



ES6251 A/B Tooling Board Bonding System

DESCRIPTION

ES6251 is a two-component somewhat lighter epoxy system formulated for bonding together machinable board stock. ES6251 is easily sanded, and will match the surface contour of the machined and sanded board-stock master. Its primary advantage over many other adhesive products is that it minimizes “telegraphing” bond lines when castings or laminates are pulled from the assembled board-stock surface. This system allows enough time to coat and bond large surface areas, but still has reasonable curing time for handling.

ES6251 can be used to bond urethane and epoxy board stock, ranging from lightweight foam boards to high-density solid boards.

PRODUCT SPECIFICATIONS

	ES6251 Part A	ES6251 Part B	ASTM Method
Color	Tan	Light Oxide Red	Visual
Viscosity, @77°F, centipoise	Light Paste	Paste	D2392
Specific Gravity, gms./cc	1.34	0.55	D1475
Mix Ratio	100 : 25 By Weight		PTM&W
Pot Life, 1/2 lb. Mass @ 77°F	50 - 55 minutes		D2471
Recommended Application Time**	25 minutes		PTM&W

**This is the time available to apply the material before it becomes too thick to spread.

HANDLING and CURING

Both Part A and Part B of ES6251 must be premixed, with special attention paid to the Part B, which contains lightweight fillers that can float to the top of the container. When the Part B is opened, the fillers will be on top and can appear to be dry and flakey, with the liquid hardener below. The fillers must be mixed into the liquid portion until homogeneous. The Part A and Part B can then be combined at the correct mix ratio.

As is typical of most epoxies, ES6251 will gradually thicken as it progresses to initial gel. Therefore, it is best to apply the mixed material to the surfaces to be bonded within the first 20 to 30 minutes after mixing, so that the adhesive will wet the surface properly. Apply ES6251 approximately 1/8” thick to one of the mating surfaces and clamp the two surfaces together. It will usually be possible to remove the clamps after 4 to 6 hours at room temperature (77°F minimum). It is recommended the bonded structure be allowed to cure overnight (15 + hours) before machining. Higher ambient temperatures will shorten these requirements and conversely, longer cure times will be required in cooler temperatures.

PACKAGING WEIGHTS

	Quart Kit	Gallon Kit	Pail Kit
ES6251 Part A	2 lb.	10 lb.	30 lb.
ES6251 Part B	.5 lb.	2.5 lb.	7.5 lb. (2 @ 3.75 lb.)
Kit	2.5 lb.	12.5 lb.	37.5 lb.

TYPICAL MECHANICAL PROPERTIES

	ES6251 A/B	ASTM Method
Mix Ratio, By Weight	100 : 25	PTM&W
Color	Tan	Visual
Mixed Viscosity, @77°F, centipoise	48,000 cps	D2393
Pot Life, 4 fl. Oz. Mass, @77°F	50 - 55 minutes	D2471
Recommended Application Time**	25 minutes	PTM&W
Cured Hardness, Shore D	72 - 75 Shore D	D2240
Specific Gravity, grams, cc	1.04	D1475
Density, lb./cu. Inch lb. / gallon	0.0376 8.69	D792
Specific Volume, cu. in./lb.	26.6	
Tensile Strength, psi	4,443 psi (30.6 MPa)	D638
Elongation at Break, %	8.1 %	
Tensile modulus, psi	386,249 psi (2,664 MPa)	
Flexural Strength, psi	8,531 psi (58.8 MPa)	D790
Flexural Modulus, psi	414,422 psi (2,857 MPa)	
Compressive Strength, psi	9,098 psi (62.7 MPa)	D695
Compressive Modulus, psi	337,596 psi (2,328 MPa)	
Glass Transition Temperature, DMA: Tg (Peak)	159°F (70.3°C)	D4065
Adhesive Lap Shear (Double Lap Shear in Compression) 1. Substrate: Standard Filled 60-65 Shore D Tooling Board 2. Substrate: Unfilled 85 Shore D Urethane Tooling Board	860 psi (Substrate Failure) 2,400 psi (Adhesive Failure)	Modified D3528

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SAFETY and HANDLING

PTM&W epoxy products are made from raw materials carefully chosen to minimize or even eliminate toxic chemicals, and therefore offer the user high performance products with minimum hazard potential when properly used. Generally, the PTM&W epoxy resins and hardeners will present no handling problems if users exercise care to protect the skin and eyes, and if good ventilation is provided in the work areas. However, breathing of mist or vapors may cause allergenic respiratory reaction, especially in highly sensitive individuals. As such, avoid contact with eyes and skin, and avoid breathing vapors. Wear protective rubber apron, clothing, nitrile rubber gloves, face shield or other items as required to prevent contact with the skin. In case of skin contact, immediately wash with soap and water, followed by a rinse of the area with vinegar, and then a further wash with soap and water. The vinegar will neutralize the hardener and lessen the chances of long term effects. Use goggles, a face shield, safety glasses or other items as required to prevent contact with the eyes. If material gets into the eyes, immediately flush with water for at least 15 minutes and call a physician. Generally, keep the work area as uncluttered and clean as possible, and clean up any minor spills immediately to prevent accidental skin contact at a later time. Keep tools clean and properly stored. Dispose of trash and empty containers properly. Do not use any of these types of products until Material Safety Data Sheets have been read and understood.

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