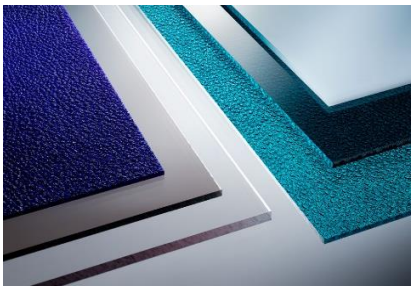
marlon fs

Welding



Although Marlon polycarbonate can be successfully welded using various techniques it can be problematical and for this reason it should be carried out by specialists.

There are high tensile stresses generated in the weld area as the material cools.
Annealing must be used to relieve these stresses otherwise the resultant construction can be brittle and prone to chemical attack resulting in crazing.

The strength of the finished weld may be only 35 to 45% of the standard material.

Hot Gas Welding
Pre-drying of the components and the filler rod is advisable to prevent 'bubbles' forming in the joint.

- Filler rod 2 mm to 4 mm square or round section Marlon FS.
- Hot gas temperature (air) 400 to 500°C.
- Welding pressure 2.8 N/mm²
- Welding speed 150 to 200 mm/min
- Nozzle to weld distance 15 mm
- Nozzle diameter equal to the seam width
- Air Quantity 25 l/min

The parts to be welded are normally horizontal but other orientations are possible. The filler rod is introduced perpendicular to the chamfered grove between the parts at a constant pressure. The welding nozzle fans across between the joint and the filler rod. (Fig 1.)

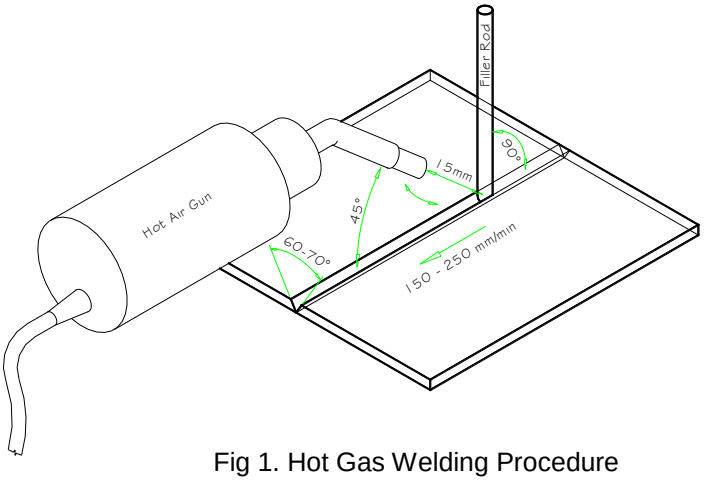


Fig 1. Hot Gas Welding Procedure

Hot Plate Welding
The polycarbonate parts are pressed against a hot plate at 400°C until they are sufficiently soft and formable. The contact areas should be matched to the heated plate.
The parts are then pressed together until molten material is squeezed out of the joint.
The pressure must be maintained until the material has solidified.
This is normally carried out using suitable jigs.
The hot plate should be Teflon coated in order to prevent material sticking.

Annealing

Annealing should take place to remove the stress generated by welding.
Marlon FS should be heated to 80 to 95°C for at least 8 hours.
The part should then be cooled slowly. The time in hours should be the material thickness divided by 4. The cooling rate must not exceed 15°C per hour.
The part must be cooled to below 60°C before removal from the oven.

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