

GENERAL GUIDELINES

The following is only for general guidelines. Please contact your Polycorp representative for specific applications.

Rubber will not bond to galvanized metal.

1. Metal Fabrication

- 1.1 All welding (hot work) on the tank, pipe, or other equipment to be lined shall be complete before the application of adhesives or rubber lining materials.
- 1.2 Metal fabrication and welding shall be in accordance with specific codes. All welds must be smooth with no porosity, holes, high spots, lumps or pockets.

2. Surface Preparation

- 2.1 Remove all loose corrosion products, weld spatter, mill scale, burrs and sharp edges from the surface to be lined using the appropriate hand or power tools in accordance with SSPC-SP2 (Hand Tool Cleaning) and SSPC-SP3 (Power Tool Cleaning).
- 2.2 Surfaces shall be inspected prior to the start of surface preparation to assure that they are dry and that visible deposits of oil and grease have been removed in accordance with SSPC- SP1(Solvent Cleaning). In addition, the inspector shall identify surface imperfections (such as weld spatter, porosity, pits, laminations, slivers or crevices) for repair as appropriate.
- 2.3 Before and during operations (e.g. abrasive blasting, power tools) ambient conditions shall be checked to determine the air and surface temperatures, relative humidity and dew point, to which the bare steel will be exposed. These operations shall not be permitted when the surface temperature is less than 5°F (3°C) above the dew point and/or the relative humidity is over 80%. The temperature should be 50°F (10°C) to 90°F (32°C).

3. Abrasive Blast Cleaning

- 3.1 The compressed air supply for abrasive blasting shall be inspected before and during operations for the presence of oil and/or water by performing a white blotter test. The test shall be performed downstream of separators. The blotter shall be free of visible contaminants of oil or water after being held in the air stream at a distance of 18” (457 mm) to 24” (610 mm) from the source for at least two minutes in accordance with SSPC Painting Manual Vol.1 Good Painting Practice – “Air Compressor and Air Cleanness”.
- 3.2 A production blast will be performed on all metal surfaces to be lined to remove corrosion products and staining. All metal surfaces shall present an appearance in accordance to SSPC-SP5 /NACE No.1.
- 3.3 Strict adherence to air temperature, 50°F (10°C) to 90°F (32°C), relative humidity and shell temperature (5°F (3°C) above the dew point) will be required. At the beginning and middle of every shift, the inspector will record, in the area of the tank they will be working, the steel temperature and the air temperature and calculate the dew point and relative humidity.

Relative Humidity	Maximum Time Span Between Blasting and Primer Application
Over 80%	No Application
70-80%	1 hour
60-70%	4 hours
50-60%	8 hours
49% or Below	24 hours

- 3.4 The entire surface of the tank to be lined is to be blasted clean to a profile of 2.0 mils (0.051mm) minimum.
- 3.5 All sandblasted areas are to be cleaned to remove all contaminating materials prior to applying primers.

- 3.6 All areas blasted are to be primed with one coat of primer as soon as possible after blasting and before any visible rust appears. Allow to dry a minimum of one hour.
- 3.7 Upon commencement of sandblasting, and continuing for the remainder of the project, no gasoline, kerosene or diesel operated engines will be permitted in or near the tank without venting such equipment to the exterior atmosphere to avoid the contamination of work area.

4. Cementing Instruction

- 4.1 All primers and cements contain solvent fumes which may be explosive under certain conditions. Therefore, safety precautions shall be taken during application.
 - **Always review Material Safety Data Sheets for specific hazards and PPE requirements**
 - **Refer to product specific technical data sheets for adhesive recommendations**
 - **All work practices should conform to local, state, provincial and federal law**
- 4.2 All primers and cements shall be thoroughly stirred and mixed sufficiently per manufacturer's recommendations before use so solids will stay in suspension. When brushing cements, they shall be of such consistency to give a smooth, uniform coverage. Use only brushes with nylon or animal bristle.
- 4.3 Any rust spots that appear during or after the cementing application shall be removed to clean metal by using a suitable method (grinding or blasting). These areas shall then be re-primed and/or re-cemented.
- 4.4 In the event the lining cannot be applied for an extended period of time and the cement loses its tack, the cemented surface shall be freshened by applying another coat of cement and/or cement-solvent mixture.
- 4.5 To prevent condensation the substrate temperature shall be a minimum of 5°F (3°C) above the dew point. If cemented surfaces are exposed to sunlight and/or weather, primer will be reapplied prior to lining.

- 4.6 Drying time for primers and cements should be long enough for the solvent to evaporate. The rate of evaporation is influenced by temperature, humidity, thickness of wet film, etc., but normally 60 minutes is sufficient. Cemented parts should be kept free from all contamination during the drying and lay over period.
- 4.7 Cements should be stored in a clean, cool and well-ventilated area. Storage at high temperatures may have a detrimental effect on the adhesion properties. If the temperature is too high for too long the cement can gel (set up). To avoid solvent loss and consequent thickening of the cement, containers should be tightly sealed. When cements are transferred to smaller holding cans, the cans should be free from contamination and provisions should be made to seal containers when not in use.

5. Rubber Lining

Rubber linings shall be stored in areas where they are not exposed to direct sunlight (see Technical Data Sheet for shelf life of individual product under different storage conditions). There are four types of seam methods for rubber lining application (See Fig. 6-1 to Fig. 6-4):

- Closed skive (Down skive)
- Open skive
- Butt joint with cap strip
- Skive butt joint

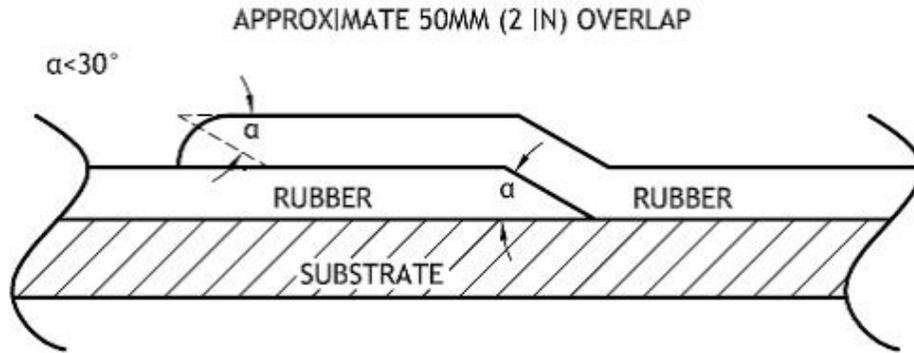


Fig. 6-1 Closed Skive

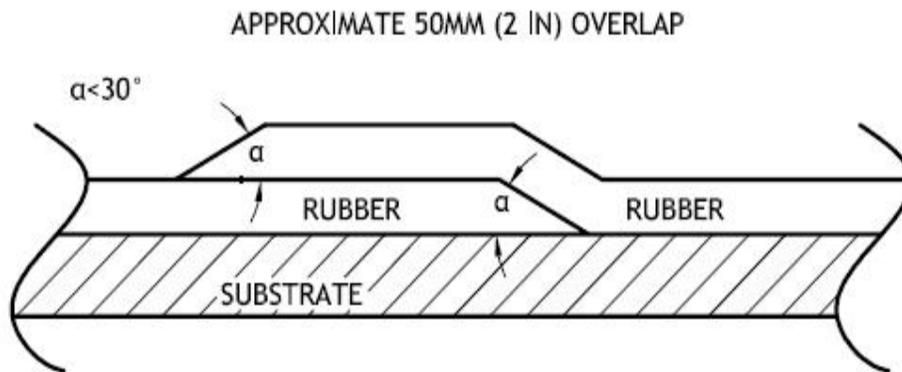


Fig. 6-2 Open Skive

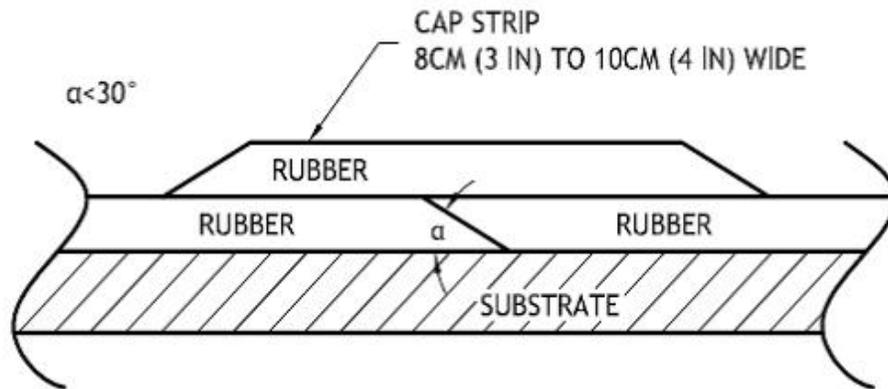


Fig. 6-3 Butt seam with strip

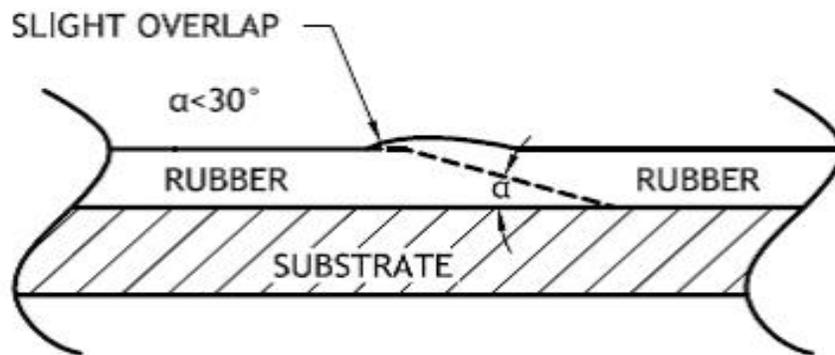


Fig. 6-4 Skive butt joint

5.1 Cutting the rubber

- Unroll the rubber sheet on a clean table. A heating table may be used for some rubber stocks.
- If preshrinking of the rubber is required, follow the instructions from the Product Technical Data Sheet
- Cut with plastic film still on rubber

5.2 Cementing the rubber

- Remove the plastic backing
- The plastic side goes to the steel
- Tie gum side of rubber should be cemented with appropriate cement
- For sticky back linings, the cement is only required on the cut skives
- Allow the cement to dry so no solvent is left

5.3 Liner Cloth

Place a lint-free liner cloth over the cemented side of the rubber to allow proper placement of the sheet

Using the liner cloth is to prevent premature sticking of the cemented rubber sheet

5.4 Sheet Application

- Position the lining on the cemented metal and, at the same time, gradually remove the liner cloth.
- After the sheet is partially tacked in place, it should be rolled with a steady, firm and overlapping stroke. The rolling should be started in the center of the panel and worked toward the edges. It is essential that the rubber lining be rolled tightly against the metal to remove any trapped air and assure complete contact between rubber and metal.

5.5 Joints in Rubber Lining

- Lining panels should be joined together by appropriate seam methods (See Technical Data Sheet for details).
- Special care must be taken to minimize stretching of the rubber linings.

5.6 Seam Placement

- The panels can be laid vertically or horizontally. Normally, the orientation is dictated by the geometry of the vessel.
- Avoid four layers of rubber when it is possible.
- Three layers of rubber are acceptable when the seams are staggered.
- Neatness and uniformity are best practice for rubber lining

5.7 Tanks should be protected from weather when located outside. In cold weather, heating facilities should be furnished to bring the temperature to 55°F (13°C) minimum inside the tank.

5.8 Manway flanges on autoclave and atmospheric cured tanks should be covered full face with lining stock and lapped 2” onto manway throat lining. On internal steam cured tanks, the manway and nipple outlet flanges can be covered as outlined in Fig.10-3, Fig.10-4 and Fig.10-5.

Note: visit www.poly-corp.com for Technical Data Sheet or contact your Polycorp representative for information on special cases