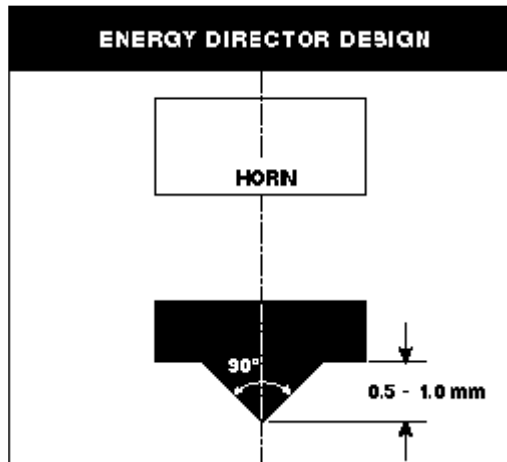


## Part Design & Assembly Welding

### Welding Methods

Welded assemblies result from frictional or conduction heating of the polymers under applied pressure such that a melt bond occurs between the components. Welding methods are best suited for applications where leak proof, permanent, attractive, or contamination free high strength bonds are required. Common welding techniques include; ultrasonic, vibration, and hot plate. These techniques are best suited to polymers with similar melt characteristics. The broad melting range of Plexiglas acrylic resins make them compatible with a number of common amorphous thermoplastic polymers.



Plexiglas® acrylic plastic is a combustible thermoplastic. Observe fire precautions appropriate for comparable forms of wood and paper. For building uses, check code approvals. Impact resistance is a factor of thickness. Avoid exposure to heat or aromatic solvents. Clean with soap and water. Avoid abrasives.

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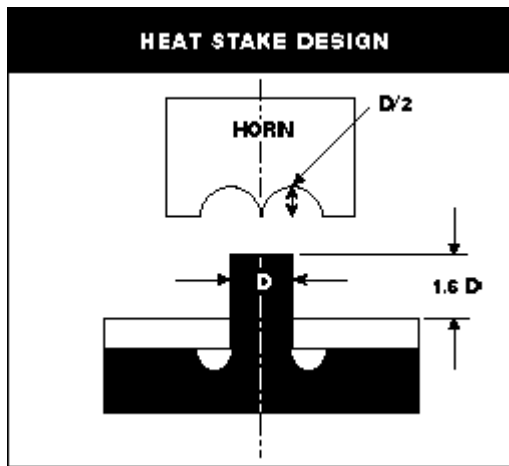
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## Thermal Method Guidelines

The following guidelines may be used as reference points when welding Plexiglas acrylic resins. Optimum conditions will vary with application depending on part size, geometry, and materials employed.

	<b>Ultrasonic (20kHz)</b>	<b>Hot VibrationPlate</b>
Amplitude	40-70 micron	.030-.070"
Press.	30-60 psig	200-500 psi
Temp.	NA	600-800° F
Melt Depth	NA	.030"- .040"
Seal Depth	NA	.010"- .020"

The use of an energy director is recommended for ultrasonic welding of Plexiglas acrylic resins. The director concentrates energy to speed softening and melting of the joint. When welding different polymers, the energy director should be incorporated in the higher modulus material



Plexiglas acrylic resins may be heat staked for assembly to materials that cannot be welded, e.g. metals and crystalline polymers. Staking is readily accomplished using heat or ultrasonic energy.

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## Thermal Method Guidelines

	Plexiglas V-Series			Plexiglas MI7			Plexiglas DR		
	Ultrasonic Vibration		Hot Plate	Ultrasonic Vibration		Hot Plate	Ultrasonic Vibration		Hot Plate
PMMA	<b>G</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>
ABS	<b>G</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>
ABS/ PC	<b>G</b>	<b>VG</b>	<b>VG</b>	<b>G</b>	<b>VG</b>	<b>VG</b>	<b>G</b>	<b>VG</b>	<b>VG</b>
PC	<b>G</b>	<b>VG</b>	<b>VG</b>	<b>G</b>	<b>VG</b>	<b>VG</b>	<b>G</b>	<b>VG</b>	<b>VG</b>

**% Polymer  
Strength  
Attainable\***

### Weld Rating

<b>Excellent</b>	90-100
<b>Very Good</b>	70-90
<b>Good</b>	50-70
<b>Fair</b>	25-50
<b>Poor</b>	0-25

\*Tensile strength of weaker material

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