

# Chemlok® AP-133 Adhesive

## Description

LORD Chemlok® AP-133 adhesive is a clear one-coat adhesive used to bond unvulcanized silicone rubber to various substrates such as metals, glass, plastics and textiles.

Chemlok AP-133 adhesive also bonds specialty elastomers such as fluoroelastomers, polyacrylates, epichlorohydrin and some peroxide vulcanized elastomers.

## Features and Benefits

**Versatile** – provides excellent bonding characteristics between a wide variety of commercially available elastomer stocks and many diverse metallic and nonmetallic substrates.

**Environmentally Resistant** – creates strong bonds capable of withstanding salt spray, chemicals, oils, solvents, corrosive atmospheres and temperature extremes.

**Durable** – provides rubber tearing bonds that are stronger than the rubber, at high or low temperatures.

**Easy to Apply** – applies easily by brush, spray or dip methods.

**High Temperature Resistant** – withstands temperatures up to 204°C (400°F) and below -51°C (-60°F) when bonding with fluoroelastomers or silicone.

## Application

**Surface Preparation** – Thoroughly clean metal surfaces prior to adhesive application. Remove protective oils, cutting oils and greases by solvent degreasing or alkaline cleaning. Remove rust, scale or oxide coatings by suitable chemical or mechanical cleaning methods.

- **Chemical Cleaning**

Chemical treatments are readily adapted to automated metal treatment and adhesive application lines. Chemical treatments are also used on metal parts that would be distorted by blast cleaning or where tight tolerances must be maintained. Phosphatizing is a commonly used chemical treatment for steel, while conversion coatings are commonly used for aluminum.

- **Mechanical Cleaning**

Grit blasting is the most widely used method of mechanical cleaning. However machining, grinding or wire brushing can be used. Use steel grit to blast clean steel, cast iron and other ferrous metals. Use

## Typical Properties\*

Appearance	Clear Liquid
Viscosity, cSt	0.0-5.0
Density	
kg/m <sup>3</sup>	790.0-830.0
(lb/gal)	(6.6-6.9)
Solids Content by Weight, %	4.8-6.2
Flash Point (Seta), °C (°F)	14 (57)
Solvents	Methanol, Ethanol, Toluene

\*Data is typical and not to be used for specification purposes.

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aluminum oxide, sand or other nonferrous grit to blast clean stainless steel, aluminum, brass, zinc and other nonferrous metals.

Carefully prepare nonmetallic surfaces. Fabric is usually desized by a scouring operation. Glass can be cleaned in an alkaline bath. Clean plastic surfaces with a solvent.

For further detailed information on surface preparation of specific substrates, refer to Chemlok Adhesives application guide. Handle clean metal surfaces with clean gloves to avoid contamination with skin oils.

**Mixing** – Pour the adhesive into a receptacle and dilute with toluene, methanol or ethanol as required. Average dilution ratio of 1:1 solvent to adhesive will provide the optimum adhesion and maximum coverage with minimum product use.

Pour out only enough adhesive to use for a short period of time, as rapid evaporation occurs in open containers. Porous substrates, such as heavy fabrics, may require more extensive dilution in order to prevent excessive pick-up.

**Applying** – Apply Chemlok AP-133 adhesive in a uniformly thin coat by brush, spray or dip methods. Bond strength can be compromised by repeated brushing or improper dipping drainage.

When coating fabrics, use a dry pick-up level of 0.05-1.0%, based on the dry weight of the fabric. Spray applications ensure that the adhesive is effectively applied to the fabric surface. For fabrics that are dipped or brushed, diluting the adhesive will help prevent fabric stiffness caused by excessive pick-up levels. For information on using dyes and fluorescing additives with Chemlok AP-133 adhesive, contact your LORD Technical Service Representative.

**Drying/Curing** – Allow applied adhesive to air-dry for approximately 10-30 minutes at room temperature. Porous substrates may require a longer time for the solvent to completely evaporate. Allow for longer drying times during humid conditions. The parts can be dried at elevated temperatures; excellent bonding properties have been achieved by drying at 104°C (220°F) for 15 minutes.

Adhesive coated parts may be bonded immediately after air-drying. In the event a layover period prior to bonding is necessary, avoid contamination of the adhesive coated parts during storage. Coated parts can be stored up to three days prior to bonding, however high humidity conditions will drastically shorten the layover period.

Use press-cure times and temperatures recommended by the elastomer manufacturers for each compound. In many instances, a post-cure will improve the bond. Poor handling characteristics can result from short press-cures that use the minimum recommended temperatures. Use caution when removing press-cured parts from the mold.

Open steam, autoclave and other curing methods will produce good bonds with Chemlok AP-133 adhesive. Maintain complete contact between the compound and the bonding surface.

Oven or post-cures can enhance bond strength because the bonded parts are exposed to higher temperatures for longer periods of time than during press-cure.

Gradually increase post-cure temperatures to permit volatile materials to diffuse and stock properties to stabilize. Start the post-cure temperatures at 10°C (50°F) below the press-cure temperature. Gradually increase the temperature over a 2-3 hour period until the maximum end-use temperature is reached.

Do not expose the bonded part to high temperatures without proper conditioning at lower temperatures. This conditioning is especially important for end-use bond temperatures that exceed 204°C (400°F).

Corrosive action on metal parts at extremely high temperatures can weaken the bond, especially in cases of contamination or inadequate surface preparation.

Chemlok AP-133 adhesive bonds are resistant to many destructive environments. Electroplating or anodizing metal parts after fabrication will not harm the bond.

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## **Shelf Life/Storage**

Shelf life is one year from date of shipment when stored at 21-27°C (70-80°F) in original, unopened container. Do not store or use near heat, sparks or open flame.

## **Cautionary Information**

Before using this or any LORD product, refer to the Material Safety Data Sheet (MSDS) and label for safe use and handling instructions.

*For industrial/commercial use only.* Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

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Values stated in this technical data sheet represent typical values as not all tests are run on each lot of material produced. For formalized product specifications for specific product end uses, contact the Customer Support Center.

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