

teeth per inch on the blade should decrease. See Table 1 for recommendations.

Metal-cutting blades and, in particular, bimetallic blades stay sharp longer than blades designed for cutting wood and are better for use on Acrylic sheet. They are supplied by several manufacturers in 100 ft. coils and can be cut to the proper length and brazed or welded. The weld must be annealed and dressed.

Blade thickness, width, and the number and type of teeth depend on the size of the band saw, the thickness of the material to be cut, and the minimum radius to be cut. Band saw blades of 0.250 inch to 0.375 inch width should be used for cutting curves; blades of 0.50 inch to 0.75 inch width should be used for straight ripping or cutting large-radius curves. The diameter of the band saw wheels will determine the maximum thickness of the blade. The thickness of the blade increases as the diameter of the wheels increases.

Special band saw blades, called "skip tooth" or "buttress" blades, have been developed for soft materials such as plastics and are available with 2, 3, 4 or 6 teeth per inch. These blades should be used when cutting thicknesses greater than 0.472 inch. These blades are hardened and will retain their sharpness for long periods when used only for cutting Acrylic sheet.

Variable pitch (number of teeth per inch) blades work well in reducing chipping when cutting sheet 0.472 inch thick or less.

Band Saw Operation

The tension on the saw blade should be just enough to prevent slipping on the wheels but not enough to stretch the blade and cause misalignment. The guide rolls or blocks should be set so they just miss the teeth but support the rest of the blade width. They should be set so that their rotation can be stopped with pressure from the thumb and forefinger when the saw is turned by hand. The back-up roll should be adjusted so that it does not turn when the saw is idling, but will provide support while the saw is cutting. When cutting formed sections, it may be necessary to raise the upper guide. When this is done, extra care

is necessary to insure proper alignment. For added safety, the upper guide should be as low as possible (within 1/2 inch of the Acrylic sheet).

The action of the saw carries sawdust from the Acrylic sheet and the masking paper onto the wheels. The dust builds up on the wheels and may cause the blade to run off. Therefore, this accumulation of dust must be removed. Stiff bristle brushes can be placed so that they touch the tires and clean them as they revolve. The brushes should be held with a light spring tension so that they will make contact, yet not cause excessive wear on the tires.

Internal cuts may be made by drilling a hole through the Acrylic sheet and cutting and welding the blade inside the hole. Once the internal cut is completed, the blade must be recut, removed from the hole, and re-welded. This technique may be useful for special jobs but it is too time-consuming for production use.

When cutting unmasked Acrylic sheet on a band saw, special care must be taken to prevent scratching. The saw table must be kept clean and should be free of nicks or burrs. Kraft paper or cardboard should be placed on the table under the unmasked sheet. Tape or rubber cement can be used to hold the paper and the Acrylic sheet together to ensure that both will move through the saw together. When trimming flanges on formed parts, the flange will slide on the saw table so any scratching will not be objectionable for most applications. For other curved work, a piece of

TABLE 1: Band Saw Blade Recommendations (Metal Cutting Blades Should Be Used)

Thickness	Blade Width	# Teeth	Tooth
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