents

Façade and Roof Elements

PLEXIGLAS® exteriors represent a captivating combination of unique surfaces, the ability to mold these surfaces into freeflowing organic shapes, and the ability to create seamless jamb and corner joints – an entirely new sensory experience.

Façades

PLEXIGLAS® Satinice

Application	Technical Advantages
· curtain ventilated façades	· 2- and 3-dimensionally thermoformable material · satin surface · translucent in different transmission grades · broad color variety

PLEXIGLAS® Hi-Gloss

Application	Technical Advantages
· curtain ventilated façades · cladding material for curtain wall façades	· 2- and 3-dimensionally thermoformable material · backside colored material with special 3D depth effect

Noise protection

PLEXIGLAS® Soundstop

Application	Technical Advantages
· sound wall elements for railways and motorways	· transparent or translucent elements · custom colors available · custom sizes, non-rectangular cuttings · bird stripe technology · thermoforming options, e.g. line bendings · 30 to 33 dB noise abatement

Roofing

PLEXIGLAS® Heatstop

Application	Technical Advantages
· translucent roofs for terraces, carports, etc. · heat reducing cladding for industrial and residential roofs/façades	· light elements · special formulation against solar radiation/heating (climate costs saving) · anti-algae technology (long lasting clean roofs) · large span width (less sub construction/cost saving) · heat insulating (energy saving)

PLEXIGLAS® Alltop

Application	Technical Advantages
· transparent roof and side-wall cladding for commercial and hobby greenhouses	· light elements · UV-transmitting (may improve plant growth) · UV-stable (30 years guarantee against yellowing) · technology against visible condensation (almost no light reduction) · large span width (less sub construction/cost saving) · sustainable roofing (EPD available) · heat insulating (energy saving)

PLEXIGLAS® Resist

Application	Technical Advantages
· transparent and translucent roof cladding for residential glazing e.g. terrace roofs, carports, hobbygreenhouses, as well as commercial greenhouses	· light elements · anti-algae technology (long lasting clean roofs) · large span width (less sub construction/cost saving) · UV-stable (30 years guarantee against yellowing) · sustainable roofing (EPD available) · heat insulating (energy saving) · glass-like transparency

Weathering protection films

PLEXIGLAS® films, EUROPLEX® films

Application	Technical Advantages
· façade panels · weathering protection films for high pressure laminates and PVC window profiles · coil coating (steel façades)	· acrylic films of 50 to 750 µm thickness · monolithic PLEXIGLAS® films block 98 % UV radiation · shields HPL façade panels & PVC window profiles from UV · EUROPLEX® films with PVDF surface provide state-of-the-art UV protection, chemical resistance and easy-to-clean surfaces · delivered as rolls or in customized cut to size sheets

Insulating Façade Elements

The element of the future providing passive house quality via an innovative insulation system based on CALOSTAT®.

CALOSTAT®

Application	Technical Advantages
Thermal Insulation New building façades: · post and beam, element façade Building façade renovation: · post and beam, ventilated curtain, concrete wall	extremely thin system (ca. 12 cm) combined with a very high insulation value (U <0,15 W/m²K) · new buildings can easily surpass new insulation norms while saving space · Impressive sound insulation (sound transmission class 3-5 DIN EN ISO 10140-2) · very good fire protection (F90) · wide selection of colors and surfaces · refurbishments can greatly improve building insulation using already existing insulation architecture without modifications

1 Sheets on both sides, e.g. solid surface material
2 CALOSTAT®
3 VIP
4 Frame

Signalling, Lighting and Visual Communication

Sheets, rods and tubes with outstanding outdoor weatherability, unsurpassed transparency and brilliance, great light-guiding properties to enable greater luminous efficiency with lower energy consumption. Especially PLEXIGLAS® Satinice, PLEXIGLAS® LED, PLEXIGLAS® Optical HC, PLEXIGLAS® Hi-Gloss and PLEXIGLAS® Textures are the most used materials for these applications.

PLEXIGLAS® products

Application	Technical Advantages
· exhibition booths and store fixtures · communication in stadiums · subways · hotels · airports and train stations · visual communication · lighting · shop fitting · decoration	· 3-dimensionally thermoformable · variety of shapes and colors · scratch resistant coating · ease of fabrication · light elements · edge colored · specialised for LED lighting

Interior Wall Cladding

A noble appearance, special deep-view effect and the outstanding reflective properties are the characteristics of PLEXIGLAS® Hi-Gloss solid sheets, which are available in various colors.

PLEXIGLAS® Hi-Gloss

Application	Technical Advantages
· bathroom furniture · showers · wall panelling · hallways · corridors · kitchen · living space · furniture · exhibition stand construction · ambient lighting · ceiling design · furniture · wall design	· high-gloss surface · brilliant and noble appearance · ready to use surface · 3-dimensionally formable

Road Marking and Flooring

Evonik products help to protect concrete and steel structures, provide durable industrial flooring and increase work safety in different environments.

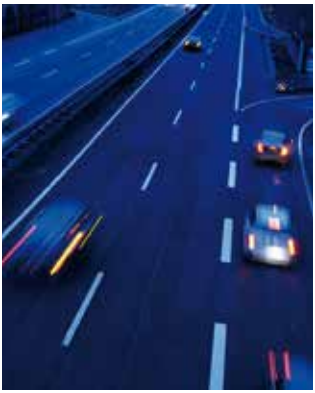
DEGADUR® reactive flooring resins

Application	Technical Advantages
DEGADUR® resins are solvent-free, coldcuring methacrylate resins for the production of durable, high quality industrial or decorative floors.	Flooring systems manufactured with DEGADUR® synthetic resins from Evonik offer an efficient solution in functionality, aesthetics and also time efficiency.

DEGADUR® floors are rapidly applied – and can be put in use within a few hours. Processing and curing is possible over a wide temperature range, down to -30° C. DEGADUR® resins protect mineral and metallic surfaces from weather, mechanical and chemical stresses. They also offer excellent UV resistance. DEGADUR® floors meet the highest hygiene requirements and increase workplace safety through their non-slip properties. Evonik's DEGADUR® products are certified with an Environmental Product Declaration that can be translated into the various environmental standards held in countries worldwide.

Examples of use

Concrete structures in general, industrial flooring in logistics, production of food and beverages, decorative and protective floorings in restaurant and hotel kitchens, spa areas, sport stadiums, railway or subway stations, airports and bridges.



Safe and durable – that is what cold plastic MMA road markings based on DEGAROUTE® stand for. The systems' longevity makes them reliable, environmentally friendly and cost-effective. For the last 50 years, Evonik Industries has been drawing on their internal experience with methacrylate reactive resins to produce and continuously enhance DEGAROUTE® based cold plastic MMA road markings.

DEGAROUTE® based road markings

Application	Technical Advantages
DEGAROUTE® based road markings contribute to innovative guidance systems which enhance safety for pedestrians, cyclists and drivers.	When compared to conventional markings, such as thermoplastic and solvent- or water-based markings, road markings based on DEGAROUTE® resins have clear advantages. The benefits of methacrylate based cold plastic road markings are: · durability – abrasion resistant at high or low temperatures · superior visual and audible properties, even during rain or at night · rapid application with short curing times resource efficient · worldwide availability consistent quality high versatility

Flooring and coatings for concrete protection

VESTAMIN® is a product range of specific amines suitable for the formulation of epoxy curing agents. They find their applications where concrete protection against chemical attack and mechanical impact is required.

VESTAMIN®

Application	Technical Advantages
VESTAMIN® for 2K epoxy primers and self leveling floors onto concrete VESTAMIN® for 2K epoxy primer and protective coatings onto metal and concrete.	· excellent wetting of and adhesion onto concrete · processing above 5°C · excellent chemical and mechanical resistance

VESTANAT® is a product portfolio of polyisocyanates cross-linkers and prepolymers for the formulation of decorative and protective polyurethanes. They find their application in top coats and sealers where excellent weathering durability, specific surface properties (like scratch resistance) and mechanical properties (flexibility) are required.

VESTANAT®

Application	Technical Advantages
VESTANAT® for decorative and protective top layers, 1K moisture cure as well as 2K cure	· excellent weathering durability and mechanical properties · application in thin layers/coat onto epoxy based primer/flooring to achieve several specific surface effects like scratch resistance, matt surface, slip resistance

Concrete injection systems

VESTAMIN® is a product portfolio of specific amines suitable for the formulation of epoxy curing agents. They find their applications in concrete injection systems where frictional bond of damaged concrete structures has to be established.

VESTAMIN®

Application	Technical Advantages
VESTAMIN® for epoxy based 2K concrete injection systems	· low viscosity · fast cure · excellent frictional bond · excellent mechanical strength and resistance against alkaline media

Adhesive systems

VESTAMIN® is a product portfolio of specific amines suitable for the formulation of epoxy curing agents. They find their applications in adhesives between concrete structures as well as adhesives onto concrete.

VESTAMIN®

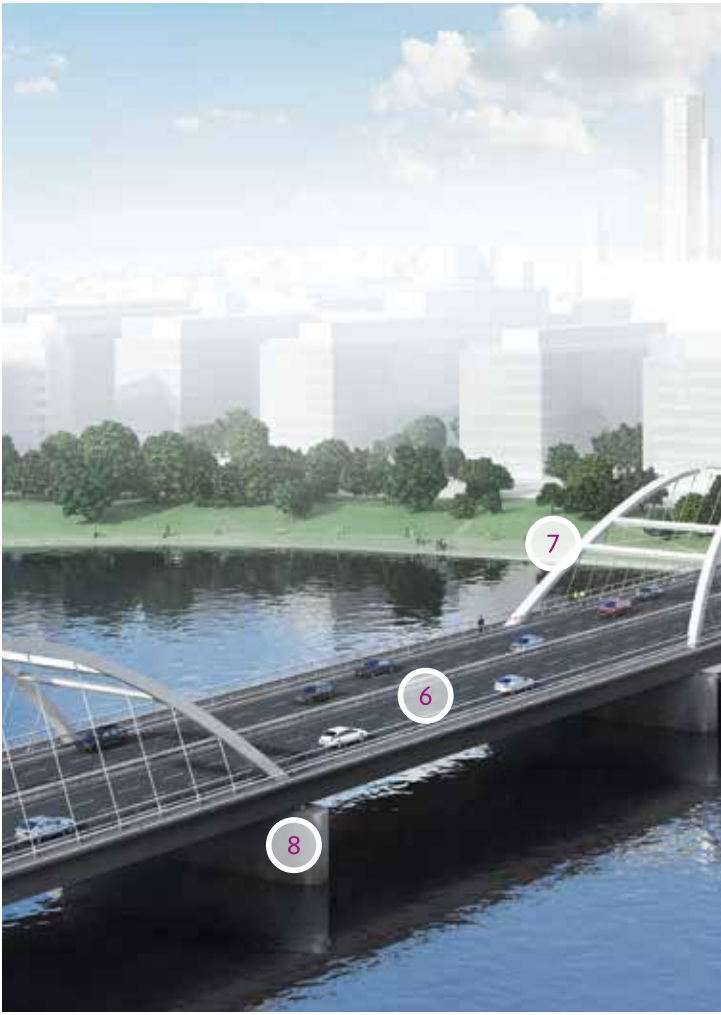
Application	Technical Advantages
VESTAMIN® for epoxy based 2K construction adhesive systems	· excellent frictional bond and adhesion to concrete · excellent mechanical strength and resistance against chemicals

Sealant systems

VESTANAT® is a product portfolio of cycloaliphatic di-and polyisocyanates suitable for the formulation of PUR or SPUR sealant systems. VESTANAT® di-isocyanate monomers are used for manufacturing of prepolymers used in sealant applications.

VESTANAT®

Application	Technical Advantages
VESTANAT® for PUR systems in 1K and 2K sealant systems	· UV resistance · excellent flexibility · chemical resistance · long pot life



1) Façade and Roof Elements
2) Signalling, Lighting etc.
3) Interior Wall Cladding
4) Road Marking and Flooring
5) Thermal Insulation
6) Road Building
7) Protection of Structures
8) Additives for Building Materials
9) Fire Resistant Glass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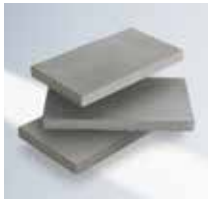
Thermal Insulation

CALOSTAT® as super insulation material and AEROSIL® as a raw material for insulation materials, e.g. like VIP and HTI are high performance materials within the market segment thermal insulation, enabling fire protection and super insulation over a wide temperature range.



Fumed Silica

AEROSIL® in VIP

Application	Technical Advantages
AEROSIL® is used as the raw material for the cores of fumed silica based Vacuum Insulation Panels (VIP).	Core materials for VIP require a completely open-porous structure to allow evacuation and must have a sufficiently high compressive strength to withstand the mechanical pressure load. Due to its micro porous structure AEROSIL® prevents convection in case of a slight pressure increase within the VIP and even in case of vacuum failure AEROSIL® provides good thermal insulation. AEROSIL® is able to absorb humidity which gets into the VIP though the sealing film by water permeation. The absorption is indispensable to keep the thermal conductivity very low. Otherwise getters have to be added. AEROSIL® is the only core material which can guarantee a long life for VIP, up to 30 years, and is the most common core material for high performance VIP.

Synthetic amorphous silica based super insulation board

CALOSTAT®

Application	Technical Advantages
Mineral board for thermal insulation with highest performance and fire protection.	A mineral material with unique properties and a thermal conductivity of only 0.019 W/(m · K). In addition to both the excellent thermal insulation under summer and winter conditions, and its non-flammability, CALOSTAT® is characterized by non-combustability, vapor diffusion openness and core hydrophobization. As a result, completely new and more efficient insulation systems are possible, resulting from the combination of material properties of CALOSTAT®.

Road Building

Evonik is providing a broad range of technologies to serve the road construction industry. VESTENAMER® and TEGO® Addibit products provide solutions for today's requirements such as durability, reduction of emissions and energy consumption, and thus support sustainable road construction and maintenance.

VESTENAMER®

Application	Technical Advantages
Rubber modified bitumen/asphalt	The use of ground tire rubber (GTR) enhances the durability and performance of asphalt concrete pavements significantly. Processing is often challenging. A small addition of VESTENAMER® pellets dramatically overcomes the challenges, leading to an easier process mix. The improved handling and durability of asphalt rubber results in a reduction of maintenance costs.

TEGO® Addibit

Application	Technical Advantages
Emulsifiers, adhesion promoter and stabilizers for asphalt and bituminous coatings	Our long proven TEGO® Addibit portfolio contains various additives for all important needs within the production of asphalt or bitumen based products and can support modern requirements of durability and reduction of emissions and energy consumption.

Protection of Structures

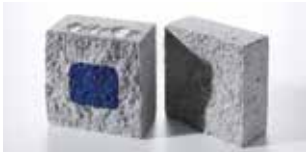
Protection of new and renovated concrete surfaces is key to ensure protection against environmental influences.

Protectosil®

Organo-functional silanes Protectosil® products are valued as hydro- and oleophobizing products, corrosion inhibitors, and effective products for preventing graffiti or other surface damaging effects. Protectosil® provide serious problem solutions to give materials a special degree of durability and resistance.

Water repellents

Protectosil® water repellent products penetrate deep into the substrate and provide hydrophobic properties on surfaces of existing and new structures.



Protectosil®

Application	Technical Advantages
The wide spectrum of Protectosil® building protection products enables you to choose the optimal product or product combination for almost every type of mineral substrate to achieve very efficient hydrophobicity. Protection of mineral surfaces against the ingress of water and water soluble pollutants.	Treatment with water repellents using Protectosil® building protection products is unique and offers deep protection which is not affected by UV exposure or abrasive load. Protectosil® water repellent products penetrate deep into the substrate. They keep water out and maintain the substrate's water vapor permeability and do not change the surface appearance. Protectosil® water repellents meet the requirements of EN 1504-2 and have been tested according to NHWA #244. Innovative emulsion technology leads to highly effective environment friendly masonry water repellents.

Surface protection (easy to clean/graffiti control)

Protectosil® SC products are aqueous solutions of oleophobizing silane systems for façade protection of absorbent mineral building materials. Stains caused by strongly colored liquids are removed more easily. Additionally chewing gum and adhesives adhere less strongly to treated surfaces.

Protectosil®

Application	Technical Advantages
Private and public buildings with representitive functions. Such as: historic landmarks, monuments, engineering structures, banks, train, subway stations or shopping malls.	Product range offers ideal properties for the protection of mineral substrates. Protectosil® SC product range creates a long lasting and easy-to-clean surface. The products are environmentally friendly and simple to use.

Protectosil ANTIGRAFFITI®

Protection with Protectosil ANTIGRAFFITI® allows easy removal of paint and helps to keep buildings free from graffiti. It penetrates into the pores of the building materials and acts as a deterrent to graffiti sprayers.

Protectosil ANTIGRAFFITI®

Application	Technical Advantages
Our hydro- and oleophobic products inhibit the adhesion of paints, coatings and markers to the surface, while also preventing penetration into the pores of the building material.	Protectosil ANTIGRAFFITI® permanent graffiti protection system for porous mineral substrates creates a strong hydro- and oleophobicity at the façade surface. It is water based and withstands at least 10 cleaning cycles, authorized by BASt (German Federal Highway Research Institute).

Corrosion protection

Protectosil® CIT is a silane-based corrosion inhibitor system specially designed for steel reinforced concrete. The molecules penetrate deep into the structure and interrupt the electrolytic current that leads to corrosion caused by chloride-ion penetration.

Protectosil® CIT

Application	Technical Advantages
Protection of steel reinforced concrete structures like bridges, park decks and sea ports against chloride induced corrosion as well as concrete repair mortars.	Protectosil® protects steel-reinforced concrete by interrupting the corrosion mechanism. Even in concrete exposed to high corrosion conditions, Protectosil® has proven its efficiency. This results in increased service life and reduced maintenance costs.

DEGALAN®

With DEGALAN®, new and renovated concrete surfaces receive optimum protection against environmental influences. DEGALAN® products offer convincing benefits in all applications where the main priorities are unsurpassed weather resistance and freedom from yellowing. In addition, DEGALAN® products ensure an optimum carbon dioxide barrier effect and show good resistance to saponification.

DEGALAN®

Application	Technical Advantages
Formulation of paints and varnishes for protection of structures made of concrete, metal, asphalt, plastics, etc... .	Protection of concrete structures against carbonation. Excellent resistance to UV, no yellowing. Mono component, easy and quick application.

The right additives can make the difference within concrete structures or additional protective layers. They can have a major influence on the durability and the workability.

SITREN®/SITREN Airvoid®/TEGOSIVIN®/TEGO® Additives

Application	Technical Advantages
Additives for integral protection of concrete structures.	Our broad range of performance additives like water repellents, shrinkage reducer, air entrainer or defoamer have a direct impact on the durability of concrete structures. In addition to these performance additives we offer products like TEGO® Antifoam or TEGO® Addibit to improve the properties of other protection products like coatings.

Additives for Building Materials

With our advanced construction additives we offer solutions that enhance our customers' performance and value. Long-term relationships based on trust and face-to-face consulting is the basis of our work.

TEGOSIVIN®

Application	Technical Advantages
Integral water repellents for cement-based applications.	The use of TEGOSIVIN® water repellents has a positive impact on the durability and the aesthetic properties of cement-based building materials. By the strong reduction of the water uptake and an excellent efflorescence control, negative effects will be avoided.

SITREN®/SITREN AirVoid®

Application	Technical Advantages
Liquid and powder performance additives for concrete and drymix applications.	Our SITREN® and SITREN AirVoid® product ranges contain different types of performance additives, mainly for cement-based applications. In addition to a broad range of liquid, powder defoaming and air entraining additives, for an optimized air control of concrete or drymix mortars, we offer different powder solutions for shrinkage reduction, water repellency and mold release.

Protectosil® DRY CIT/Protectosil® SC POWDER

Application	Technical Advantages
Corrosion protection and oleophobic agent as part of mix design of steel reinforced concrete and special mortars	The in-situ corrosion protection properties and prolonged durability of Protectosil® DRY CIT greatly improves the life cycle of concrete structures. Protectosil® SC POWDER helps to maintain clean surfaces of high end mortars.

AEROXIDE® TiO_2

Application	Technical Advantages
High purity fumed titania for photocatalytic concrete, urban pavements, façade mortars, plasters, tiles, roof tiles	Photocatalysis in the building industry offers promising potential. Surfaces coated with AEROXIDE® TiO_2 become self-cleaning and anti-bacterial. Furthermore, due to the very high photocatalytic activity of our products, photocatalytic oxidation of nitrogen oxides (NOx) and volatile organic compounds (VOCs) is one of the key properties provided for innovative building materials. In order to meet different requirements our product portfolio includes as well a highly dispersed fumed titania (AEROXIDE® TiO_2 90), a granulated fumed titania (VP AEROPERL® P 25/20) and dispersions thereof (AERODISP®).

TEGO® antifoams and further processing aids

Application	Technical Advantages
Processing aids for an optimized production of industrially produced building materials.	The production process of various building materials will be improved by our broad range of TEGO® additives. Including: optimized foam control, better wetting, improved dispersing, leading to a higher process efficiency and better product performance.

AEROSIL®/SIPERNAT®

Application	Technical Advantages
AEROSIL®, AEROXIDE®, AERODISP®, AEROPERL®, SIPERNAT® can enhance the performance, application and production processes of cement, mortars, concretes, gypsums, plasters as well as of construction additives	Many are the advantages that can be obtained by the right choice of our products. Some examples for cementitious systems are a faster and higher development of early strength, higher final compressive strength, improved homogeneity of component distribution, reduction of bleeding and segregation or stabilization of slurries and foams. Benefits for construction additives include, among others, improved processability during e.g. spray drying of emulsions/dispersions exhibiting thermoplastic behaviour, carrier of liquid additives for exact and controlled dosing, improved mixing efficiency and consistency in dry-mix formulations, stabilizations of dispersions by viscoelastic properties or stabilization of foams and emulsions by pickering effect.

Dynasylan®

Application	Technical Advantages
Adhesion promoter between inorganic materials and organic polymers. Used in mineral fiber insulating materials, as additive to the binder system.	Functional Silanes are performance additives. Their main effects are: · surface modification of inorganic particles, fibers or substrates · adhesion promotion between inorganic material and organic resins · crosslinking of various resin types Main benefits are: · improved corrosion protection due to improved paint adhesion · improved mechanical strength, weather resistance, and moisture resistance

Fire Resistant Glass

The leading technologies used to manufacture insulating fire-resistant glass are based on glass plates separated by intumescent layers, which are composed of a highly viscose solution of alkali silicates and appropriate organic additives. The key enabler to manufacture glass according to this technology in a simple processis AERODISP® W 1244, a ready to use formulation based on propriatory silica technology.

AERODISP®

Application	Technical Advantages
AERODISP® high purity silica dispersion as key component for the intumescent interlayer of insulating fire resistant glass	The ready to use formulation enables a simpler process with lower investment requirements than conventional processes. Final glass can be larger in dimensions and thinner compared to the limits of conventional technologies. This gives higher degrees of freedom to the architects.

List of Products and Websites

AERODISP®	www.evonik.com/aerosil
AEROSIL®	www.evonik.com/aerosil
AEROXIDE®	www.evonik.com/aerosil
CALOSTAT®	www.evonik.com/calostat
DEGADUR®	www.evonik.com/degadur
DEGALAN®	www.evonik.com/degalan
DEGAROUTE®	www.evonik.com/degaroute
DYNASYLAN®	www.evonik.com/dynasylan
PLEXIGLAS®	www.evonik.com/plexiglas
Protectosil®	www.evonik.com/protectosil
SIPERNAT®	www.evonik.com/sipernat
SITREN®	www.evonik.com/sitren
TEGO® Addibit	www.evonik.com/asphalt
TEGOSIVIN®	www.evonik.com/tegovisin
VESTENAMER®	www.evonik.com/vestamid

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EVONIK
POWER TO CREATE