RUTLANDPLASTICS

Right People Right Partner

# Ultrasonic Welding – Materials Guide

| Material | Ease of Welding | |
|---|---|---|
| | Near-Field | Far-Field |
| ABS | Excellent | Good |
| Acetal | Good | Fair |
| Acrylic | Good | Good to Fair |
| Fluoropolymers | Poor | Ineffective |
| PC/ABS | Excellent to good | Good |
| Polyamide (Nylon) | Good | Fair |
| Polycarbonate | Good | Good |
| Polyester Thermoplastic | Good | Fair |
| Polyethylene | Fair to Poor | Poor |
| Polypropylene | Fair | Poor |
| Polystyrene (General Purpose) | Excellent | Excellent |
| Polystyrene (High Impact) | Good | Good to Fair |
| Polysulphone | Good | Fair |
| PPO | Good | Good |
| PPS | Good | Fair |
| Rigid PVC | Fair to Poor | Poor |

The suitability of a thermoplastic for ultrasonic welding depends on its ability to transmit high frequency vibration. This means that rigid materials are better than flexible ones. Melting behaviour is also important. Materials that melt over a broad temperature range and solidify gradually work best. The table above shows the quality of weld to be expected when joining a particular thermoplastic to itself under optimum conditions. A near-field weld is one where the joint interface is within about 6mm of a welding horn tip contact point; anything else is far-field. Far-field welding is much less effective because of energy losses within the material.