

JOINING METHOD – SOLVENT WELDING

Installation

To make consistently tight joints, the following points of solvent cementing should be clearly understood:

1. The appropriate ABS one-step cement must be used.
2. Sufficient cement must be applied to fill the gap between pipe and fittings.
3. Assembly of pipe and fittings must be made while the surfaces are still wet and fluid.
4. Joint strength will develop as the cement cures. In the tight part of the joint, surfaces tend to fuse together; in the loose part, the cement bonds to both surfaces.

IPEX ABS DWV

Handling & Installation

Step 1 Preparation

Assemble proper materials for the job. This includes the appropriate cement, primer and applicator for the size of piping system to be assembled.



Step 2 Cut Pipe

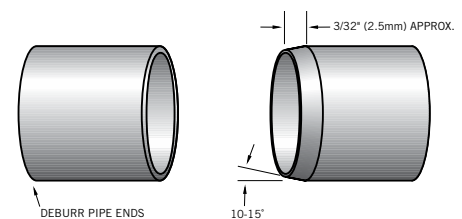
Pipe must be cut as square as possible. (A diagonal cut reduces bonding area in the most effective part of the joint.) Use a handsaw and miter box or a mechanical saw.

Plastic tubing cutters may also be used for cutting plastic pipe; however, some produce a raised bead at the end of the pipe. This bead must be removed with a file or reamer, as it will wipe the cement away when pipe is inserted into the fitting.



Step 3 Deburr Pipe Ends

Use a knife, plastic pipe deburring tool, or file to remove burrs from the end of small diameter pipe. Be sure to remove all burrs from around the inside as well as the outside of the pipe. A slight chamfer (bevel) of about 15° should be added to the end to permit easier insertion of the pipe into the fitting. Failure to chamfer the edge of the pipe may remove cement from the fitting socket, causing the joint to leak.



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Step 4 Clean Pipe Ends

Remove all dirt, grease and moisture. A thorough wipe with a clean dry rag is usually sufficient. (Moisture will retard cure, dirt or grease can prevent adhesion).



Step 5 Check Fit

Check pipe and fittings for dry fit before welding together. For proper interference fit, the pipe must go easily into the fitting one quarter to three quarters of the way. Too tight a fit is not desirable; you must be able to fully bottom the pipe in the socket during assembly. If the pipe and fittings are not out of round, a satisfactory joint can be made if there is a "net" fit, that is, the pipe bottoms in the fitting socket with no interference, without stop.

All pipe and fittings must conform to ASTM and other recognized standards.



Step 6 Select Applicator

Ensure that the right applicator is being used for the size of pipe or fittings being joined. The applicator size should be equal to half the pipe diameter. It is important that a proper size applicator be used to help ensure that sufficient layers of cement.



Step 7 Cement Application

Stir the cement or shake can before using. Using the correct size applicator, aggressively work a full even layer of cement on to the pipe end equal to the depth of the fitting socket. Do not brush it out to a thin paint type layer, as this will dry within a few seconds.



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Step 8 Cement Application

Aggressively work a medium layer of cement into the fitting socket.

AVOID PUDDLING THE CEMENT IN THE SOCKET. ON BELL END PIPE DO NOT COAT BEYOND THE SOCKET DEPTH OR ALLOW CEMENT TO RUN DOWN INTO THE PIPE BEYOND THE SPIGOT END.



Step 9 Cement Application

Apply a second full, even layer of cement on the pipe.



Step 10 Assembly

Without delay, while the cement is still wet, assemble the pipe and fittings. Use sufficient force to ensure that the pipe bottoms in the fitting socket. If possible, twist the pipe a quarter turn as you insert it.



Step 11 Assembly

Hold the pipe and fitting together for approximately 30 seconds to avoid push out.

After assembly, a joint should have a ring or bead of cement completely around the juncture of the pipe and fitting. If voids in this ring are present, sufficient cement was not applied and the joint may be defective.



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Step 12 Joint Cleaning

Using a rag, remove the excess cement from the pipe and fitting, including the ring or bead, as it will needlessly soften the pipe and fitting and does not add to joint strength. Avoid disturbing or moving the joint.



Step 13 Joint Setting & Curing

Handle newly assembled joints carefully until initial set has taken place. (Note: in humid weather allow for 50% more curing time.) ABS cements have an average cure time of 2 minutes at 170°F (21°C), with quicker cure time at higher temperature and slower cure time at lower temperatures.

The joints can be tested after an hour. Do not air test ABS DWV. Check local code requirements for testing clarifications.

Joining method—Threading

Threading of ABS schedule 40 pipe is not recommended.

Molded male (MPT x H) and female (H x FPT) threaded adapters should be used to make a threaded connection.

IPEX recommended thread lubricant such as Teflon® tape (PTFE) or IPEX Thread Sealant should be used onto the threaded portion of the fitting.

If tape is used, wrap the tape around the entire length of threads beginning with number two thread from the end. The tape should slightly overlap itself going in the same direction as the threads. This will prevent the tape from unraveling when the fitting is tightened on the pipe. Overlapping in the wrong direction and the use of too much tape can affect tolerances between threads. This can generate stress in the wall of female fittings resulting in failure during operations.

If IPEX Thread Sealant is to be used, brush on a generous amount of sealant, using the correctly sized applicator, onto the threads beginning with the number two thread from the end.

If desired, the joint may be tightened with a strap wrench. In NO INSTANCE should a pipe or chain wrench be used as the jaws of this type of wrench will scar and damage the pipe wall. Fittings should be threaded together until hand tight with an additional 1/2 to 1 turns more. Avoid stretching or distorting the pipe, fittings or threads by over tightening.

Transitions from ABS to cast iron can also be made using molded threaded cast iron adapters (H x NPT).

NOTE 1: Never apply solvent cement to threaded fittings. Do not allow cleaners, primers, or solvent cements to "run" or drip into the threaded portion of the fitting.

NOTE 2: Avoid screwing metallic male threads into plastic female threads, except those that have metal reinforcement. Consult the factory or your IPEX sales representative for the availability of these metal reinforced fittings.

NOTE 3: It is recommended that pipe tape/lubricant be used when connecting union ends to threaded pipe. However, pipe tape/lubricant is not needed on the union threaded interface assembly.



Cold Weather

Although normal installation temperatures are between 40°F (4°C) and 110°F (43°C), high strength joints have been made at temperatures as low as -15°F (-26°C).

In cold weather, solvents penetrate and soften the plastic pipe and fitting surfaces more slowly than in warm weather. In this situation, the plastic is more resistant to solvent attack and it becomes even more important to pre-soften surfaces with an aggressive primer. Be aware that because of slower evaporation, a longer cure time is necessary.

Tips for solvent welding in cold weather

- Prefabricate as much of the system as is possible in a heated work area.
- Store cements and primers in a warmer area when not in use and make sure they remain fluid.
- Take special care to remove moisture including ice and snow from the surfaces to be joined.
- Ensure that the temperature of the materials to be joined (re: pipe and fittings) is similar.
- Use Primer to soften the joining surfaces before applying cement. More than one application may be necessary.
- Allow a longer cure period before the system is used. Note: A heat blanket may be used to speed up the set and cure times.

Hot Weather

There are many occasions when solvent welding plastic pipe at 95°F (35°C) temperatures and above cannot be avoided. If special precautions are taken, problems can be avoided.

Solvent cements for plastic pipe contain high-strength solvents which evaporate faster at elevated temperatures. This is especially true when there is a hot wind blowing. If the pipe is stored in direct sunlight, the pipe surface temperatures may be 20°F to 30°F (10°C to 15°C) higher than the ambient temperature. In this situation, the plastic is less resistant to attack and the solvents will attack faster and deeper, especially inside a joint. It is therefore very important to avoid puddling the cement inside the fitting socket and to ensure that any excess cement outside the joint is wiped off.

Tips for solvent welding in hot weather:

- Store solvent cements and primers in a cool or shaded area prior to use.
- If possible, store fittings and pipe or at least the ends to be solvent welded, in a shady area before welding.
- Try to do the solvent welding in cooler morning hours.
- Cool surfaces to be joined by wiping with a damp rag.
- Make sure that the surface is dry prior to applying solvent cement.
- Make sure that both surfaces to be joined are still wet with cement when putting them together. With large size pipe, more people on the crew may be necessary.
- Using a primer and a heavier, high-viscosity cement will provide a little more working time.

Note: During hot weather the expansion-contraction factor may increase.

IPEX ABS DWV

Handling & Storage



Handling and storage

ABS is strong, lightweight material. Piping made of this material is easily handled and, as a result, there is a tendency for them to be thrown about on the jobsite. Care should be taken in handling and storage to prevent damage to the pipe.

ABS pipe should be given adequate support at all times. It should not be stacked in large piles, especially in warm temperature conditions, as bottom pipe may become distorted and joining will become difficult.

Prolonged Outdoor Exposure

Pipe should be protected from the direct sunlight using a tarp or opaque sheet. If temperatures reach above 100°F, proper airflow should be allowed under the tarp.



WARNING

- **NEVER** use compressed air or gas in pipe and fittings.
- **NEVER** test pipe and fittings with compressed air or gas, or air-over-water boosters.
- **ONLY** use pipe for water and approved chemicals.



WARNING

During the curing of the solvent cement joints, vapors may accumulate inside the pipeline, especially should one end of the line be capped. Nearby sparks from welders or torches may inadvertently ignite these vapors and create a hazardous incident. Attention should be given to removing all vapors using air-blowers or water flushing prior to capping one end of an empty pipeline.



U.V. LIGHT

Care should be taken to avoid prolonged exposure to sunlight, which will cause discoloration of the material. If stored outdoors, products must be underneath an opaque covering, e.g. a tarpaulin.

If installed in a location exposed to sunlight, the pipework should be painted.

Schedule 40 Pipe & Fittings

Scope

This specification sheet covers the manufacturers' requirements for ABS Schedule 40 IPS pipe and fittings as well as Schedule 40 cell core ABS pipe. The pipe and fittings meet or exceed all applicable ASTM standards.

Material

ABS compounds used in the manufacturing of ABS-DWV Solid Wall Pipe and Fittings, and Cell Core ABS-DWV pipe complies with the material requirements of ASTM D3965 "Standard Specification for Rigid Acrylonitrile-Butadiene-Styrene (ABS) Materials for Pipe and Fittings", having a cell classification of 42222, 42222 and 32222, respectively.

Dimensions

Extruded and Molded ABS-DWV Solid Wall Pipe and Fittings conform to CSA B181.1 ASTM D2661 and CSA B181.1. Extruded Cell Core ABS-DWV Pipe conforms to ASTM F628 "Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe with a Cellular Core"

Sample Specification

All ABS Schedule 40 pipe and fittings shall conform to ASTM D2661 and CSA B181.1. ABS Schedule 40 Cell Core pipe shall conform to ASTM F628. All ABS fittings shall be molded or fabricated from ABS compound compatible with the pipe material.

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- Industrial process piping systems
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- Plumbing and mechanical piping systems
- Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems

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