

CILBOND 80ET is a High-Performance Solvent-Based Cover-Coat Bonding Agent, for a wide range of Rubber Compounds.

BONDING CAPABILITIES

When used with **Cilbond 12E** (solvent-based primer) or **Cilbond 62W** (water-based primer), **Cilbond 80ET** will bond the elastomers listed below to a range of metal and plastic substrates during the vulcanisation and post-vulcanisation processes:-

- 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 Ethyl Acrylate (Vamac®)
- Ethylene Vinyl Acetate (EVA / EVM)
- Acrylic Rubber (ACM)
- Chlorinated Polyethylene (CPE)
- Millable Polyurethane (Sulphur or peroxide cured)

Cilbond 80ET also gives excellent adhesion to RFL-treated fabrics and finds uses in high-performance timing belts, hoses and carriage belts, especially where severe environments are present such as high temperatures and fluids.

TYPICAL PHYSICAL PROPERTIES OF CILBOND 80ET

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| Appearance | <i>Black Liquid</i> |
| Viscosity - No 3 Zahn Cup @ 78°F | <i>45 seconds</i> |
| Viscosity - Brookfield LV2 / 12 @ 78°F | <i>500 cps</i> |
| Non-Volatile Solids / Concentration | <i>22% by weight</i> |
| VOC Content | <i>78% by weight (6.2 lbs per US Gallon)</i> |
| Volume Solids | <i>14.6%</i> |
| Weight per Gallon | <i>8.0 lbs</i> |
| HAP Content | <i>77.3% (28.1lb HAP / US Gallon solid)</i> |
| Specific Gravity @ 78°F | <i>0.96</i> |
| Flash Point (Abel Pensky) | <i>54°F (12°C)</i> |
| Bonding Temperature Range | <i>210 - 445°F</i> |
| In-Service Temperature Resistance | <i>-58 - 355°F</i> |
| In-Service Environmental Resistance | <i>Salt-spray, water immersion, boiling water, steam up to 265°F, hot oils, fuels, glycols and hydraulic fuels up to 355°F</i> |
| Typical Coverage @ 15 microns / 0.6 mil (dry) | <i>650 ft² / US Gal</i> |
| Shelf Life | <i>12 Months from Date of Manufacture</i> |

METAL SURFACE PREPARATION

For optimum bonding the substrate surface must be contaminant free. With ferrous metals, grit-blasting with clean, sharp chilled iron grit (200–300 μ) and for non-ferrous metals with 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 80ET

AGITATION **Cilbond 80ET** must be thoroughly stirred before use, preferably with a propeller type agitator.

BRUSHING **Cilbond 80ET** can be brush applied without the need for dilution. If required (especially if covering large areas), dilute with up to 20% Xylene or Toluene.

SPRAYING It is normal to dilute **Cilbond 80ET** to 16-24 seconds on a Zahn 2 cup or 13-20 seconds on a DIN 4 or Ford 4 cup using Toluene or Xylene. Xylene is the preferred diluent, though Toluene is preferred at low ambient temperatures. A nozzle size of 0.04 – 0.06 in (1.0 – 1.5 mm) is recommended with an air pressure of 22 psi (1.5 bar). Note that excessive pressure can lead to cob-webbing.

Generally the use of 25 - 40 parts of diluent to 100 parts of **Cilbond 80ET**, by volume is a typical dilution. In hot and/or humid conditions fibrillation (cob-webbing) may occur and under such conditions dilute to closer to 13 seconds on a DIN 4 cup using Xylene.

DIPPING For Dipping processes, **Cilbond 80ET** should be diluted to 18-26 seconds on a Zahn 2 cup or 16 - 22 seconds on a DIN 4 or Ford 4 cup. Toluene is the preferred diluent for dipping but it is possible to use Xylene, Methylene Chloride, Butyl Acetate and many other solvents. **Do not use ketone based solvents.**

ROLLER COATING / KNIFE COATING The viscosity of **Cilbond 80ET** is suitable for most roller and knife coating applications, even for fabrics.

DILUTION CIL recommends **Xylene** or **Toluene** to dilute Cilbond 80ET.

COATING THICKNESS **Cilbond 80ET** should be coated at a dry film thickness of **0.5 - 1.0 mil (12.5 - 25 microns)**.

DRYING Allow 20 to 40 minutes drying time at room temperature. If necessary, forced drying of parts at up to 160°F will reduce the drying time, although care should be taken to avoid blistering. Pre-warming the metals to ~140°F will also reduce drying times.

PRE-BAKING Limited pre-baking is possible with **Cilbond 80ET**, though high-temperature pre-bakes should be avoided. The pre-bake of a bonding agent is always compound dependent, so each compound should be tested as required. In general, the maximum pre-bake for **Cilbond 80ET** is 20-30 minutes at 310°F.

STORAGE It is recommended that components are bonded within 7 days of application of the bonding agent. However under validated, controlled conditions (designed to avoid contamination of parts), they may be stored for much longer periods, such as up to 2 months.

IN-SERVICE BENEFITS

Components produced with **Cilbond 80ET** exhibit excellent properties in service.

For maximum resistance to heat, fluid (including water, oils, ester oils, brake fluids, glycol mixtures) and salt-spray, **Cilbond 12E** is the recommended primer. Other in-service benefits include :

- Components produced using **Cilbond 12E / 80ET** survive long term in-service temperatures over the range from -110°F to +390°F and exhibit excellent dynamic performance tests at up to 355°F.
- When components made with **Cilbond 12E / 80ET** are heated short term/intermittently, the maximum heat resistance is compound dependent, but is generally up to 428°F or even higher.
- **Cilbond 12E / 80ET** shows no failure when subjected to a boiling water peel test under a 2kg load for 100 hours or the severe boiling water test conducted under a 12 kg load for 24 hours.
- **Cilbond 12E / 80ET** passes the 504 hour Volvo hot water test at 158°F.
- **Cilbond 12E / 80ET** passes long term glycol tests at 320°F for ≥500 hrs.
- **Cilbond 12E / 80ET** shows no failure when subjected to total immersion in a 50/50 wt/wt mix of water/glycol at 248°F for 360 hours.
- **Cilbond 12E / 80ET** exhibits excellent resistance to the DIN EN ISO 9227:2006-10 salt spray test with minimal edge failure after 500 hours in 5% salt at 95°F, with 30% extension on the elastomer.

The **Cilbond 62W / 80ET** system also exhibits excellent salt-spray, hot fuel and oil resistance properties. This is an ideal system which both meets current legislation covering lead and other heavy metals and also the need to reduce VOC emissions.

The **Cilbond 10E / 80ET** system is recommended for Rubber Roller manufacturers, offering a versatile two-coat system for many different compounds. The **Cilbond 10E** can then also be used as a one-component system for rollers from NBR and PVC / NBR, offering material and time savings.

WHERE TO USE CILBOND 80ET

Due to its superior performance and environmental resistance, **Cilbond 80ET** is used extensively in demanding industries such as Automotive and Off-shore, producing components such as :

- Hydromounts and TVD's
- Pump Linings and Tank Linings
- Hoses
- Rollers
- Other rubber to metal bonded components.

FURTHER INFORMATION

Cilbond 80ET is supplied in 2.5, 6.5 and 55 US Gallon containers. ½ pint trial samples are also available upon request.

For more information on **Cilbond 80ET** or for details of our other products please visit www.cilbond.com or e-mail sales@cilbond.com

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