

CILBOND 89ET is a high-performance solvent-based bonding agent, for a wide range of rubber compounds by conventional or post-vulcanisation moulding techniques.

BONDING CAPABILITIES

Cilbond 89ET may be used as a one-component bonding agent to bond the following elastomers to metals or each other :

- Natural Rubber (NR)
- Styrene Butadiene Rubber (SBR)
- Polychloroprene (CR)
- Polyisoprene Rubber (IR)
- Nitrile Rubber (NBR and XNBR)
- Hydrogenated NBR (HNBR sulphur or peroxide cured)
- Polybutadiene Rubber (BR)
- Ethylene Propylene Copolymer (EPM)
- Ethylene Propylene Diene Terpolymer (EPDM sulphur or peroxide cured and silicone modified)
- Butyl Rubber (IIR)
- Halogenated Butyl Rubber (CIIR and BIIR)
- Epichlorohydrin Rubber (ECO)
- Chlorosulphonated Polyethylene (CSM and ACSM)
- Ethylene Vinyl Acetate (EVA / EVM)
- Acrylic Rubber (ACM)
- Chlorinated Polyethylene (CPE)
- Millable Polyurethane (Sulphur or peroxide cured)
- Cast PU (Prepolymer or quasi systems)
- Vamac® (AEM)
- Thermoplastic Elastomers (TPE)
- ENGAGE® Ethylene Octene

Cilbond 89ET can be used as a splicing cement to bond cured to uncured, uncured to uncured and cured to cured rubbers to each other and themselves.

TYPICAL PHYSICAL PROPERTIES OF CILBOND 89ET

Appearance	<i>Black Mobile Liquid</i>
Viscosity - No 3 Zahn Cup @ 78°F	<i>20 seconds</i>
Non-Volatile Solids / Concentration	<i>24% by weight</i>
VOC Content	<i>76% by weight (6.1 lbs per US Gallon)</i>
Volume Solids	<i>18.1%</i>
Weight per Gallon	<i>8.0 lbs</i>
HAP Content	<i>86.1% (34.1lb HAP / US Gallon solid)</i>
Specific Gravity @ 78°F	<i>0.99</i>
Flash Point (Abel Pensky)	<i>59°F (15°C)</i>
Bonding Temperature Range	<i>158 - 356°F</i>
Typical Coverage as a One-Coat System	<i>490 ft² / US Gallon</i>
Typical Coverage as a Cover-Coat	<i>730 ft² / US Gallon</i>
Shelf Life	<i>12 Months from Date of Manufacture</i>

NOTE : **Cilbond 89ET** is not recommended in very humid climates where temperatures exceed **95°F**, as it has a limited shelf life at such temperatures and at high humidity, especially once containers have been opened.



METAL SURFACE PREPARATION

For optimum bonding the substrate surface must be contaminant free. With ferrous metals, grit-blasting with clean, sharp chilled iron grit (200–400 μ) and for non-ferrous metals with clean, sharp aluminium oxide grit, to a grey-white finish should yield excellent bonding surfaces.

For detailed recommendations on substrate preparation refer to **Information Sheet A1**.

APPLYING CILBOND 89ET

- AGITATION** **Cilbond 89ET** must be thoroughly stirred before use, preferably with a propeller type agitator.
- BRUSHING** **Cilbond 89ET** can be brush applied without the need for dilution. If dilution is required (if covering large areas) use Xylene or Toluene.
- SPRAYING** To apply by spray, dilute with Toluene or Xylene to a viscosity of 23 - 26 seconds (Zahn No. 2 cup at 78°F) or 16 - 20 seconds on a DIN 4 / Ford 4 / Frikmar Cup at 78°F. If cob-webbing (fibrillation) occurs on spraying, replace the Toluene with Xylene.
- A nozzle size of 0.04 – 0.06 in (1.0 - 1.5mm) is recommended, with an air pressure of 22 psi (1.5 bar). Note : Excessive pressure can lead to cob-webbing.
- Cilbond 89ET** contains an isocyanate prepolymer of very low volatility. This is reactive towards water and so extra care must be taken when spraying.
- DIPPING** For Dipping, dilute with Toluene or Xylene to a viscosity of 23 - 26 seconds (Zahn No 2 cup at 78°F) or 16 - 20 seconds on a DIN 4 / Ford 4 / Frikmar Cup at 78°F.
- DILUTION** CIL recommends **Xylene** or **Toluene** to dilute Cilbond 89ET.
- COATING THICKNESS** As a **One-Component** bonding system apply at a dry film thickness of **0.6 – 1.0 mils** (15 – 30 microns).
As a **Cover-Coat** bonding system apply at a dry film thickness of **0.4 – 1.0 mils** (10 - 25 microns).
- PRE-BAKING** Pre-baking **Cilbond 89ET** is not normally recommended, but short pre-bakes of up to 10 minutes at ca. 310°F can be tolerated, if necessary.
- DRYING** Allow 20 - 30 minutes drying time at room temperature. Pre-warming parts to ~140°F prior to coating will reduce the drying time.
- MOULDING** **Cilbond 89ET** can be processed by all conventional moulding techniques and it exhibits good bonding within the temperature range of 160°F – 355°F.
- STORAGE** Parts coated with **Cilbond 89ET** should ideally be bonded **within 30 hours** of drying.
- Allowing the coated parts to air-cure for longer than 30 hours can improve substrate adhesion and resistance to wiping (melt-flow) and mould fouling. However, depending on the elastomer, this may also result in a gradual reduction in elastomer adhesion.
- Tests at CIL have shown that parts coated with **Cilbond 89ET** may be stored for up to 14 days (in a clean, dry environment) without a reduction in adhesion, but full customer validation is recommended.



IN-SERVICE BENEFITS

Cilbond 89ET will give extremely good rubber tearing bonds when moulded by either conventional or post-vulcanisation bonding techniques, and also offers good environmental resistance. Bonds are resistant to temperatures between - 40°F to +355°F.

Cilbond 89ET is excellent for low-temperature post-vulcanisation bonding, provided the coated surface can be heated to at least 140°F (ideally 160°F). Applications include the moulding of castable PU onto cured rubbers, as typified by on-site bonding where the application of heat is limited (such as conveyor belt repairs and rubber roller recovery using castable PU).

The adhesion of **Cilbond 89ET** to fibres, yarns and textiles made from rayon, aramid, nylon and polyester is excellent and the flexibility of cured **Cilbond 89ET** makes it ideal for speciality applications for rubber products reinforced with cord, fibre or fabric (such as hoses, timing belts and conveyor belts).

For rubber to metal bonding, a primer coat on the metal of **Cilbond 12E** is recommended for applications where superior environmental resistance is required. **Cilbond 12E** is also recommended for the bonding of engineering plastics such as PPS, PEEK, PES, Nylon, PET, PBT, etc.

WHERE TO USE CILBOND 89ET

The low-temperature curing properties of **Cilbond 89ET** make it suitable for :

- Tank Lining
- Rollers and Wheels
- Belting
- Seals
- Automotive Components
- PU to Rubber combinations
- Other Rubber to Metal bonded components, particularly low-temperature bonding applications and Post-Vulcanisation Bonding (see *Cilbond Information Sheet C20*).

PACKAGING

Cilbond 89ET is available in 2.5 and 6.5 US Gallon tight head drums. Keep containers well sealed when not in use. Avoid contact with water. ½ pint trial samples are also available upon request.

FURTHER INFORMATION

For more information on **Cilbond 89ET** or for details of our other products please visit www.cilbond.com or e-mail sales@cilbond.com

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