

EPDM Facade Waterproofing



The complete system for water, weather and moisture protection of facades and windows



During its lifetime a building facade is subject to the effects of thermal and structural movements as well as wind and water, all under a wide range of temperatures and climatic conditions. These stresses and movements subject the waterproofing to a range of demands: it needs to be strong, elastic, weatherproof and resistant to industrial, polluted atmosphere. It needs to give a service life as long as the life of the building, with no loss in performance or properties.

The Cladseal system provides an engineered waterproofing system meeting all these requirements.

The Cladseal Material

EPDM (Ethylene propylene diene monomer) is a synthetic rubber obtained by the copolymerisation of ethylene and propylene and a non-conjugated diene monomer. The rubber also contains reinforcing carbon black, fillers, processing aids, antioxidants and vulcanising ingredients. During production the EPDM compound is vulcanised. The long macro molecules are joined together by chemical cross-linking, making an elastic, flexible membrane that is stable to temperature change, is chemically resistant and will always return to its original dimensions after being elongated.

The EPDM polymer has over the last 40 years found an ever increasing number of applications, in the building and civil engineering industry and in the automotive industry.





The Cladseal Product

The EPDM and Butyl membranes, with their cross-linked molecular structure, have negligible aging over time, despite exposure to the atmosphere, sunlight, UV radiation, chemical pollutions, water and extremes of temperature. EPDM and Butyl contain no plasticisers which can evaporate or be washed out over time or migrate to other materials. The strength and elasticity remains virtually unchanged over decades, without shrinkage, melting, hardening or cracking, and the membrane remains flexible at temperatures from -40 to + 150° C.

Cladseal EPDM has a proven service life, defined as minimum 150 % elongation at break, exceeding 50 years in exposed installations.

EPDM and Butyl are also highly resistant to chemicals and attacks by rodents, fungi, bacteria and micro-organisms. EPDM is also resistant to water absorption.

EPDM can absorb thermal and structural movements during linear elongation up to 300% and have a multi-axial elongation exceeding 100 %, at any temperature. Unlike most thermoplastic materials EPDM has no yield point, even when deformed to extreme limits it will still return to its original shape, size and thickness. Due to its viscoelastic properties it can withstand an almost unlimited pressure load.

Comparison with thermoplastic materials

	EPDM	Thermoplastic materials	
-40° C	<p>0% 300% 0%</p>	<p>0% 0% 0%</p>	<p>At -40° C EPDM is unaffected, thermoplastics are stiff, brittle</p>
+150° C	<p>0% 300% 0%</p>		<p>At +150° C EPDM is unaffected, thermoplastics are liquids</p>
After elongation due to structural movements	<p>0% 300% 0%</p>	<p>0% 40% 40%</p>	<p>After decades of flexing, EPDM is unaffected. Thermoplastics are thin and elongated, or cracked.</p>

Because of its stable molecular structure EPDM does not affect other building materials or cause migration, staining or discolouration.

EPDM has a low weight and a documented service life exceeding 50 years. It does not contain any CFCs, HCFCs, phthalates, dioxins, low grade hydrocarbons or other harmful chemicals. Because of this, a Life Cycle Assessment (LCA) is very favourable when compared to alternative products.

Cladseal Butyl has similar properties as Cladseal EPDM, combined with an extremely low water vapour permeability.

The Cladseal System

The Cladseal System incorporates a range of products giving full freedom in construction and application of the weather sealing attachment against the window frame and/or load carrying structures, both at the outside and the inside walls of the building. Sourcing all components from one supplier means compatible components and best possible logistics. The Cladseal system offers EPDM for outside weatherproofing and Butyl where a low vapour permeability is requested. Cladseal can be fixed to any building substrate using Cladseal methods:

- adhered in separate contact adhesive **Cladseal EPDM** or **Cladseal Butyl** + Contact Adhesive 5000
- adhered in separate high viscosity paste adhesive **Cladseal EPDM** or **Cladseal Butyl** + Paste Adhesive 3300
- adhered with self adhesive, sticky backing **Cladseal SA**
- adhered with factory applied, self adhesive strips on one or two edges **Cladseal SA-Fix**
- mechanically fixed in a designed female groove, with factory applied male extruded EPDM profile – **Cladseal P-Fix**





The Cladseal Installation

With five alternative application methods there is a suitable Cladseal solution to every facade or window construction and every type of substrate. The strips are available in any specified width from 50 mm up to 1700 mm to ensure the correct weatherproofing in any individual case.

Bonding surfaces have to be dry and clean. Overlap seams between strips have to be sealed with sealants and porous substrates have to be coated with a primer to provide a good bonding surface. All components that are necessary are included in the Cladseal Systems:

	Product type	Areas of use	Suitable substrates or surfaces
Paste Adhesive 3300	Polymer based high viscosity adhesive with low solvent content. Colour: black	Adhering Cladseal EPDM and Cladseal Butyl to substrates. By using Paste Adhesive the position of strip can be adjusted, where Contact Adhesive gives constant fixation.	PVC, Aluminium, Steel, Galvanised steel, Glass, Acrylic glass, Concrete, Light weight concrete, Lead, Wood, Bitumen, EPDM, Butyl
Contact Adhesive 5000	Polymer based contact adhesive containing inflammable solvents. Colour: black	Adhering Cladseal EPDM and Cladseal Butyl to substrates. Can also be used to adhere/splice EPDM or Butyl surfaces together, in combination with Sealant 5590.	PVC, Aluminium, Steel, Galvanised steel, Glass, Bitumen (not APP), Concrete, Light weight concrete, Wood, EPDM, Butyl
Sealant 5590	Silicone based sealant with low solvent content. Colour: black	Sealing of overlap seams, details and corners in all Cladseal Systems	PVC, PE, Aluminium, Steel, Galvanised steel, Glass, Acrylic glass, EPDM, Butyl
Primer 9800	Solvent based primer, contains polymer. Highly inflammable. Colour: red	Treatment of absorbing or porous substrates before applying Paste Adhesive 3300 or Contact Adhesive 5000 when using Cladseal EPDM or Cladseal Butyl. Always used on any substrate with system Cladseal SA.	Mineral based substrates, (i.e. Concrete, Light weight concrete, Stone, Perlite, Mineral boards)
Cleaning Wash 9700	Naphtha (Petroleum), hydrogen processed light. Highly flammable. Colourless liquid.	Used on metal and EPDM surfaces that are to accept the adhesives (note: on both mating surfaces in the case of EPDM).	

The Cladseal Service

To support and develop our customers is a key objective of the Cladseal Service. Our commitment to a “state-of-the-art” weather sealing package does not end with delivery of products to the building site. We remain your partner in providing individual engineered solutions, technical training and service in installation and construction, trouble shooting, development and logistics.

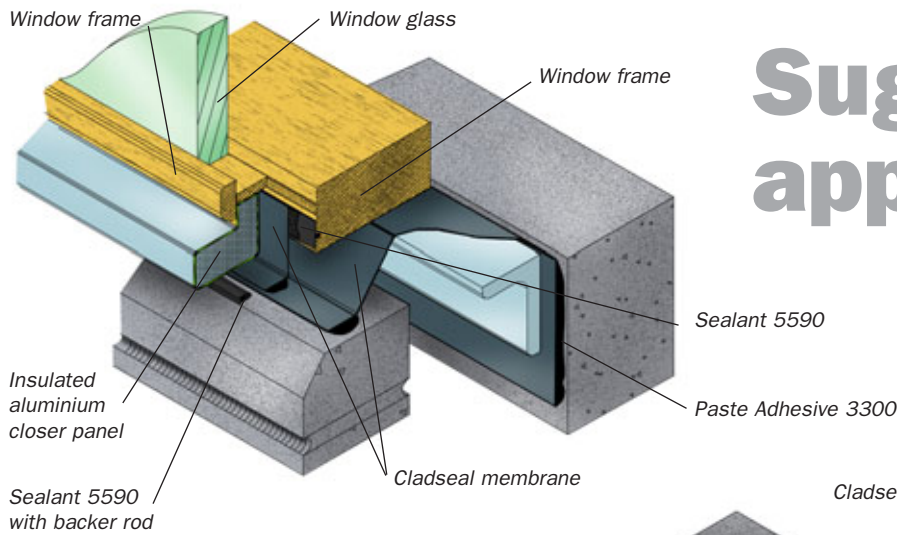
Deliveries

The Cladseal Systems: Cladseal EPDM, Cladseal Butyl and Cladseal SA can be

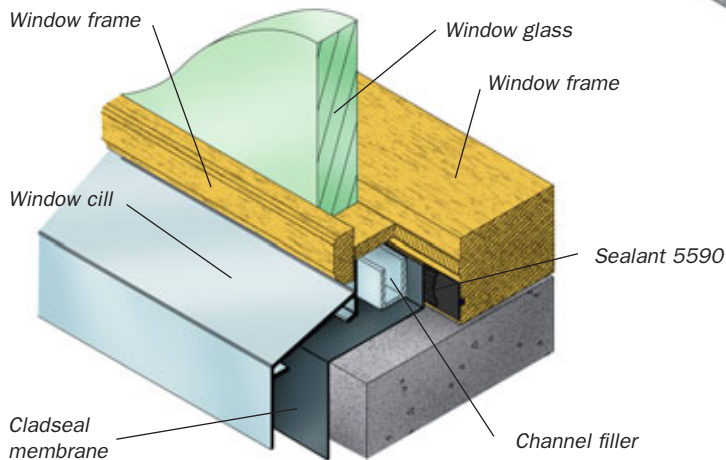
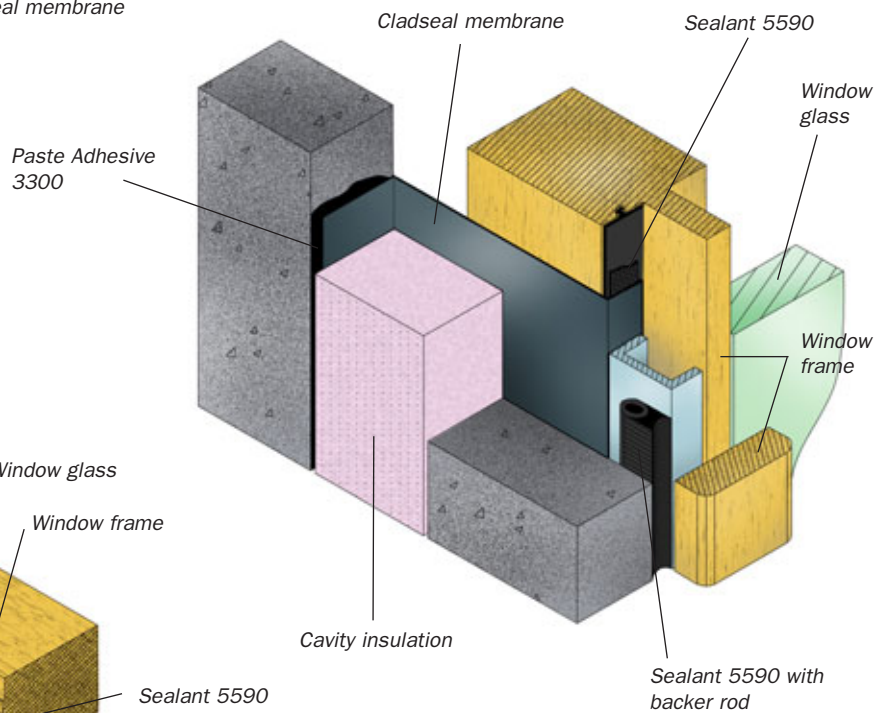
delivered in requested width with short notice, within days if requested, from the Swedish plant or from domestic facilities. The Cladseal Systems Cladseal SA-Fix and P-Fix are customer specific programs tailored to particular enquiries. The Cladseal SA-Fix product is normally delivered in 4 weeks, while the Cladseal P-Fix system incorporates an EPDM extruded profile produced against customer drawings, therefore involves production of matrix tools and samples for approval. Normal time for this process is 2-4 months.



Suggested applications



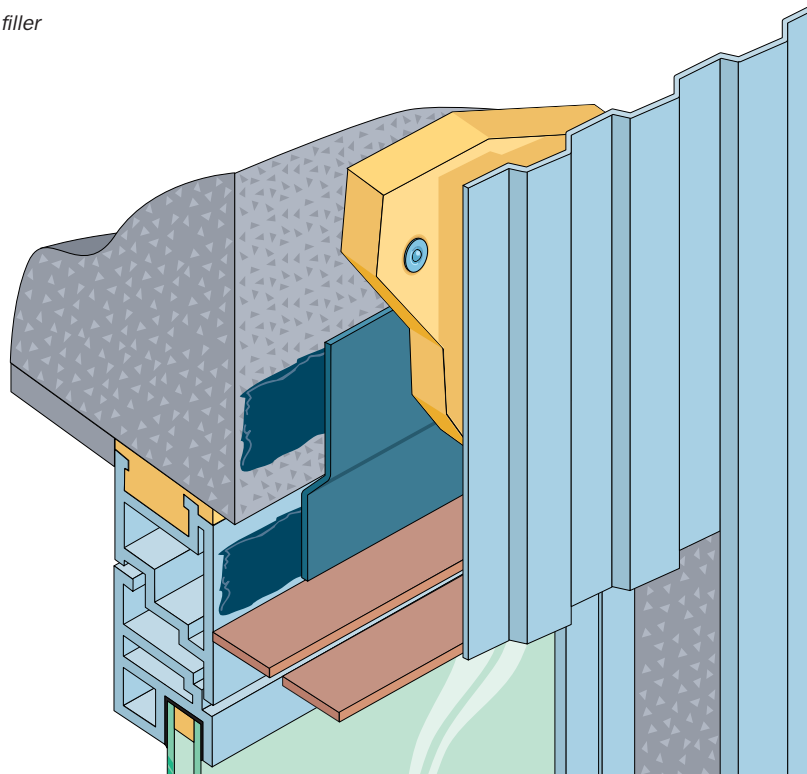
As a supplier of material only, TBS Elastomers does not assume responsibility for error in design, engineering, quantities or dimensions. Specifier, engineer and/or roofing applicator shall verify dimensions and sizes.



Construction and Installation Service

Our technical support team is available to offer advice on the installation, specification, application and suitability for a particular project of all Cladseal systems.

Our technical service engineers are also at your disposal for on-site training and advice and can provide information on the correct handling and techniques required to install the Cladseal systems.

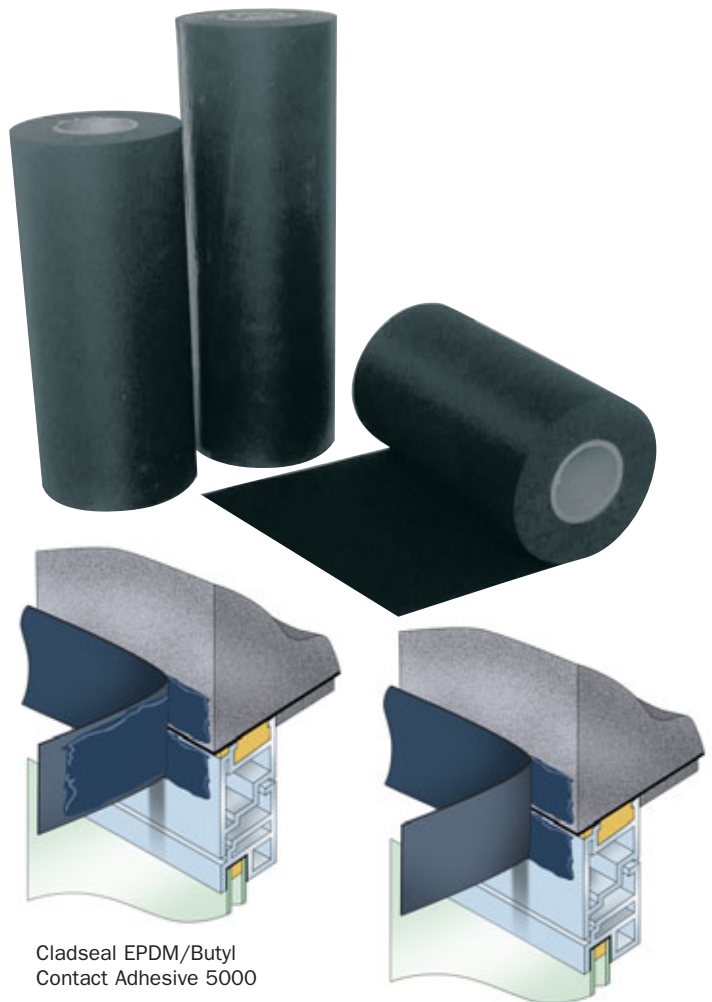




The Cladseal System

- **Weather resistant.** Resistant to atmosphere, UV light and airborne pollutions. Service life expectancy exceeds 50 years.
- **Temperature resistant.** Maintains its elasticity and extensibility irrespective of temperature.
- **Biological resistant.** Resistant to microbiological degradation, rodents, fungi and bacteria.
- **Elastic.** Can elongate over 300 %, with over 100 % multidimensional elongation, and will always return to its original size and shape after elongation. Will therefore accommodate any thermal or structural movements in a building structure.
- **Proven history.** EPDM and Butyl membranes have been used for over 50 years in the building and civil engineering industry. The flexible membrane with the longest history.
- **Tough and puncture resistant.** Not affected by mechanical abuse, or extreme pressure loads.
- **Resistant to building materials.** EPDM and Butyl contain no plasticisers or additives that can migrate to other building materials and are compatible with any building substrates.
- **Chemical resistant.** EPDM or Butyl are not affected by other building materials, like mortar, cement, polystyrene, acids.
- **Not affected by water.** EPDM and Butyl are completely unaffected by water and moisture, and absorb no measurable amount of water.
- **Environmental friendly products.** Contains no environmental pollutants. Can be re-cycled, burned or disposed of without any effects on the environment.
- **An engineered Cladding system.** All components and a full range of technical solutions from one supplier.

Everything you need...



Cladseal EPDM/Butyl Contact Adhesive 5000

Cladseal EPDM/Butyl Paste Adhesive 3300

Cladseal EPDM

EPDM membrane, homogenous, 2 ply construction. High/intermediate water vapour transmission factor. The strip surface has a textile imprint for maximum adhesion

Thickness: 0.75/1.00/1.20/1.50 mm
 Length: 25 m
 Width: Specified, from 100 to 1700 mm
 Water vapour transmission factor (DIN 52 615)
 $\mu = 32000$, $S_d = 24$ m
 Package: Each roll packed in PE film
 Delivered stacked on pallets 1200x800 mm
 Rolls per pallet

Thickness mm	Width mm	Number of rolls	Sqm per pallet
0.75 and 1.00	100-200	72, vertical	180-360
	250-400	48, vertical	300-480
	450-800	24, vertical	270-480
0.75	850-1700	30, horizontal	638-1275
1.00	850-1700	20, horizontal	425-850
1.20 and 1.50	100-200	45, vertical	113-225
	250-400	30, vertical	188-300
	450-800	15, vertical	169-300
	850-1700	20, horizontal	425-850

Cladseal Butyl

Butyl membrane, homogenous, 2 ply construction. Low water vapour transmission factor. The strip surface has a textile imprint for maximum adhesion.

Thickness: 0.75/1.00/1.50 mm
 Length: 20 m
 Width: Specified, from 100 to 1700 mm
 Water vapour transmission factor (DIN 52 615)
 $\mu = 300\ 000$, $s_d = 440$ m
 Package: Each roll packed in PE film
 Delivered stacked on pallets 1200x800 mm
 Rolls per pallet

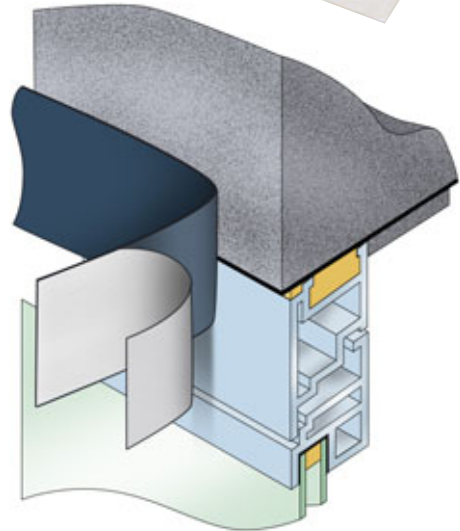
Thickness mm	Width mm	Number of rolls	Sqm per pallet
0.75 and 1.00	100-200	72, vertical	100-360
	250-400	48, vertical	300-400
	450-800	24, vertical	270-480
0.75	850-1700	30, horizontal	638-1275
1.00	850-1700	20, horizontal	425-850
1.50	100-200	45, vertical	113-225
	250-400	30, vertical	188-300
	450-800	15, vertical	169-300
	850-1700	20, horizontal	425-850

Cladseal SA

Cladseal SA is a self adhesive 1.6 mm thick EPDM facade sealing strip. The EPDM layer has a thickness of 1.00 mm and incorporates a polyester textile scrim. The sticky Butyl based adhesive backing has a thickness of 0.6 mm and is covered with a release film. Intermediate water vapour transmission factor.

Thickness: 1.60 mm
 Length: 20 m
 Width: Specified, from 100 mm to 1700 mm
 Package: Each roll wrapped in PE film
 Delivered stacked on pallets 1200x800 mm
 Rolls per pallet

Thickness mm	Width mm	Number of rolls	Sqm per pallet
1.60	100-300	45, vertical	90-270
	350-450	30, vertical	210-270
	500-900	15, vertical	150-270
	950-1700	6, horizontal	114-204

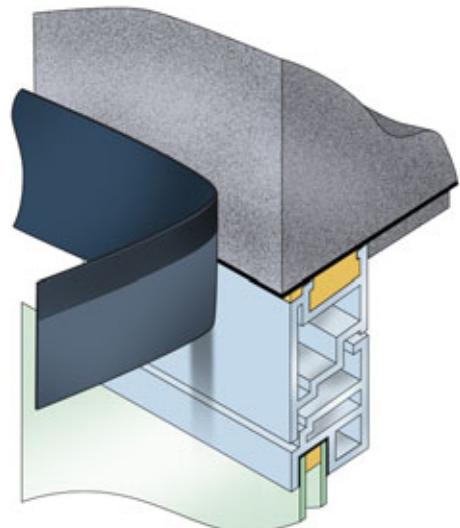
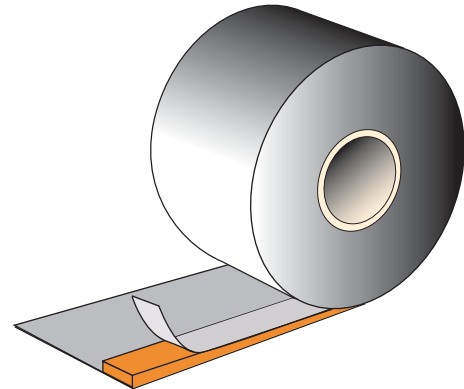


Cladseal SA-Fix

Cladseal SA-Fix is a homogenous EPDM facade sealing strip, which on one or two sides has a 40 mm sticky Butyl tape. High/intermediate water vapour transmission.

Cladseal SA-Fix is offered against specific inquiries, time of delivery 3-4 weeks.

Thickness: 0.75/1.00/1.20 mm
 Length: 25 m
 Width: Specified, from 100 to 1000 mm
 Water vapour transmission factor (DIN 52 615)
 $\mu = 32\ 000$, $s_d = 24\ m$
 Package: Delivered stacked on pallets 1200x800 mm



Cladseal SA-Fix, tape application examples



Sticky tape on one edge



Sticky tape on two edges



Sticky tape on two edges, opposite sides

Cladseal P-Fix

Cladseal P-Fix is a homogenous EPDM facade sealing strip, which on one side has a male EPDM profile attached. The profile is designed to fit into a corresponding track in the aluminium or PVC framework. The strip is mechanically plugged into a track in the building structure or window frame at one side and adhered in adhesive at the other side.

The Cladseal P-Fix is available only for customer specific programs incorporating drawings of the desired profile shape and size.

Thickness: 0.75/1.00/1.20 mm
Length: 25 m, or specified up to 100 m
Width: Specified, from 200 to 1000 mm
Water vapour transmission factor (DIN 52 615)
 $\mu = 32\ 000$, $s_d = 24\ m$
Package: Wig-waged into cardboard box.

Cladseal Adhesives and Primers

Contact Adhesive 5000

Contact Adhesive 5000, in tins of 4.5 kg or 0.9 kg. Applied on both rubber strip and substrate with brush or roller. When surface feels dry to the touch, (10-15 minutes) the strip is pressed against surface. Synthetic polymer and resins dissolved in inflammable solvents. Coverage 0.5 kg/m².

Paste Adhesive 3300

Paste Adhesive 3300, 600 ml sausage pack. Applied on substrate with standard type of hand gun or putty spade. Package: 12 pcs. in box, 60 boxes (720 pcs.) on pallet

Sealant 5590

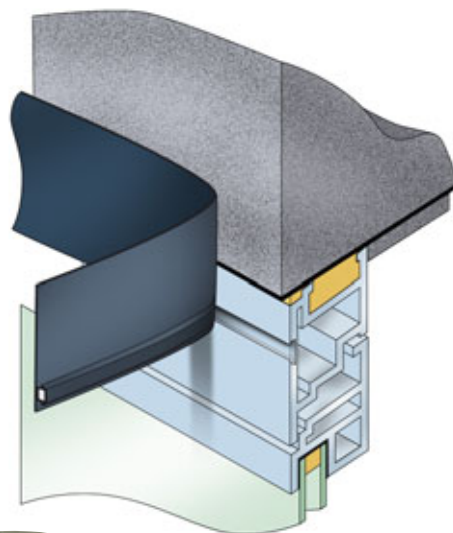
Supersal Sealant 5590, in 310 g cartridge. Silicone based sealant with excellent adhesion to rubber and most substrates. Coverage 8-12 lin. m/cartridge
Package: 15 cartridges in cardboard box

Primer 9800

Primer 9800, in 5 litre metal tin
Polymer based primer for porous substrates and for consequent use with Cladseal SA.
Contains inflammable solvents
Coverage approx. 3 sqm/litre

Cleaning Wash 9700

Cleaning Wash 9700, in tins of 1 litre or 5 litre.
Must be used on metal and EPDM surfaces that are to accept the adhesives (note: on both mating surfaces in the case of EPDM). Apply with a clean lint free rag.
Coverage 35 sqm/litre



The Watertight Difference



Trelleborg has a hundred years history of stability and commitment to quality. Our operations are conducted according to ISO 9001 and ISO 14001.

Products and systems are tested according to applicable standards, supervised by independent laboratories and authorities and certified to local building codes in all the markets where we are active.

TBS Elastomers Europe
Suite 3D, Willow House
Strathclyde Business Park
Bellshill
Lanarkshire ML4 3PB
Scotland, UK

Tel: +44 1698 464620
Fax: +44 1698 464621

tbselastomers@trelleborg.com

Unique rubber membranes

Rubber is elastic, not plastic. Vulcanisation creates a stable cross-linked polymer structure with unsurpassed dimensional stability, elasticity and long term durability. As an operation within one of the global leaders in industrial rubber products, we have access to the most cost effective raw materials as well as leading process technology. Trelleborg Technical Centre is working jointly with universities and technical colleges to further improve our products. Our systems involve patented, very competitive elastomeric materials and splicing techniques.

Fully engineered systems

30 years of close co-operation with architects, construction engineers and roofing contractors have resulted in complete and reliable solutions comprising rubber membranes, installation methods and compatible accessories. All backed by efficient technical service.

Focus on the environment

Environmental protection and care comes naturally to a supplier of products that contributes to the conservation of water, as well as the protection of goods and property from water leakage and moisture. Our rubber membranes are chemically stable and contain no problematic additives such as plasticisers, flame retardants, heat or UV stabilisers. They do not release any substances that cause allergies or hazards to the environment. Recycling options are available for membranes reclaimed from old installations.