

Chemlok® CB150 Cold-Bond Adhesive

Application Guide

In order to ensure safe use of Chemlok® CB150 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 CB150 adhesive is a one-component, cold-bond adhesive intended for rubber-lining vulcanized rubber at ambient temperatures.

It is helpful to collect the necessary materials used in applying Chemlok CB150 adhesive. Materials to collect before starting include:

- Chemlok 205 Primer
- Chemlok CB102CS Adhesion Enhancer/Surface Modifier
- Chemlok CB150 Adhesive
- Xylene (for reactivation, if needed)
- 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 free oxide 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).

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 CB150 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 remain unlined for up to 24 hours provided they are protected from dust and the elements.

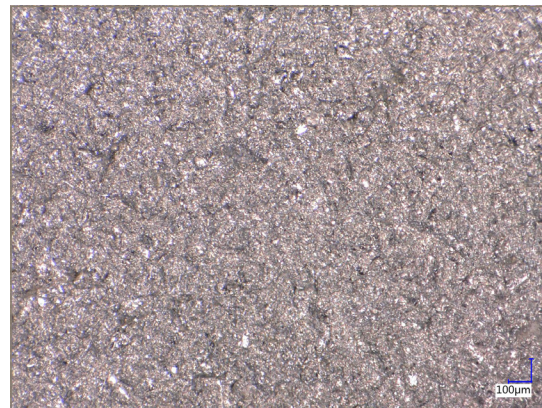


Figure 1. Optimal Blast Profile

Surface Preparation – Vulcanized Rubber:

Chemlok CB150 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.

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 skives where the bonding layer is not present should always be treated with Chemlok CB102CS adhesion enhancer/surface modifier with a saturated rag wipe (see Figure 2). DO NOT SPRAY Chemlok CB102CS adhesion enhancer/surface modifier.

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).

Temperature ranges from -43°C (-45°F) to 50°C (125°F) under Stress & Peel.

All applications and rubber compounds are different, and Parker Lord recommends testing Chemlok CB150 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 CB150 adhesive is an appropriate fit for your application.

Applying Adhesive – Rubber-to-Metal:

Coats required to sufficiently bond assets will vary by geometry and the general use of the assets.

Generally:

- Light-duty abrasion plates/bumpers where the bondline is compressed and medium-duty cycle assets with exterior diameter and seams benefit from the following combination: one coat of adhesive on primed metal and two coats of adhesive on the prepared rubber (1 metal/2 rubber).
- Heavy-duty cycle assets with interior diameter and seams benefit from the following combination: two coats of adhesive on the metal and two coats of adhesive applied to the rubber (2 metal/2 rubber). When used in practice, the first coat to the metal and rubber are applied simultaneously. The second coat should be applied to the metal first and then the rubber.

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 CB150 adhesive before implementing it in manufacturing.

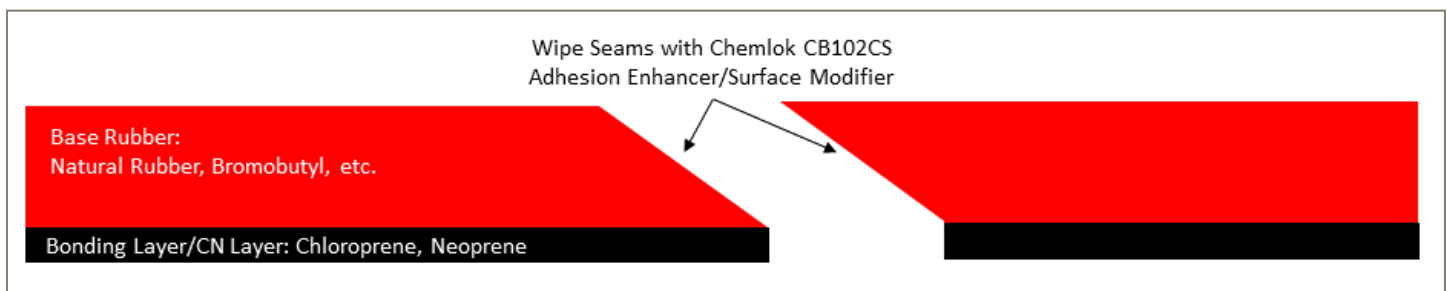


Figure 2. Surface Preparation of Vulcanized Rubber with Bonding Layer

Apply - 1 Metal/2 Rubber

1. Using a 1/2" nap* roller or brush, apply approximately 640 wet microns (22-26 wet mils) of Chemlok CB150 adhesive to primed metal (see Figure 3). Brush/roll back and forth to ensure smooth uniform coverage as the adhesive will self-level. If applied correctly, there should not be high or low spots and you will not be able to see the color of the primer.

*1/2" nap is recommended. 1/4" and 3/8" can be used with very similar results.

2. Apply an equal amount of adhesive to the prepared rubber following same application process as the metal (see Figure 4).
3. Allow 15-30 minutes for the adhesive to "set up" at 25°C (77°F). For the second coat on the rubber, apply an additional 640 wet microns (22-26 wet mils).



Figure 3. Apply to Primed Metal

Apply - 2 Metal/2 Rubber

1. Using a 1/2" nap roller or brush, apply approximately 640 microns (22-26 wet mils) of Chemlok CB150 adhesive to primed metal (see Figure 3). Brush/roll back and forth to ensure smooth uniform coverage as the adhesive will self-level. If applied correctly, there should not be high or low spots and you will not be able to see the color of the primer.
2. Apply an equal amount of adhesive to the prepared rubber following same application process as the metal (see Figure 4). Before continuing, allow 15-30 minutes for the adhesive to "set up" at 25°C (77°F) on both metal and rubber.
3. For the second coat applied to rubber, apply an additional 640 microns (22-26 wet mils) first to the metal and then to the rubber.

Note: The adhesive will absorb in the prepared rubber while the solvent for the metal will require time to flash off. Following this order will assist with dry time.

Tack

Allow 45-60 minutes at 25°C (77°F) for tack to develop. Chemlok CB150 adhesive will transition from a glossy appearance to matte appearance (see Figure 5). Depending on airflow, tack time will vary.

Note: Chemlok CB150 adhesive will feel dry to the touch. This is by design to allow for easier rubber handling. When Chemlok CB150 adhesive is mated to another surface coated with Chemlok CB150 adhesive, it will stick tenaciously.



Figure 4. Apply to Prepared Rubber

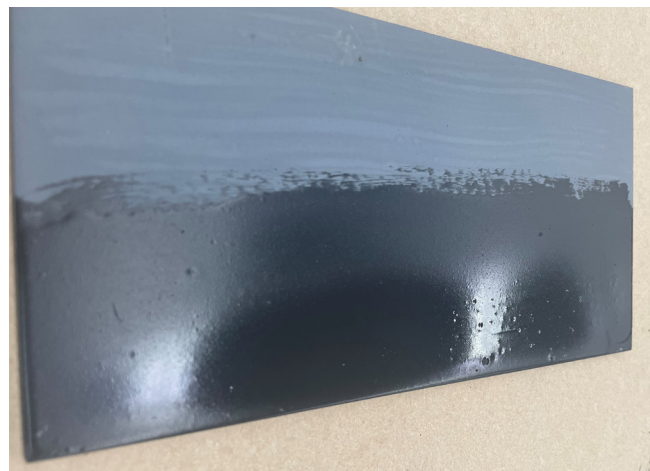


Figure 5. Allow Tack to Develop

Note: Photo only for reference to depict difference between glossy appearance and matte appearance. Do not mate until adhesive transitions completely to matte appearance.

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 (see Figure 6).

Freshening (if needed)

Depending on humidity and temperature, adhesive can be freshened by wiping with a xylene soaked rag (see Figure 7). Be sure to allow adequate time for the xylene to flash (dry off) before mating. When freshening, the assets will have minor tack. Chemlok CB150 adhesive may be freshened up to 24 hours after application.



Figure 6. Mate and Stitch Rubber to Metal

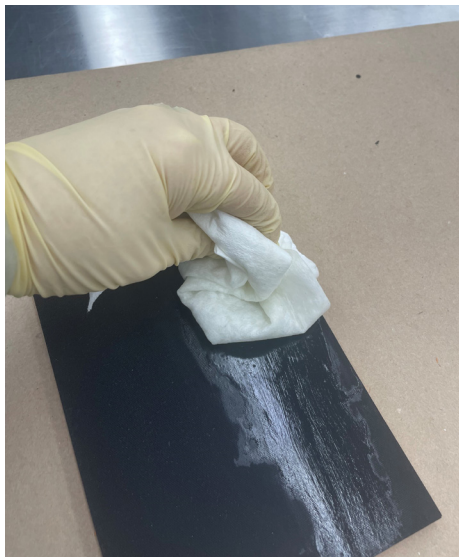


Figure 7. Freshen Adhesive with Xylene Wipe (if needed)

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):

Apply

1. Using a 1/2" nap roller or brush, apply a uniform coat of Chemlok CB150 adhesive, approximately 640 microns (22-26 wet mils), to each face of the prepared rubber (see Figure 3).
2. Allow 15-30 minutes to dry at 25°C (77°F).
3. Apply a second coat to both rubber interfaces.

Tack

Allow 45-60 minutes for tack to develop.

Note: Chemlok CB150 adhesive will feel dry to the touch. This is by design to allow for easier rubber handling. When Chemlok CB150 adhesive is mated to another surface coated with Chemlok CB150 adhesive, it will stick tenaciously.

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.

Freshening (if needed)

Depending on humidity and temperature, adhesive can be freshened by wiping with a xylene soaked rag (see Figure 7). Be sure to allow adequate time for the xylene to flash (dry off) before mating. When freshening, the assets will have minor tack. Chemlok CB150 adhesive may be freshened up to 24 hours after application.

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:

Uneven adhesive/bubble – If the adhesive “moves” or an indentation can be left with the knuckle test, let substrate dry for an additional 10-15 more minutes. Reevaluate. (See Figure 8.)

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 CB150 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 CB150 adhesive is essential for safe and effective application. We recommend these procedures be followed:

Routes of Exposure

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



Figure 8. Uneven Adhesive/Bubble

Health Effects

- Solvents and their vapors/mists have various effects on human health. Exposure to large doses of solvents may slow down reaction time and affect rational judgement.
- Proper ventilation when applying any adhesive product is critical to ensuring the health and safety of operators.
- Repeat or prolonged exposure to solvent content may cause burns or dermatitis or skin defatting.

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.
- Good personal hygiene should be practiced and a separate storage area utilized for work clothing to prevent the contamination of regular clothing.
- Always wash hands before eating, drinking, smoking, and leaving work.

Key Points

- Consult relevant SDS and product labels to assist in determining appropriate control measures.
- Do not spray apply CB102CS adhesion enhancer/surface modifier. Chemlok 205 primer may be spray applied.
- 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.

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- 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.
- 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.

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