

Firststeel Coated Strip

Envirobond™

Chromium (VI) free pre-applied adhesives for automotive applications

The Sector

This datasheet refers to products that are suitable for use in automotive applications where pre-applied, reactivatable adhesives are required. Such applications include weather strips for the linings of doors, sunroofs, bonnets and boots, body side mouldings and brake shims.

Pre-applied Adhesives

Envirobond is free of hexavalent chromium and complies with European legislation 2000/53/EC. In general, the product consists of two layers of specially developed resins applied to a metal substrate in a continuous coil-coating operation. As the product is non-tacky, *Envirobond* can be transported in coil form, is formable and can be reactivated at a later date using either heat or a combination of heat and pressure. The material to be bonded to *Envirobond* can be applied as an extrusion process, injection forming, in a platen press or rolling operation. The selection of the adhesive and metal substrate will depend on the specific application and manufacturing process. All products are provided with a colour tint to aid identification.

Reactivation Parameters

The manufacturing process will normally involve a pre-heat followed by application of the bonding material and the reactivation process itself. We recommend that *Envirobond* is reheated to a temperature not exceeding that stated in the table 'Typical Properties'. Reactivation temperature windows are also provided.

Product Types

Envirobond™ for Elastomers

This product is designed to form satisfactory bonds with various grades of unvulcanised elastomers, including styrene butadiene rubber (SBR), nitrile butadiene rubber (NBR), ethylene propylene diene M (EPDM) class polymers, ethylene-propylene rubber (EPR), chloroprene rubber (CR), isoprene rubber (IR) and nitrile rubber (NR).

Envirobond™ for Thermoplastics

This product is designed to form satisfactory bonds with extruded soft and hard polyvinyl chloride (PVC) compounds, polypropylene (PP) and acrylonitrile butadienestyrene (ABS) polymers.

Envirobond™ for Thermoplastic Elastomers (TPE)

This product is designed to form satisfactory bonds with mixes of polypropylene and EPDM and also mixes of polypropylene and talc.

Envirobond™ for General Bonding

This is a multipurpose product based on hot-melt technology. The product will form excellent bonds with various materials including metals, plastics such as acrylate, latex, polyester and polyurethane, textiles such as acrylic, cotton, jute and silk, as well as other materials such as cardboard, artificial leather and wood. The product is based on hot melt technology and the bond will be weakened if the end product is exposed to excessive heat.

Typical Properties

	Material to be bonded	Typical film thickness (ECCA T01)	Flexibility (ECCA T07)	Maximum pre-heat temperature (°C)	Reactivation temperature (°C)
Envirobond™ for Elastomers	General elastomers	5-9	0-2.0T	120	150-220
Envirobond™ for Thermoplastics	General PVC	5-10	0-0.5T	110	160-230
	General PVC	3-7	0-1T	150	180-220
	Soft PVC	5-10	0.5-1T	150	180-230
	PP	1-5	0-1.0T	150	180-230
Envirobond™ for Thermoplastic Elastomers	PP/TALC	5-10	0.5-1.5T	110	150-200 max
	General TPE	6-10	0-0.5T	110	170-230
Envirobond™ for General Bonding	Various [1]	20 to 200	0T	-	100-200

[1] Various solutions available, specification dependent on application, please consult Firsteel

[2] Properties are typical and not offered as a specification. Consult Firsteel as to suitability of these products for a given application

Performance

The function of *Envirobond*, if reactivated correctly, is to provide a satisfactory and continuous bond between the metal and the specific material to be bonded. When tested to failure, the overall system will fail within the bonded material and not within the adhesive. Also, the adhesive provides extra corrosion protection and is stable against the presence of solvents and oils.

Performance of the bond will depend on the reactivation process, the grade, type and hardness of the material to be bonded, the metal substrate and the condition of the surface of the *Envirobond* product.

All *Envirobond* products are flexible and allow for complex cold-forming operations to be performed prior to and following the reactivation and bonding processes without cracking or any other defect of the coating. The product should be stored in a clean, dry environment at a temperature between 5 and 35°C and care should be taken not to damage the surface. *Envirobond* is stable over long periods, with a shelf life from 6 months to 1 year, depending on the grade.

Decorative Products

Envirobond can be supplied with adhesive on one side and a decorative effect on the other. This allows customised effects or prints to be added to the application in situations where the final product will be visible to the user of the vehicle.

Substrates

The selection of substrate will depend on factors such as the flexibility, strength and level of corrosion resistance required. Most commonly used substrates are cold rolled (EN 10139) and cold reduced steels (EN 10130), hot dipped galvanised steel (EN 10326, EN10327), aluminium alloys (EN 573/485/515) and stainless steels (EN 10088). Other substrates are available on request.

Product Validation

We can provide recommendations on product selection for a specific process and application. We routinely develop and validate new adhesive technologies. A positive release quality program is operated, ensuring that every batch has adequate bonding and other physical characteristics before the product is despatched.

Dimensional Capability and Further Processing

Products are available in a range of widths from 6.5 mm up to a maximum of 640 mm, and in gauges from 0.15 mm to 1.6 mm for ferrous substrates and 2.0 mm for aluminium. Products can be supplied as coils, slit coil or processed blanks. They are also available as traverse wound spools.

Contact Details

Contact Firsteel for more information and technical advice or to request samples.

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