

TECHNICAL DATA SHEET - PLASTIC WELDING TECHNIQUE

Fabrication of thermoplastics is common place these days within the Engineering sector. Whether we need to effect a repair or fabricate a fume hood, the techniques for welding are the same. This article will outline the use of Thermoplastics Welding in the Automotive industry, and highlight advantages as one example. Thermoplastic Welding - Automotive Vehicle manufacturers have increasingly turned to plastics to solve design problems, and now there are over 200 kilograms of plastics on the average modern car. Apart from improving appearance, a reduction in vehicle weight, leading to better fuel economy and increased performance, is just one of the many advantages which plastics can offer. As for corrosion the risk to most modern vehicles is substantially reduced, since all it's external panels are manufactured from plastics. Then there's the costs to consider. Tooling costs for plastics are considerably less than for steel, which allows manufacturers the financial freedom to re-design vehicles more frequently, whilst also producing more imaginative designs. However, an important concern of environmentalists, is what happens to all this plastic when it gets damaged, or the vehicle is scrapped. Vehicle manufacturers are answering such concerns by making as much of the vehicle recyclable as possible. As for damage, the majority of plastics used in the production of modern cars can be repaired. For the insurer, plastic repairs, rather than replacement, mean a substantial saving in costs.

For the repairer, there are many advantages : -

- Increased workflow
- Better customer service
Components on order can take some time to arrive, whereas a repair can increase workflow and get the car back to the customer that much faster.
- Increased profits
Repairing means that most of the profits in the job go to the repairer, rather than the vehicle manufacturer.
- More work opportunities
A repairer with the necessary equipment and skills has the opportunity to offer the service to other repairers.

**Plastics Welding : *the basics...***

There are a few basic rules when welding plastics. These techniques apply to both Plastic Fabrication and Plastic Repair.

Welding temperature –

As all plastics vary in their characteristics, so to does the temperature at which welding takes place. Each different material has a different welding temperature. This is the point where the plastic is brought to a molten state. Too cold, and the material will not flow together adequately. Too hot, and the material can degrade. So, temperature control during welding is vital. Techspan Plastic Welders feature infinite control of the welding temperature.

Compatible welding rod –

You can only weld 'like' materials. For example, Polypropylene (most car bumpers) can only be welded with a Polypropylene welding rod. So it is very important to first identify the material to be welded. Here, most plastics used in the manufacture of modern cars are stamped with plastics identification codes. However, where this identification is not present, a welding rod test kit (RTK) is available to assist.

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Techspan Plastic Welding Technique :

Surface Preparation—

As with all forms of welding, surface preparation will ensure successful welds. Cleaning of the welding area when welding plastics, is generally one of scraping away any residues left from manufacture and atmospheric soils. Emery paper or even a clean wire brush will do the trick. As long as there's no grease, dirt or silicone residues left behind, it's on to the next step.

Welding Groove—

If you're wanting to effect a butt weld of two plastic components, a 90 degree "V" shaped groove must be prepared along the mating faces. The "V" groove can be formed with careful use of the rotary burring bit, which is usually supplied together with the welding tool.

Tacking—

Prior to the main welding, a Tacking Nozzle is fitted to the welding tool and once up to temperature, the Tacking Nozzle is run along the entire length of area to be welded. This provides a light swaging of the two materials and you are now ready for the main welding rod.

Main Welding—

Once we have the required temperature setting, a Speed Welding nozzle is fitted to the welding tool and the correct Welding Rod is fed into the Speed Welding nozzle with the operator applying approx. 2.5 kg of pressure, sufficient to push the now softening Welding Rod into the "V" groove. The correct mating between the Welding Rod and the parent material occurs when the rod is seen to soften, and new rod moves down the Speed Welding nozzle. The weld should be completed in one continuous run along the length of area to be welded.

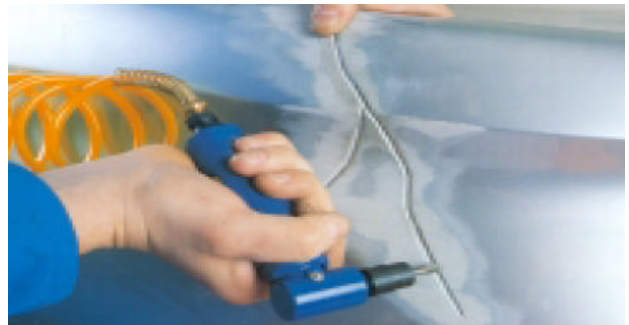
Weld Dressing—

Some applications may require the weld to be dressed. Dressing should only be carried out once the plastic has cooled completely. Remember that Plastic is a soft material that will yield easily to abrasives. For this reason you should use a 80 grit disc first and then progress to a 180 grit disc and then a 240 grit disc, to produce a smooth finish. Further finishing may be necessary depending on the required results.

Further information :

For more details visit our website -

www.techspanonline.com



Preparing the "V" groove



Tacking prior to welding



Welding using Speed nozzle



Pendulum Welding with standard nozzle

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