



Plastic Welding

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Plastic welding is the process of joining work pieces made from plastic with the help of advanced welding techniques. Plastic welding can be used for joining two or more work pieces made from the same type of plastic or two or more pieces made from different types of plastic.

Plastic welding techniques include hot gas welding method in which hot air is directed onto the films to be joined, converting them into the liquid form. They are then pressed together and allowed to cool, which cross-links the molecular chains producing the joint. This technique is however associated with high level of energy losses and the consequent low level of efficiency.

Another technique is known as contact gas welding in which welding is carried out with the use of pincer-like contact rails. The work pieces to be welded are placed in between the contact rails and necessary heat and pressure is applied by closing the pincers. In impulse welding, the stage of heating is adjusted on the welding equipment. High frequency plastic welding uses the chemical structure of plastics containing dipoles such as polyethylene (PE), polypropylene (PP) and polystyrene (PS), and polar plastics (with dipoles), such as polyvinyl chloride (PVC), polyamides (PA) and acetates. In this process, plastic work pieces are exposed to high frequency alternating electromagnetic field, which excites the dipoles in the plastics, creating heat that joins them together.

In ultrasound plastic welding technique, high frequency sound waves generate internal friction in work pieces, which heats up the plastic pieces and joins them together. This is a fast welding process and can be carried over long durations without interruptions.

Welded plastic components are relatively less stable than welded metalwork pieces. Plastic welding is carried out only in cases where it is very difficult to get a replacement or in cases where the unavailability of the plastic component can affect production or manufacturing.

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