CILBOND 41 is a One-Component Solvent-Based Bonding Agent for Low-Temperature Curing Castable and RIM Polyurethane Systems to a variety of substrates

**BENEFITS OF CILBOND 41**

**BONDING CAPABILITIES:**

Cilbond 41 is an effective one-part bonding system for castable polyurethane elastomers and RIM polyurethanes to a variety of substrates including mild steel, stainless steel, brass, aluminium, acrylic plastics, ABS, GRP, epoxies and concrete.

**IN-SERVICE BENEFITS:**

When used as a two component adhesive with Cilcure B, improved environmental resistance is achieved and the system will bond fusion bonded epoxies, cured elastomers such as NR, CR, PU, etc and very fast curing polyurethanes, as used in rotational casting systems and many sprayed elastomers.

Furthermore, the water resistance of Cilbond 41 + Cilcure B is exceptional. A modified 95º shore A ether TDI prepolymer cured with Ethacure 300 bonded to mild steel will withstand boiling water at 105ºC without loss of adhesion for >200 hrs.

Cilbond 41 can also be used at temperatures of less than 20ºC (under controlled conditions), making on-site bonding possible.

**END-USE APPLICATIONS OF CILBOND 41**

End applications for products using Cilbond 41 include:

- Rollers for the paper, metal decorating and textile industries
- Solid tyres
- Carriage wheels
- Dunnage
- Pipe linings and pipe coatings
- Any product with an engineering bond between a PU elastomer and a metal or plastic substrate

**TYPICAL PHYSICAL PROPERTIES OF CILBOND 41**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Hazy Colourless to Pale Yellow Liquid</td>
</tr>
<tr>
<td>Viscosity - No 3 Zahn Cup @ 26°C</td>
<td>14 seconds</td>
</tr>
<tr>
<td>Non-Volatile Solids</td>
<td>18% by weight</td>
</tr>
<tr>
<td>Specific Gravity @ 26°C</td>
<td>0.87</td>
</tr>
<tr>
<td>Flash Point (Abel Pensky)</td>
<td>-8ºC</td>
</tr>
<tr>
<td>Bonding Temperature Range</td>
<td>20 - 100ºC</td>
</tr>
<tr>
<td>Recommended Dry Coating Thickness</td>
<td>15 – 25 micron for maximum adhesion.</td>
</tr>
<tr>
<td>Coverage</td>
<td>15m² / Litre</td>
</tr>
<tr>
<td>Shelf Life</td>
<td>24 Months from Date of Manufacture</td>
</tr>
</tbody>
</table>
WHERE TO USE CILBOND 41

Cilbond 41 is used to bond castable PU elastomers to a variety of metals and engineering plastics substrates, where the curing temperature of the PU is between 20°C and 90°C.

The ability of Cilbond 41 to form dependable bonds between castable PU’s and concrete makes the product particularly useful for sprayable or cast coatings in external applications.

For improved environmental resistance, bonded components should be either aged at ambient temperatures for several weeks or, if possible, given a post cure at 50 - 70°C for several hours. Rollers, wheels and solid tyres, wear parts, cable connectors are all suitable application areas. If the environmental conditions are severe, such as continuous water immersion, then Cilbond 41 and Cilcure B is preferred. See separate section below.

THE USE OF CILBOND 41 WITH CILCURE B

Cilcure B is an additive used to give Cilbond 41 superior environmental resistance and the ability to bond rotationally cast PU’s to metals, PVC and even cured rubber compounds. This 2 part system can also be the first choice for bonding PU to concrete and fusion bonded epoxy coatings.

Using Cilbond 41 and Cilcure B as a primer under Cilbond 41 gives a versatile system for tough environments.

<table>
<thead>
<tr>
<th>Mixing Ratio of Cilbond 41 : Cilcure B</th>
<th>Weight : Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room temperature rotational casting</td>
<td>100 : 5</td>
</tr>
<tr>
<td>Improved environmental resistance</td>
<td>100 : 8</td>
</tr>
<tr>
<td>Bonding to cured rubbers</td>
<td></td>
</tr>
<tr>
<td>Post vulcanisation bonding</td>
<td></td>
</tr>
<tr>
<td>Excellent environmental resistance</td>
<td></td>
</tr>
</tbody>
</table>

The Cilcure B must be added to well stirred Cilbond 41 and the mixture stirred gently for a few minutes. Stand for a few minutes and stir again before use. Keep the mixture covered or sealed from the atmosphere when not in use and use the mixture within 8 hours. Do not use the mixture once it becomes viscous or gelatinous.

The details on how to apply Cilbond 41 and Cilcure B are basically the same as for Cilbond 41, except that the parts should be moulded with the PU within 24 - 30 hours. In most cases it is quite feasible to cast the PU once the coating has been dried for 20 minutes, unless higher boiling solvents have been used when the drying time must be extended.

Using a cover coat of Cilbond 41 over a primer coat of Cilbond 41 and Cilcure B gives the user the combined benefits of both, in that the Cilbond 41 and Cilcure B gives the system improved bonding to metals, plastics and especially to elastomers, gives improved environmental resistance, whilst the Cilbond 41 cover coat gives the user a long open time in that parts can be stored prior to moulding the PU.

METAL SURFACE PREPARATION

Cilbond 41 must be applied to carefully prepared surfaces for it to be effective. Surfaces should ideally be grit blasted with clean, filtered (200 - 400 micron sharp alumina or steel grit) and solvent degreased. Alternatively, surfaces may be phosphated using well-established proprietary procedures. For detailed recommendations on substrate preparation refer to Information Sheet A1.
APPLYING CILBOND 41

AGITATION
Stir well before use and occasionally during use. Use an earthed, hand-held or mechanical metal stirrer.

BRUSHING
Application by brushing is normally undertaken without dilution, but for coating large areas, dilution with 5 - 10% of the diluents shown below, improves flow and speed of application.

DIPPING
Dilute to a viscosity of 16 - 24 seconds using a Zahn No 2 cup at 25ºC or 13 - 20 seconds using a Din 4 or Ford 4 Cup at 25ºC using up to 10% of the diluents below. Acetone is recommended if a fast drying coating is required. The CIL recommendation is to add butyl acetate to Cilbond 41 at a mix ratio of between 2:1 to 3:2 by weight of Cilbond 41:butyl acetate.

SPRAYING
Dilute to 16 - 24 seconds on a Zahn No 2 Cup or 13- 20 seconds on a DIN 4 or Ford 4 Cup at 25ºC, using up to 10% of the diluents shown below. If fibrillation (cob-webbing) occurs, use more diluent or use more higher boiling solvent. Acetone is not recommended for spraying.

If MEK is used as the sole diluent, beware of chilling of the sprayed metal parts and subsequent condensation of water, which may lead to a micro porous film.

For best spraying quality, CIL recommends using an HVLP spray system (1 - 1.5mm nozzle size and 1.5 bar air pressure). Dilute with butyl acetate at a mix ratio of 2 : 1 to 3 : 2 by weight of Cilbond 41 : Butyl Acetate.

ROLLER COATING
Dilute to 13 – 20 seconds on a DIN 4 or Ford 4 Cup at 25ºC, for most roller application processes. Dilution with up to 10% of the diluents shown below gives a fast application. Over rolling should be avoided.

DRYING
Dry each coat for at least 30 minutes and the final coat for at least 1 hour at a room temperature of 25ºC. At below 20ºC extend the drying time accordingly. Forced drying is not normally required and is not normally recommended, but may be used if care is taken to prevent blistering of the films. Pre-warming parts (60ºC) prior to coating with Cilbond 41 will help drying.

PRE-BAKING
Pre-baking is not a requirement of Cilbond 41, though a short pre-bake of up to 2 hours at 90 - 100ºC will not affect bonding.

COATING THICKNESS
For general-purpose applications use a dry coating thickness of 15 microns.
For dynamic fatigue or severe environments use a dry coating thickness of ≥25 microns.

DILUENTS
Diluents may not be necessary with Cilbond 41, but if required choose from the following :

<table>
<thead>
<tr>
<th>Diluents</th>
<th>Min. Drying time</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEK</td>
<td>20 mins</td>
<td>The most versatile diluent for brushing and dipping.</td>
</tr>
<tr>
<td>Acetone</td>
<td>20 mins</td>
<td>Only for dipping, can cause severe metal chilling</td>
</tr>
<tr>
<td>MIBK</td>
<td>35 mins</td>
<td></td>
</tr>
<tr>
<td>Butyl acetate</td>
<td>45 mins</td>
<td>First recommendation for spraying</td>
</tr>
<tr>
<td>Glycol ether acetates</td>
<td>1 – 4 hours</td>
<td>Reduces fibrillation on spraying, but drying times are extended to several hours.</td>
</tr>
</tbody>
</table>

Always stir the Cilbond 41 whilst adding any diluent.

STORAGE
Coated parts may be stored for long periods of time (several weeks) provided they are protected from dust and moisture. If parts are stored for long periods an additional fresh coat may be required.

PU CASTING
Cast the PU following recommendations from the PU supplier. Allow bonds to develop for >24 hrs before applying any stress or immersion in any fluid.
CLEANING OF EQUIPMENT

Dried films of Cilbond 41 will clean off equipment using acetone, MEK or MIBK.

When using Cilbond 41 with Cilcure B, dried films will initially dissolve in the same solvents, but cured films may be difficult to remove unless methylene chloride or other aggressive solvents are employed.

PACKAGING/STORAGE

Cilbond 41 is supplied in 10L, 25L and 200L containers. 250ml trial samples are also available upon request.

Cilbond 41 should ideally be stored under temperature controlled conditions of 25°C or below.

Avoid storing/transporting Cilbond 41 at above 30°C.

FURTHER INFORMATION

For more information on Cilbond 41 or for details of our other products please visit www.kommerlinguk.com or e-mail sales@kommerlinguk.com