Turcite-B Slydway Installation

Turcite-B Linear Bearing System

Trelleborg’s proven Turcite Slydway Bearing System has been specifically developed as an effective bearing element between sliding metal surfaces found in machine tools or other linear bearing applications. The system, when installed using very specific, yet easy to follow procedures; provides an extremely reliable linear bearing surface, lower friction and wear. The Slydway Linear Bearing System consists of three main components: Turcite-B, Cleaner and Adhesive.

Materials List

A. Turcite-B bearing material
B. Trelleborg Waylock Adhesive
   ➢ Hardener
   ➢ Adhesive
   ➢ Serrated Spatula
   ➢ Instruction Sheet
   ➢ MSDS for Waylock
C. Devitt Cleaner/Degreaser
D. Clean Cloth (light color, lint-free)
E. Acetone or isopropyl alcohol
F. Stir sticks and utility knife
G. Wax paper or plastic sheet
H. Clean gloves Weights or clamps

Installation Instructions for Turcite-B

1. Turcite Bonding Surface:

   Turcite-B Linear Bearing Materials are thin, flat, fluoropolymer-based sheets, which are secured to metal substrates through epoxy adhesive bonding. Turcite B is chemically etched to accept Trelleborg’s Waylock epoxy bonding adhesive. The etched side of the Turcite-B material can be easily identified by its uniform dark brown to black color.

2. Surface Finish Preparation:

   Turcite-B Linear Bearing Material

   Do not sand or roughen Turcite’s etched surface; this will expose un-etched material and adversely affect bond strength. Care must be taken to ensure that the material bonding surfaces are kept clean, dry and free from dirt and chemicals (including dirty hands), as this will adversely affect bond strength.

   Metal Surfaces

   It is critical to the strength of the Turcite Linear Bearing System’s bond that there is a proper finish on the metal bonding surface. To ensure maximum bond strength, the metal bonding surface finish should not be less than 40 µinRa (3.2 µm). Polished metal surfaces or surfaces that are too rough may weaken, causing failure at the bond-line.

3. Cleaning the Bonding Surfaces:

   Turcite-B Linear Bearing Material

   To ensure that the Turcite-B is clean and free from dirt and oils, thoroughly wipe down the etched surface with Devitt’s Cleaner/Degreaser. Three cleanings, Using Devitt’s Cleaner/Degreaser, should be considered the minimum in order to thoroughly prepare the surface. Failure to remove surface dirt and oil can result in a bond-line failure.
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Metal Surfaces

A thorough cleaning of the finished metal bonding surface is required to assure proper bonding. A minimum of three cleanings, using Devitt Cleaner/Degreaser (as with Turcite-B Linear Bearing Material), are required to ensure that all contaminants have been removed. After cleaning, the metal and Turcite surfaces should be kept clean and protected from any contamination prior to bonding.

Please note: used castings, common in rebuilt or reworked machine tools, may require repetitive cleaning before all surface oils are removed.

4. Final Preparation of Turcite-B and Metal Bonding Surface

After the etched side of Turcite-B Material and the metal bonding surfaces are clean and dry, an additional final cleaning must be done immediately prior to bonding. Using a clean, lint-free white cloth saturated with isopropyl alcohol or acetone, remove any residual surface contamination with a final wipe down.

After this final cleaning, both surfaces should be allowed to completely air dry and should not be touched or handled until ready for bonding. Do not use compressed air to dry surface after final wiping, as it may contain water or oil contaminants, resulting in bond-line failure.

5. Preparation of the Waylock Epoxy Adhesive.

Trelleborg’s two-part Waylock epoxy adhesive is the only recommended adhesive, due to its ability to provide maximum bond strength. Stir each Waylock component with separate clean stick, until thoroughly blended. Never use a hot water bath to heat the adhesive or the hardener, as materials are adversely affected by moisture. During periods of humidity over 75%, care must be taken to close containers immediately after use.

6. Bonding the Two Surfaces:

A thin, even layer of Waylock bonding adhesive should be applied to both surfaces using serrated spatula. Use of the serrated spatula ensures that the Waylock bonding adhesive is applied in just the right amount. Thicker or thinner amounts of adhesive will adversely affect bond integrity.

After laying the Turcite Linear Bearing Material on the metal bonding surface, all wrinkles and bubbles should be smoothed out of the Turcite. Using weights or clamping devices, light contact pressure should be applied to hold the two bonding surfaces in place while curling occurs. Pressure of 3 psi (20 KPa) to 10 psi (69 KPa) should be adequate for proper bonding. Special care should be taken to avoid overloading large bonding areas, as this can reduce bond effectiveness. Curing time is approximately 24 hours. This time should be lengthened if the adhesive will be used below 50°F (10°C). To avoid adhesion between the weights or clamps and the Turcite, we recommend covering the Turcite with a plastic sheet or wax paper.

Note: Curing time can be reduced by 2 hours by heating the part at 150°F (65°C).
7. Final Finish Machining:

After full cure of the adhesive bond, Turcite Linear Bearing Material can be finished by milling or grinding. Additional coolant is generally not required when milling for final finishing. When grinding, it is important to use an open structured wheel and flood with coolant to avoid overheating. The use of coolant when grinding is beneficial in achieving a better surface finish. Milled or ground surfaces can be scraped to enhance the tribological properties of the guides.

Machining Oil Grooves

For optimum performances of our Turcite Linear Bearing system, provisions must be made for delivering and maintaining a consistent lubricating film between the mating surfaces.

Oil grooves should be milled into the surface of the Turcite Material to a depth less than the thickness of the material. A generous smooth radius at the edge of the oil groove is required. This will force the flow of the oil from the grooves, across the bearing surface, helping to create a hydrodynamic oil film.

There are many types of oil groove designs available and successfully utilized by machine tool manufacturers. The primary requirement for the design is to create oil groove sections that are diagonal or 4° plus or minus to the direction of travel. This will allow the oil to penetrate between the mating surfaces.

Oil grooves should never be machined closer that .025” (6mm) from the edge of the bearing material.

Metal Mating Surface Finish

For optimum performance, the steel mating surface to Turcite Material, generally referred to as the way, should have a surface finish of 14µin Ra (0,35 µm). The surface finish should never be less than 8 µin Ra (0, 2 µm) nor more than 20 µin Ra (0, 5 µm).

Never lap or polish the metal mating surface (the way) to the Turcite Material. This process will promote a stick-slip effect and will also increase friction during operation.

Mated Sliding Surface

For best performance, surface area contact between the way and the saddle interference should be maximized. This optimum surface contact ensures uniform lubrication dispersion and film thickness, which benefits hydrodynamic conditions.