

Thermoplastic Installation Instructions

SCOPE

One of the more important features of industrial thermoplastics is the ease with which they lend themselves to a variety of fabricating techniques. This versatility, plus the wide selection of piping components now available, make possible fast and economical installation, maintenance and modification of industrial piping systems. It is the objective of this section to provide detailed instructions on all known techniques of joining, maintaining and handling thermoplastics in order to permit maximum integrity of your piping system.

SOLVENT WELDING

The generally preferred method of joining rigid thermoplastics such as PVC and CPVC is solvent welding. This process gives a stronger joint than threading and is also considered faster and simpler. Additionally, solvent welding permits the use of thinner walls when compared to threaded connections for equivalent pressure ratings.

THERMO-SEALING (SOCKET FUSION)

Polypropylene (PP), a thermoplastic polyolefin and PVDF (Kynar), cannot be dissolved by even the strongest of organic solvents. Since solvent attack (or bite) by dissolution is necessary to effect a solvent cement bond with thermoplastics, it is not possible to join polypropylene or PVDF by solvent cementing. Therefore, polypropylene and PVDF pressure systems can only be joined using heat fusion techniques. A thermal sealing procedure is used when joining using heat fusion techniques. A thermal

sealing procedure is used when joining 1/2" through 4" sizes. When joining 6" polypropylene systems, which are recommended for drainage applications only, a fillet welding procedure is utilized.

THREADING

Threaded joints are sometimes used when a piping system must be dismantled for occasional cleaning or modifications. Since threading results in a reduction in the effective wall thickness of the pipe, the pressure rating of threaded pipe is reduced to one-half that of unthreaded pipe, ie. pipe joined by solvent cementing or thermal sealing. This reduction in wall thickness resulting from threading can seriously affect the pressure carrying capability and mechanical strength of Schedule 40 or lighter pipe and therefore, only Schedule 80 or heavier pipe should be threaded when the pipe is used for pressure applications. Also, threading is not recommended for plastic pipe above 4 inches in diameter nor is it recommended for pressure polypropylene piping systems.

FLANGING

One of the earliest methods for joining thermoplastic piping, flanging continues to be used extensively for process lines. Thermoplastic flanges and flanged fittings are available in a full size range and may be attached to pipe by solvent welding, by threading, or by thermal sealing, as required by the particular thermoplastic material.

Storage and Handling of Thermoplastic Piping Components

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Industrial thermoplastic piping components are designed and manufactured for use in severe duty systems involving the transport of aggressive liquids. In order to ensure their integrity, once installed, they must be handled with reasonable care prior to installation.

STORAGE

1. Pipe - When pipe is received in standard lifts it should remain in the lift until ready for use. Lifts should not be stacked more than three high and should always be stacked wood on wood. Loose pipe should be stored on racks with a minimum support spacing of three feet. Pipe should be shaded but not covered when stored outside in high ambient temperatures. This will provide for free circulation of air and reduce the heat build-up due to direct sunlight exposure.
2. Fittings - Fittings should be stored in their original cartons to keep them free of dirt and reduce the possibility of damage. If possible, fittings should be stored indoors.
3. Solvent Cements and Primers - Solvent cements have a definite shelf life and each can and carton is clearly marked with a date of manufacture. Stock should be rotated to ensure that the oldest material is used first. Primer does not have a shelf life but it is good practice to rotate this stock also. Solvent

cements and primers should be stored in a relatively cool shelter away from direct sun exposure.

CAUTION: SOLVENT CEMENTS AND PRIMERS ARE COMPOSED OF VARIOUS SOLVENTS AND REQUIRE SPECIAL CONDITIONS FOR STORAGE. BECAUSE OF THEIR FLAMMABILITY THEY MUST NOT BE EXPOSED TO IGNITION, HEAT, SPARKS OR OPEN FLAMES.

HANDLING

1. Pipe and Fittings - Care should be exercised to avoid rough handling of thermoplastic pipe and fittings. They should not be dragged over sharp projections, dropped or have objects dropped upon them. Pipe ends should be inspected for cracks resulting from such abuse. Transportation by truck or pipe trailer will require that the pipe be continuously supported and all sharp edges on the trailer bed that could come in contact with the pipe must be padded.
2. Solvent Cements and Primers - Keep containers for solvent cements tightly closed except when in use. Avoid prolonged breathing of solvent vapors, and when pipe and fittings are being joined in partially enclosed areas use a ventilating device to attenuate vapor levels. Keep solvent cements, primers and cleaners away from all sources of ignition, heat, sparks and open flames. Avoid repeated contact with the skin by wearing proper gloves impervious to the