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CHEMICAL INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HG/T 4281-2011

Welding procedure specification for plastics

塑料焊接工艺规程

(English Translation)

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1 Scope

This standard specifies the terms and definitions of plastic welding specification, hot-gas welding, extrusion welding, fusion welding and electrofusion welding specifications, quality inspection and requirements for welders.

This standard is applicable to the welding specifications for pipes and plates of thermoplastics and plastic alloys, such as polyvinyl chloride [PVC: including chlorinated polyvinyl chloride (PVC-C), unplasticized polyvinyl chloride (PVC-U), soft polyvinyl chloride (PVC-R)], polypropylene [PP: including polypropylene block copolymer (PP-B), polypropylene photopolymer (PP-H), polypropylene random copolymer (PP-R)], polyethylene [PE: including high density polyethylene (PE-HD), medium density polyethylene (PE-MD), low density polyethylene (PE-LD), polyvinylidene fluoride (PVDF), polytetrafluoroethylene (PTFE-TFM) acrylonitrile/butadiene/styrene plastics (ABS), polyamide (PA).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced documents (including any amendment) applies.

GB/T 6111 Thermoplastics pipes for the conveyance of fluids - Resistance to internal pressure - Test method

GB/T 19806 Plastic pipes and fittings - Crushing decohesion test for polyethylene (PE) electrofusion assemblies

GB/T 19808 Plastics pipes and fittings - Peel decohesion test for polyethylene (PE) electrofusion assemblies of nominal outside diameter greater than or equal to 90mm

GB/T 19810 Polyethylene (PE) pipes and fittings - Determination of the tensile strength and

failure mode of test pieces from a butt-fused joint

GB/T 20674.1 Plastics pipes and fittings - Equipment for fusion jointing polyethylene systems - Part 1: Butt fusion

GB/T 20674.2 Plastics pipes and fittings - Equipment for fusion jointing polyethylene systems - Part 2: Electrofusion

HG/T 4280 Welding procedure qualification for plastics

HG/T 4282 Test method of tensile for plastics welded test specimen

HG/T 4283 Test method of bending for plastics welded test specimen

CJJ 63-2008 Technical specification for polyethylene (PE) fuel gas pipeline engineering

TSG D2002-2006 Regulation on welding technology for gas supply polyethylene pipe

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply.

3.1 hot-gas welding

welding method by which a plastic welding surface and plastic welding rod/wire are heated to plastic state with hot gas and then connected together under external pressure, including round nozzle hot-gas welding and high-speed nozzle hot-gas welding

3.2 round nozzle hot-gas welding

welding method by which a welding rod is heated with gas from a round nozzle, and the welding rod and the base metal are welded together by hot gas; by moving the nozzle slowly along the weld, heat up the area of welding rod and base metal at the same time with hot gas; the welding direction should be perpendicular to the base metal, and the nozzle moves up and down along the sector area of the welding rod and base metal

3.3 high-speed nozzle hot-gas welding

welding method by which a welding rod in plasticized state is pressed on the welding surface through heating welding rod with a beam-inclined nozzle, and the welding rod automatically moves along with the nozzle

3.4 extrusion welding

welding method by which the plastic welding rod and the surface to be welded are preheated with hot gas, and the welding rods are connected together after being fed and pressurized by screw

3.5 fusion welding

welding method by which after heating the two plastic end faces of plastics with heating part, remove the heating part quickly, and then weld the two plastic end faces together under appropriate pressure, including butt fusion welding, socket fusion welding and saddle fusion welding

3.6 butt fusion welding

connection method by which two plastic end faces are joined together under certain pressure, with joint cooled for a required period under the pressure, after the two end faces are heated to a viscous flow state with special heating part and the heating part is removed

3.7 socket fusion welding

connection process in which insert the outer surface of a pipe and the inner surface of a fitting into the die of the welding machine without rotation at the same time and heat for seconds, then quickly remove the welding machine, and quickly insert the heated pipe vertically into the fitting, keeping pressure and lowering temperature