Mechanical joints on plastic piping

Threading plastic pipe

Threaded joints are useful for systems that may be installed on a temporary basis, or for making a transition joint between plastic pipes and a non-plastic piping material.
Plastic pipes should not normally be threaded in diameters that are above 2" / 50mm nominal bore. This is due to the risk of out-of-roundness of the threads that can result in leaking joints under pressure. However moulded plastic pipe fittings are available with male or female threads in a wider range of sizes. Threaded joints using injection moulded parts are more reliable and can therefore be safely made in larger diameters.
It is possible to thread plastic pipes made from PVC-U, PVC-C, ABS, Polypropylene and PVDF. Polyethylene should not be threaded. Only heavy-wall pipe should be used for threading. In some materials a special "threading grade" pipe is available. This should be used if it is available. Note that threading plastic pipe reduces the pipe maximum operating pressure by approximately 50%

Guidelines for threading plastic pipes:

use threading dies and a vise designed for use with plastic pipe

- do not over tighten the vise to avoid damage to the pipe wall
- insert a wood or aluminum plug into the pipe end to prevent distortion of the pipe
- the dies should be clean and sharp with a 5° to 10° negative front rake angle
- slowly turn the threading dies, keeping the speed constant
- if lubricant is required, use only a soap and water solution

Making threaded joints

Whenever possible use an injection moulded threaded pipe fitting, as it will have been designed to adapt to the forces and stresses that are created from threaded connections. Special threaded connections that have stainless steel, brass or galvanized mild steel threads are widely available for transition to metallic piping systems. There is also a wide selection of reinforced threaded components with male or female threads that are designed to produce safe and reliable joints between plastic systems.
Correctly apply the thread sealant to the male thread, making sure that good coverage of the threads is achieved. Assemble the joint until hand tight, and then tighten between 1 to 2 turns beyond hand tight using a strap wrench designed for use with thermoplastic pipe - do not over tighten!
PTFE thread tape and PTFE based paste sealants may be used. However only paste sealants that are specifically manufactured for use on plastic piping systems should be used. Some paste sealants contain chemicals which cause stress cracking in thermoplastic materials, and failures often occur as a direct result of incompatible thread sealants.
PTFE tape used correctly provides good sealing properties on thermoplastic threads. Applied to male threads, the tape should be carefully applied in a clockwise direction so that the threads are evenly covered. Generally 1fi to 2 turns is sufficient to provide coverage. Over application can cause a build up in the joint area, leading to additional stress from over tightening. Do not combine the use of PTFE tape with other sealants.

Points to remember with threaded joints:

- Whenever possible, always use an injection moulded threaded component
- If you must use pipe, make sure that the wall thickness is suitable for threading
- Do not use metallic pipe tools that can cause notches or gouges
- Do not subject threaded joints to vibration, stress or deflection
- Do not over-tighten the joint
- Take care when threading male metal threads into female plastic threads
- Make sure that the thread types are compatible
- Make sure you use a compatible thread sealant
- Do not combine thread sealants with other products such as hemp
- Pipe wrenches designed for metallic piping should not be used on thermoplastic pipe
- Remember that threading plastic pipe reduces the pipe maximum operating pressure by 50%