

# Ultrasonic Welding



Figure 1 Spot-welded produce container

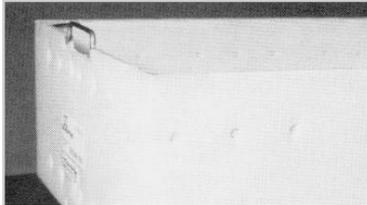


Figure 2 Spot-welded tote box

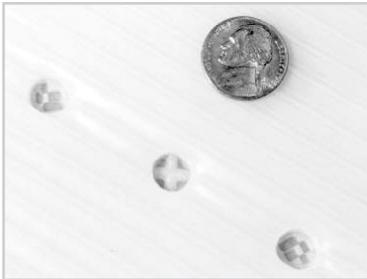


Figure 3 Typical spot-weld configurations

## Ultrasonic Sealing of High Density Polyethylene (HDPE) Corrugated Board

Corrugated plastic are used for shipping containers, totes, and specialized packaging, among others. The unique material, besides being sealable with ultrasonics, has many advantages over other traditional materials:

- Stronger and more durable than corrugated fiberboard.
- Won't rot, rust, mildew, or corrode like metal or wood.
- Unaffected by water and resists chemicals, grease, and dirt.
- Reusable.

**MATERIAL:** High density polyethylene is most commonly used for corrugated containers. Polypropylene can also be used.

### TYPICAL CORRUGATED PLASTICS APPLICATIONS:

Postal containers; seed trays; meat, fish, and produce containers; construction containers; grocery totes. (Figures 1 and 2.).

### ULTRASONIC ASSEMBLY FOR CORRUGATED PLASTICS

Ultrasonic welding is the primary method of fabrication using the plunge mode. A spot welding tip using a "cross" type configuration is a typical pattern, although special designs including logos may be used. (See Figure 3.) Multiple-tip horns can be used as well as a single tip horn.

**EQUIPMENT:** Hand-held spot welders; bench model integrated welders; automated equipment – components or integrated units.

### ADVANTAGES OF ULTRASONIC ASSEMBLY:

- Cost effective.
- Strong, repeatable assembly.
- Short cycle times – typically less than one second.
- Eliminates staples, glue, and solvents.
- Seals multiple layers.
- Easily adaptable to automation.

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## MULTIPLE LAYER APPLICATIONS:

In addition to welding double-layer applications, the ultrasonic process has been used to seal up to 6 layers of polypropylene. A special horn is used, configured with a series of steps to engage each layer as the horn descends into the material. High preload is used to compact the layers before ultrasonics are triggered. This configuration produces a very strong spot weld with good appearance. (See Figure 4.)

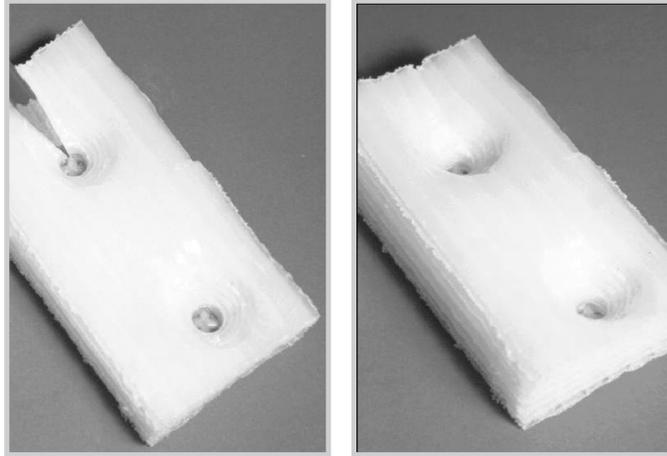


Figure 4 Multiple-layer welding.

## BRANSON

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