

Chemlok® CB100 A/B Cold-Bond Adhesive

Application Guide

In order to ensure safe use of Chemlok® CB100 A/B adhesive, read this application guide and the Safety Data Sheets (SDS) in their entirety before rubber lining.

For safety and comfort, proper ventilation is critical when applying any solvent-based product.

Chemlok CB100 A/B adhesive is a two-component, cold-bond adhesive system intended for rubber-lining vulcanized rubber at ambient temperatures.

Parker LORD recommends reading through this application guide before rubber lining. Additionally, it is helpful to collect the necessary materials used in applying Chemlok CB100 A/B adhesive before doing so.

Materials to collect before starting:

- Chemlok 205 Primer
- Chemlok CB102CS Adhesion Enhancer/Surface Modifier
- Chemlok CB100 A Adhesive
- Chemlok CB100 B Curative
- Dry xylene (for dilution, if preferred)
- Nap paint rollers/brushes
- Clean rags
- Neoprene or other impermeable gloves
- Steel/rubber rollers for stitching and/or spades

Surface Preparation – Metals:

Thoroughly clean metal surfaces prior to application. Remove rust, scale or oxide coatings prior to primer application.

Grit blasting is the most widely used method of mechanical cleaning. However machining, grinding or wire brushing can also be used.

- Use steel grit to blast clean steel, cast iron and other ferrous metals.
- Use aluminum oxide, sand or other nonferrous grit to blast clean stainless steel, aluminum, brass, zinc and other nonferrous metals.

For optimal bonding, the blast profile should be prepared to SSPC-SP5 or NACE No. 1 or ISO SA3 “White Metal” (see Figure 1).

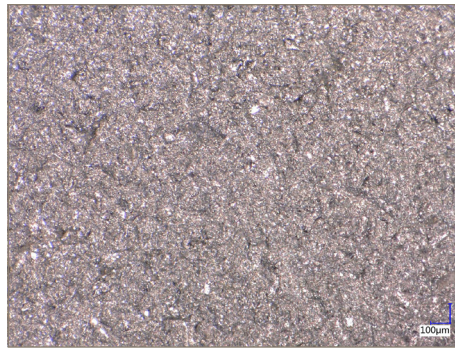


Figure 1. Optimal Blast Profile

After grit blasting, be sure to wipe off residual dust and blast-compound with a clean rag and clean solvent.

Apply Primer to Metal

Mix – Thoroughly stir primer before use and agitate sufficiently during use to keep dispersed solids uniformly suspended. When cold-bonding, Chemlok 205 primer is used at full-strength, undiluted.

Apply – Apply primer by brush, roll coat, or any method that gives a uniform coating and avoids excessive runs or tears. Normally the dry film thickness of Chemlok 205 primer should be 5.1-10.2 micron (0.2-0.4 mil).

For greater throughput on large assets, Chemlok 205 primer may be spray applied. For more on spray application, refer to Chemlok Adhesives application guide.

Dry – Thoroughly dry parts coated with Chemlok 205 primer before applying Chemlok CB100 A/B adhesive. When using Chemlok 205 primer for cold-bonding, it will take approximately 60 minutes at room temperature [25°C (77°F)].

Dried films of Chemlok 205 primer are non-tacky. Primed metal components may be remain unlined for up to 24 hours provided they are protected from dust and the elements.

Surface Preparation – Vulcanized Rubber:

Chemlok CB100 A/B adhesive is designed for use on vulcanized natural rubber, chloroprene, neoprene, and similar compounds.

Many vulcanized rubber sheets utilize a polar bonding layer to improve bonding to the substrate (see Figure 2). This is common with halogenated/bromated compounds that are difficult to bond.

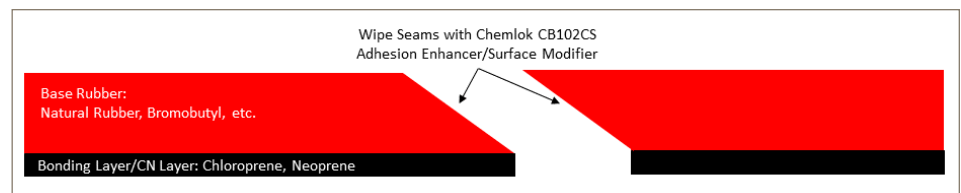


Figure 2. Surface Preparation of Vulcanized Rubber with Bonding Layer

If you are unsure what substrate you are bonding, ask your rubber supplier if a 'bonding layer' or 'CN-layer' is included on your rubber. The bonding layer is often a noticeably different color.

For Rubber With a Bonding Layer

- Wipe the bonding layer clean with a dry solvent. For best results, apply Chemlok CB102CS adhesion enhancer/surface modifier to clean and activate the surface as it contains functional chemistry that will further enhance the polarity of the bonding layer.
- Seams, and mating skives, where the bonding layer is not present should always be treated with Chemlok CB102CS adhesion enhancer/surface modifier with a rag wipe (see Figure 2). DO NOT SPRAY.

For Rubber Without a Bonding Layer

- A moderate buff is recommended. Buffing will remove surface contaminants, such as antioxidants and waxes, that may have bloomed to the bond surface and will inhibit the bond. Buffing will also mechanically abrade the bond interface; improving its topography and making it more available to the bonding agent.
- Utilize Chemlok CB102CS adhesion enhancer/surface modifier to clean the buffed area and treat seams. When used properly, Chemlok CB102CS adhesion enhancer/surface modifier will dry in approximately 5 minutes at 25°C (77°F).

All rubber compounds are different, and Parker LORD recommends testing Chemlok CB100 A/B adhesive to determine fitness for use in your application. If you do not have the facilities to test your substrate combination, contact Parker LORD at 877-ASK-LORD to discuss having our labs assist in determining whether Chemlok CB100 A/B adhesive is an appropriate fit for your application.

Mixing Adhesive:

If using Chemlok CB100 A/B adhesive in bulk, the mix ratio by weight is:

- 12 parts Chemlok CB100 A adhesive
- 1.0 parts Chemlok CB100 B curative

Chemlok CB100 A and B components used in quart and gallon form are designed as 'dump-and-mix,' meaning the chemistry has been pre-measured by Parker LORD for your convenience such that Chemlok CB100 B curative can be poured directly into the container for Chemlok CB100 A adhesive and mixed without measuring.

Mix Chemlok CB100 A and B component by hand for 3-5 minutes. You will notice a physical change in viscosity when mixed appropriately. If using a pneumatic drill or pneumatic mixer, low RPMs are encouraged as too high a RPM could incorporate air into the system.

Dilution

Chemlok CB100 A/B adhesive has a greater solids content than most cold-bonding adhesives. This is intentional as it:

- Reduces the number of coats required to achieve recommended film thicknesses,
- Better coats porous substrates like concrete and aggressive steel grit blasts, and
- Allows user to dilute the mixed chemistry to their preferred working viscosity for their application. Generally, the larger the asset, the easier it is to roll Chemlok CB100 A/B adhesive in its neat form. The smaller the asset, and you may find it easier to brush and roll in a diluted form.

To dilute Chemlok CB100 A/B adhesive, add up to 4 oz (120 mL) of dry xylene for each mixed quart, and up to 16 oz (480 mL) per gallon kit.

For best results when diluting, add Chemlok CB100 B curative to Chemlok CB100 A adhesive and mix for 2-3 minutes. Then add the desired amount of diluent and mix for an additional 2-3 minutes.

Applying Adhesive – Rubber-to-Metal:

Coats required to sufficiently bond assets will vary by geometry and dilution of Chemlok CB100 A/B adhesive.

Generally, in its undiluted form:

- Exterior-diameter parts and flat plates benefit from the following combination: one coat of adhesive on primed metal and one coat of adhesive on the prepared rubber. If the adhesive is diluted, a second coat on the rubber only is generally recommended.
- Interior-diameter parts generally benefit from the following combination: one coat of adhesive on the metal and two coats of adhesive applied to the rubber. When used in practice, the first coat to the metal and rubber are applied simultaneously. The second coat applied to the rubber is used as a 'wet-swaging' lubricant. The adhesive allows the lining to be pushed into place more easily and, as solvent evaporates, adheres the rubber lining to the inner diameter of the radii.

Differences in geometry, rubber durometer, and manufacturing preferences will dictate the best combination of dilution and coats which are suitable. Parker LORD recommends testing Chemlok CB100 A/B adhesive before implementing it in manufacturing.

Apply

Using a nap roller or brush, apply approximately 22-26 wet mils (640 microns) of Chemlok CB100 A/B adhesive to prepared rubber. Apply an equal amount of adhesive to the primed metal. (If desired, when using a second coat on the rubber, apply an additional 22-26 wet mils 15-30 minutes after the first coat was applied.)

If applied correctly, the adhesive will appear uniform and you will not be able to see the underlying primer on the metal or color of the rubber. If you are having difficulty applying Chemlok CB 100 A/B adhesive or find that you are 'pushing' instead of rolling it, try diluting adhesive per instructions.

Tack

Allow 45-60 minutes for tack to develop. Chemlok CB 100 A/B adhesive will transition from a glossy appearance to matte appearance. Depending on airflow, tack time will vary.

Chemlok CB 100 A/B adhesive will feel slightly dry to the touch with minor tack. This is by design to allow for easier rubber handling. When Chemlok CB 100 A/B adhesive is mated to another surface coated with Chemlok CB 100 A/B adhesive, it will stick tenaciously.

Freshening

Depending on humidity and temperature, adhesive can be freshened by wiping with a xylene soaked rag. Be sure to allow adequate time for the xylene to flash (dry off) before mating. Chemlok CB 100 A/B adhesive may be freshened up to 2 hours after application.

Mate

Mate rubber to metal, and stitch with rubber roller or apply spade pressure to eliminate air-gaps and ensure good entanglement of metal and rubber coats.

Cure

Depending on the asset size and geometric complexity, most assets can be moved immediately after rubber-lining as long as the bondline is not stressed. Although cure will occur in a 24-72 hour period, full strengths are reached in seven days.

Applying Adhesive – Rubber-to-Rubber (Seams):

First Coat

Using a nap roller or brush, apply a uniform coat of Chemlok CB 100 A/B adhesive, approximately 22-26 wet mils (640 microns), to each face of the prepared rubber.

Dry

Allow 15-30 minutes to dry at 77°F (25°C).

Second Coat

Apply a second coat to both rubber interfaces.

Tack

Allow 45-60 minutes for tack to develop. Chemlok CB 100 A/B adhesive will feel slightly dry to the touch with minor tack. This is by design to allow for easier rubber handling. When Chemlok CB 100 A/B adhesive is mated to another surface coated with Chemlok CB 100 A/B adhesive, it will stick tenaciously.

Freshening

Depending on humidity and temperature, adhesive can be freshened by wiping with a xylene soaked rag. Be sure to allow adequate time for the xylene to flash (dry off) before mating. Chemlok CB 100 A/B adhesive may be freshened up to 2 hours after application.

Mate

Mate seams by first testing tack, stick the tip of one end of the seam to the base of the second end. If this holds with no stretching, close the seam the rest of the way.

Cure

Depending on the asset size and geometric complexity, most assets can be moved immediately after rubber-lining as long as the bondline is not stressed. Although cure will occur in a 24-72 hour period, full strengths are reached in seven days.

Common Problems & Troubleshooting:

Stringing of adhesive from substrate around a radius or at a seam – This is often a function of either too much adhesive applied or inadequate drying before mating. To resolve, try applying less adhesive using a roller or diluting the adhesive. Diluting will speed the evaporation and allow the product to be applied thinner.

Adhesive layers won't stick to themselves – The adhesive has become too dry and must be freshened. Soak a rag with dry xylene and wipe onto the surface of the adhesive, allowing tack to develop. If outside of the freshening window, apply another thin layer of Chemlok CB 100 A/B adhesive.

Adhesive is too thick to roll – Try diluting the adhesive up to 4 oz (120 mL) of dry xylene per quart Chemlok CB 100 A/B adhesive.

Maintaining Surface Conditions During Application:

Maintaining optimum surface cleanliness is essential to good bonding.

- Avoid exposure to dust, moisture, chemical fumes, mold release agents and other possible contaminants.
- When handling substrates, wear chemical resistant gloves, such as nitrile; avoid latex gloves.
- Keep solvents and cleaning solutions free from contamination and replace when necessary.
- Ensure grits and abrasives remain clean and free of contaminants.
- Check the purity of rinse water and "drying" air frequently, ensuring minimal contamination.

The water break test can be used to check for oil and grease removal. If a surface can support an unbroken film of deionized water for 60 seconds or more, it is considered essentially free from grease or oil.

Safe Handling:

Proper handling of Chemlok CB100 A/B adhesive is essential for safe and effective application. We recommend these procedures be followed:

Routes of Exposure

Solvents and isocyanates enter the body primarily through inhalation or skin exposure however consider oral and eye contact.

Health Effects

- Inhalation of isocyanates and solvents can cause respiratory irritation/sensitization in people or lead to occupational asthma.
- Individuals with a history of asthma should not work in areas with the potential for isocyanate exposure.
- Solvents and their vapors/mists have various effects on human health. Many of them have a narcotic effect, causing fatigue, dizziness and intoxication. High doses may lead to unconsciousness and death. Exposure to large doses of solvents may slow down reaction-time and affect rational judgement.

- Repeat or prolonged solvent content may cause burns or dermatitis or skin defatting.
- Skin sensitization can occur due to the irritant nature of isocyanates in contact with the skin surface, which may result in dermatitis.

Recommendations

- To ensure the air exchange and ventilation system of the work area is appropriate for the process, air monitoring may be considered, ensuring the levels are below the occupational exposure limits reported in Section 8 of the product SDS.
- If this is not possible, work with isocyanates should be isolated away from other areas of the workplace using engineering controls, for example, local exhaust ventilation (LEV), spray booths with appropriate PPE (e.g. airline respirators, suitable gloves, overalls and goggles).
- Good personal hygiene should be practiced and a separate storage area utilized for work clothing to prevent the contamination of regular clothing.
- Hands should always be washed before eating, drinking, smoking and before leaving work.
- Biological monitoring for isocyanates in workers urine can be performed as an additional precautionary measure.

Key Points

- Consult relevant SDS and product labels to assist in determining appropriate control measures.
- Do not spray apply.
- Liquid and vapors are flammable. Avoid all heat, sparks, and flame sources.
- Always assume that exposure is likely to occur and protect according to the level of risk identified from risk assessment.
- Ensure appropriate PPE is correctly selected, used and maintained.
- Avoid skin contact through the use of impervious gloves and protective clothing.
- Use tools for product manipulation, if necessary.
- Wear safety glasses, goggles, or face shield.
- Do not use within an enclosed space.
- Avoid inhalation by ensuring ventilation is adequate and functioning properly.
- Perform chemical air monitoring, as necessary.
- Always wash hands before eating, drinking, smoking, and leaving work.
- Clean processing equipment regularly.
- Dispose of waste according to federal, state, and local regulations.

Values stated in this document 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.

Information provided herein is based upon tests believed to be reliable. In as much as Parker LORD has no control over the manner in which others may use this information, it does not guarantee the results to be obtained. In addition, Parker LORD does not guarantee the performance of the product or the results obtained from the use of the product or this information where the product has been repackaged by any third party, including but not limited to any product end-user. Nor does the company make any express or implied warranty of merchantability or fitness for a particular purpose concerning the effects or results of such use.

WARNING — USER RESPONSIBILITY. FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.



Parker LORD
Engineered Materials Group

111 LORD Drive
Cary, NC 27511-7923
USA

phone +1 877 ASK LORD (275 5673)

www.lord.com