

RIGIDAX®

Having trouble fixturing those thin-wall or hard-to-hold parts? This pour-on thermoplastic tooling compound may be the solution.

OVERVIEW:

Rigidax® tooling compound is designed for stabilizing, supporting or holding parts that are normally hard to fixture in close-tolerance machining applications. It is also a great solution when you need to support thin wall or odd shaped parts that need to be stabilized during a machining process. Rigidax® is a castable, thermoplastic compound. Unlike most wax compounds, it has a low shrink factor when going from its melted state to a solid/cooled state. It is melted and poured in or around the part. After machining, the Rigidax® is melted out and the parts are cleaned. Rigidax can be reused multiple times by adding new material.

In addition to metals, Rigidax® has also been used successfully with glass, plastic, ceramics, quartz, fiberglass, etc. During milling or grinding, feeds and speeds normally required for the material being machined are used. There will be cases where feed and speed rates can be increased due to higher rigidity of the parts. When used in grinding applications, this compound does not “load” the grinding wheels. The added stabilization of the supported parts may tangibly increase tool or wheel life because of the reduction of vibration and chatter.

USING RIGIDAX®:

Preheating the part to 120-180°F will allow Rigidax® to “wet” the surface of the part and provide even greater holding power. One pound of Rigidax® will fill approximately 20 cubic inches. There are about 11 pounds of Rigidax® to the gallon.

Rigidax® (Green, Blue & Red) should be heated to 275°F to pour (not beyond). The WS (Water Soluble) version should be heated no higher than 200°F.

Rigidax® has several fillers which must be kept in suspension for proper performance. The material should be agitated when melted at about 30 revolutions per minute. Treat it much like you would a bucket of paint.

The proper melt-out temperature for all versions of Rigidax® is 250°F.

CLEANUP:

After your process is completed, you can melt away the bulk of the Rigidax and re-use it. Rigidax is designed to hold to the part so it will not just flake off like other waxes might. The Rigidax that is left on the part will generally look like a thin coat of cheap paint. There are typically three ways to remove Rigidax from the work piece and which one you choose depends on your specific circumstances.

1. *Mechanical means*: This could be as simple as holding on to your heated part with a gloved hand and wiping the Rigidax off. Other means such as chipping, sandblasting or shot blasting have also been used. These methods will obviously not work if you have delicate parts, hidden areas, or need to clean more than a few parts at a time.
2. *Heated bath*: Dipping your part into a bath of liquid that has been heated above the melting point of Rigidax. For most variations of Rigidax, using hot water may be a slow process. Liquids such as mineral oil have been successfully used since it has a boiling point that is substantially higher than water. Some slight agitation will speed up the process. For the water soluble version of Rigidax, warm water will work great.
3. Chemical bath: BioAct 280 is available on our web site. BioAct is a precision cleaner that can remove Rigidax to a level that meets aerospace quality requirements. This is the method most often used in a production environment when you need to make a lot of parts. There is a manual available on our website that you can download with instructions on the process. You will have to heat the BioAct up to a temperature above the melt point of the Rigidax that you are using. There are also other chemicals that can be used. You can find these by doing an Internet search on the term “dewaxer”. Most of the alternatives involve chemicals that are hazardous and quite nasty.

Rigidax® Versions:

Type	Uses	Ring & Ball Softening Point	Penetration At 77°F, 454g (DMM)	Specific Gravity	Drop Melt Point
Green 24-12	General purpose and most popular form of Rigidax®. Easier to get into small crevices and multiple interrupt parts such as blades and vanes. Great holding ability.	188° F (Typical) 87° C (Typical)	2.0 - 8.0 (59 Shore D)	1.300 - 1.500	181° F 83° C
Green 23-8	Higher viscosity (thicker) than 24-12 when melted. Slightly more adhesive and viscous than Blue 23-8.	193° F (Typical) 90° C (Typical)	2.5 – 8.5 (49 Shore D)	1.300 - 1.500	180° F 82° C
Blue 24-12	Same as Green 24-12 but without the micro fiber glass component that is in the Green version therefore matrix is not as strong. Blue is designed for use where possibility of fiberglass residue may cause problems (example; optical applications). Blue is just slightly more viscous than Green. Easier to get into small crevices and multiple interrupt parts than the Blue 23-8 version would be.	185° F (Typical) 85° C (Typical)	3.0 – 9.0 (63 Shore D)	1.260 - 1.460	179° F 81.7° C
Blue 23-8	Same as Blue 24-12 but more viscous. Great for multi-vane impellers, blades, turbine wheels.	180°F (Typical) 82°C (Typical)	6.0 (Typical) (61 Shore D)	1.360 Typical	178.8° F 81.6° C
Red NMF	High fiber content Rigidax. Extremely strong matrix. Fastest setting. Lowest pouring temperature (except for water soluble version). Excellent holding properties but cleaning from hollow parts, especially blades, is more difficult due to its high fiber content. Viscosity is substantially lower than all other variations of Rigidax making it ideal for parts with small crevices and tight corners.	193° F (Typical) 89° C (Typical)	2.5 - 8.5 (59 Shore D)	1.290 - 1.390	174.2° F 79.0° C
WS Water Soluble	WS is the easiest Rigidax® to clean up however; it is not as adhesive or strong as the other Rigidax grades. Cannot use coolants when machining. Much lower viscosity than Green or Blue versions.	170° F (Typical) 77° C (Typical)	1.5 – 5.0 (64 Shore D)	1.360 - 1.480	181° F 83° C