



Turcite® B Linear Bearing Systems

Trelleborg Sealing Solutions has a Turcite® linear bearing system that has been specifically developed as an effective bearing element between sliding metal surfaces found in machine tools and other linear bearing applications. When the recommended procedures are followed it will provide an extremely reliable linear bearing surface, lower friction and low wear. The Turcite® linear bearing system consists of three main components: Turcite®, Wayclean® degreaser and Waylock® II adhesive.

Material List

Turcite®	Acetone or isopropyl alcohol	Instruction sheet
Waylock® II (two part adhesive)	Stir sticks or utility knife	MSDS
Serrated spatula	Wax paper or plastic sheet	
Wayclean® degreaser	Clean gloves	
Cleaning cloth, white, lint free	Weights or clamps	

Installation Instructions

Warning: not following the installation instructions and handling can result in inadequate bonding!

Turcite® B

Turcite® linear bearing material is a thin, flat, fluoropolymer-based sheet, which is secured to metal substrates through adhesive bonding. Turcite® is chemically etched to accept the Waylock® II bonding adhesive.

Surface Finish Preparation

Turcite® Material

Do not sand or roughen the surface of the Turcite® etched surface! This will expose unetched 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. The etched side of the Turcite® material can be identified by its uniform dark brown to black color.

Metal Surfaces

Surface to be bonded: It is critical to the strength of the Turcite® bonding that there is a proper finish on the metal bonding surface. The recommended surface finish should be 250 µin Ra (6.30 µm). The metal bonding surface finish should never be less than 125 µin Ra (3.2 µm) nor greater than 500 µin Ra (12.5 µm). Surface finish outside this range will result in reduced bond strength. Polished metal surfaces or surfaces that are too rough may weaken, causing failure at the bond-line.



Mating surface: For optimum performance, the mating surface running against the Turcite® material should have a surface finish of 14-20 µin Ra (0.35 – 0.50 µm). The surface finish should never be less than 8 µin Ra (0,2 µm).

Never lap or polish the metal mating surface to the metal mating surface; this will promote a stick slip effect and increase friction during operation.

Cleaning Bonding Surfaces

Turcite® material must be clean and free from dirt and oils. Thoroughly wipe down the etched surface of the Turcite® material with Wayclean® degreaser. Three cleanings using Wayclean® 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.

* Wayclean® degreaser is the only recommended cleaning agent for this application. Wayclean® has been specifically developed to successfully remove contaminants from Turcite® and metal surfaces in preparation for bonding. Use of any other degreasers, petrol or thinners may leave an invisible surface residue which may cause bond-line failure .

The metal surface that will be bonded to the Turcite® material requires a thorough cleaning to assure proper bonding. Three cleanings minimum, using Wayclean® is recommended 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 .

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

Final Preparation of Turcite® and Metal Bonding Surfaces

After the etched side of Turcite® and the metal bonding surfaces are clean and dry, an additional final cleaning must be done immediately prior to bonding. Saturate using a clean, lint-free, white cloth with isopropyl alcohol or acetone and remove any residual surface contamination with a final wipe down. Allow surfaces to dry completely and do not be touch or handle until ready for bonding.

Note: Do not use compressed air to dry surface; it may contain water or oil contaminants resulting in bond-line failure.

Preparation and Bonding with Waylock® II Adhesive

Stir each component with a clean stick, until thoroughly blended. Use a different stick for each component to avoid cross-contamination.

Never use a hot water bath to heat the adhesive or the hardener, as the materials are adversely affected by moisture. During periods of humidity over 75%, care must be taken to close containers immediately after use.

A thin, even layer of Waylock® II bonding adhesive should be applied to both surfaces using the serrated spatula, which ensures the proper thickness of adhesive. Thicker or thinner amounts of adhesive will adversely affect bond integrity. After laying the Turcite® 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 curing 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).

Final Finish Machining

Once the adhesive bond is fully cured the Turcite® surface can be finished by milling or grinding. 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.

Oil Grooves

For optimum performance of our Turcite® linear bearing system, provisions must be made for delivering and maintaining a consistent lubricating film of oil 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 radii 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 perpendicular to the direction of travel. This will allow the oil to penetrate between the mating surfaces. Oil grooves should never be machined closer than 0.25" (6mm) from the edge of the bearing material.

Typical Properties of Waylock® II	
Lap Shear (ASTM D1002)	
AL/AL	>2000 psi (>13.8MPa)
Cold Rolled Steel	>1200 psi (>8.2 MPa)
Pot Life	25 minutes; 100g mass
Service Temperature	-65 to 180°F (-54 to 82°C)
Mixing Ration by Volume	1 : 1 (Part A: Part B)
Cure Time	6 hours (ready to be machined)
At Room Temperature	24 hours (fully cured)
Accelerated Cure Time	150°F (66°C) for 2 hours
After procuring 4 hours at room temperature	180°F (82°C) for 30 minutes
Chemical Resistance	Excellent against most lubricating oils, coolants and solvents.
Color	Grey-Black
<i>Note: Do not mix large quantities (more than 300 grams) at one time. If a large quantity of this material is mixed and allowed to react in a concentrated mass, considerable heat and possible toxic fumes could result.</i>	

