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Permabond 791  
Global TDS Revision 7  
06 August 2020  
Page 1/2

PERMABOND® 791  
Cyanoacrylate  
Technical Datasheet

Features & Benefits
- Extremely fast setting
- Rapid development of high strength
- Ease of use – no mixing or heat cure
- Surface insensitive
- 100% reactive, no solvents

Description
PERMABOND® 791 is a low viscosity, surface insensitive adhesive that will rapidly bond substrates with acidic surfaces such as wood and plated surfaces. Plastics, metals, ceramics and elastomers are also rapidly bonded. The fast cure minimizes the occurrence of frosting and fogging.

Cyanoacrylate adhesives are single component adhesives that polymerize rapidly when pressed into a thin film between parts. The moisture adsorbed on the surface initiates the curing of the adhesive. Strong bonds are developed extremely fast and on a great variety of materials. These properties make PERMABOND cyanoacrylates the ideal adhesives for high speed production lines.

Physical Properties of Uncured Adhesive
- Chemical composition: Ethyl cyanoacrylate
- Appearance: Colourless
- Viscosity @ 25°C: 15-50 mPa.s (cP)
- Specific gravity: 1.1

Typical Curing Properties
- Maximum gap fill: 0.1 mm 0.004 in
- Fixture / handling time*: 2-3 seconds (Steel) 2-3 seconds (Buna N Rubber) 2-3 seconds (Phenolic)
- Full strength: 24 hours

*Handling times can be affected by temperature, humidity and specific surfaces being bonded. Larger gaps or acidic surfaces will also reduce cure speed but this can be overcome by the use of Permabond C Surface Activator (CSA) or Permabond QFS 16.

Typical Performance of Cured Adhesive

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shear strength* (ISO4587)</td>
<td>Steel 18-22 N/mm² (2600-3200 psi)</td>
</tr>
<tr>
<td></td>
<td>ABS &gt;6 N/mm² (870 psi)**SF</td>
</tr>
<tr>
<td></td>
<td>PVC &gt;10 N/mm² (1450 psi)**SF</td>
</tr>
<tr>
<td></td>
<td>PC &gt;6 N/mm² (870 psi)**SF</td>
</tr>
<tr>
<td>Tensile strength (ISO6922)</td>
<td>&gt;20 N/mm² (&gt;3000 psi)</td>
</tr>
<tr>
<td>Coefficient of thermal expansion</td>
<td>90 x 10⁻⁶ mm/mm/°C</td>
</tr>
<tr>
<td>Coefficient of thermal conductivity</td>
<td>0.1 W/(m.K)</td>
</tr>
<tr>
<td>Hardness (ISO868)</td>
<td>85 Shore D</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>25 kV/mm</td>
</tr>
</tbody>
</table>

*Strength results will vary depending on the level of surface preparation and gap.  
**SF = Substrate failure.

Hot Strength

% Strength Retention vs Temperature (°C)

791 can withstand higher temperatures for brief periods (such as for paint baking and wave soldering processes) providing the joint is not unduly stressed. The minimum temperature the cured adhesive can be exposed to is -55°C (-65°F) depending on the materials being bonded.

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Permabond 791  
Global TDS Revision 7  
06 August 2020  
Page 1/2
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**Specimens were immersed for 1000 hours at 22°C (unless otherwise stated).**

**Chemical Resistance**

<table>
<thead>
<tr>
<th></th>
<th>% Strength Retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Reference</td>
<td></td>
</tr>
<tr>
<td>95% Relative Humidity 40°C</td>
<td></td>
</tr>
<tr>
<td>Unleaded Gasoline</td>
<td></td>
</tr>
<tr>
<td>Motor Oil @ 40°C</td>
<td></td>
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<tr>
<td>Water</td>
<td></td>
</tr>
<tr>
<td>Ethanol</td>
<td></td>
</tr>
<tr>
<td>Isopropanol</td>
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</tr>
</tbody>
</table>

**Surface Preparation**

Surfaces should be clean, dry and grease-free before applying the adhesive. Use a suitable solvent (such as acetone or isopropanol) for the degreasing of surfaces. Some metals such as aluminium, copper and its alloys will benefit from light abrasion with emery cloth (or similar), to remove the oxide layer.

**Directions for Use**

1. Apply the adhesive sparingly to one surface.
2. Bring the components together quickly and correctly aligned.
3. Apply sufficient pressure to ensure the adhesive spreads into a thin film.
4. Do not disturb or re-align until sufficient strength is achieved, normally in a few seconds.
5. Any surplus adhesive can be removed with Permabond CA solvent, nitromethane or acetone.

**NB:**
For difficult or porous surfaces using a Permabond activator is recommended. If bonding polypropylene, polyethylene, PTFE or silicone, prime first with Permabond Polyolefin Primer (POP).

**Additional Information**

This product is not recommended for use in contact with strong oxidizing materials and polar solvents although will withstand a solvent wash without any bond strength deterioration. Users are reminded that all materials, whether innocuous or not, should be handled in accordance with the principles of good industrial hygiene. Full information can be obtained from the Safety Data Sheet.

This Technical Datasheet (TDS) offers guideline information and does not constitute a specification.

**Storage & Handling**

| Storage Temperature | 2 to 7°C (35 to 45°F) |

Allow adhesive to reach room temperature before opening bottle to prevent condensation inside the bottle which can reduce shelf life.

**Video Links**

Surface preparation:  
[https://youtu.be/8CMOMP7hXjU](https://youtu.be/8CMOMP7hXjU)

Cyanoacrylate directions for use:  
[https://youtu.be/PiPzutdRmsk](https://youtu.be/PiPzutdRmsk)

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Permabond 791  
Global TDS Revision 7  
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Page 2/2