PRODUCT DATA SHEET

550™

LOW VOC CPVC (PVC-C) SOLVENT CEMENT for FIRE SPRINKLER SYSTEMS

GENERAL DESCRIPTION & APPLICATION:

WELD-ON® 550™ CPVC solvent cement is a red, low VOC emissions, heavy bodied, medium setting, high strength cement for CPVC fire sprinkler pipe and fittings with interference fit through 3 inch (90 mm) diameter. This WELD-ON CPVC solvent cement is formulated as one-step cement (no primer).

NOTE: WELD-ON solvent cements must never be used in a CPVC system using or being tested by compressed air or gases; including air-over-water booster.

AVAILABILITY:

This product is available in pint (473 ml), and quart (946 ml) metal cans. For detailed information on containers and applicators, see our current Price List.

STANDARDS AND CERTIFICATION LISTINGS:

- Meets ASTM D 2846 and F 493 Standards for use with CPVC pipes.
- Meets SCAQMD Rule 1168/316A.
- Compliant with LEED® (Leadership in Energy and Environmental Design). When using this WELD-ON low VOC product, credit can be claimed for LEED Green Building Rating System - Indoor Environmental Quality.
- Listed by NSF International for compliance with ASTM F 493, NSF/ANSI Standard 14 and NSF/ANSI Standard 61. Use with CPVC installations for potable water.

SPECIFICATIONS:

COLOR:	Red
RESIN:	CPVC
SPECIFIC GRAVITY:	0.989 ± 0.01
BROOKFIELD VISCOSITY:	Minimum 1,600 cP @ 73 ± 2°F (23 ± 1°C)

SHELF LIFE:

2 years in tightly sealed containers. The date code of manufacture is stamped on the bottom of the container. Stability of the product is limited by the evaporation of the solvent when the container is opened. Evaporation of solvent will cause the cement to thicken and reduce its effectiveness. Adding of thinners to change viscosity is not recommended and may significantly change the properties of the cement.

QUALITY ASSURANCE:

WELD-ON 550 is carefully evaluated to assure that consistent high quality is maintained. Fourier transform infrared spectroscopy, gas chromatography, and additional in depth testing ensures each batch is manufactured to exacting standards. A batch identification code is stamped on each can and assures traceability of all materials and processes used in manufacturing this solvent cement.

DIRECTIONS FOR JOINING CPVC PIPE AND FITTINGS FOR FIRE SPRINKLER SYSTEMS:

Carefully review the instructions supplied by the fire sprinkler system manufacturers. Extra care must be given to the installation of such systems. A one-step solvent cementing technique is recommended for fire sprinkler system pipe diameter of 3 inches (90 mm) and smaller with pressure application. However, check local code requirements for more detail.

Prior to using WELD-ON 550 CPVC solvent cement, review and follow all precautions found on the container labels, material safety data sheet, this product bulletin and Standard Practice for Safe Handling ASTM F 402

BEFORE JOINT ASSEMBLY

- Review all directions on the cement container label or the standard practice for making solvent cemented joints (ASTM D 2855).
- Assemble proper materials for the job.

CPVC PIPE & FITTING PREPARATION

- Cut pipe square. CPVC pipe can be easily cut with:
  - Ratchet cutter - care must be exercised when using this cutter as it may split the pipe if not properly used and maintained. Only use ratchet cutters that contain a sharp blade (blades dull quickly). Only use ratchet cutters at temperatures of 50°F (10°C) or warmer. Only use good quality ratchet cutters capable of consistently cutting the pipe squarely. Failure to follow any of the above directions may result in leakage or property damage
  - Wheel-type plastic tubing cutter
  - Power saw
  - Fine toothed saw

Tools used to cut CPVC must be designed for plastic use and must be in good condition in accordance with the tool manufacturer's recommendations. It is important to cut the pipe square. A square cut provides the surface of the pipe with maximum bonding area. A diagonal cut reduces bonding area in the most effective and critical part of the joint. If any indication of damage or cracking is evident at the pipe end, cut off at least 2 inches (50 mm) beyond any visible crack.

- Remove the pipe's inside diameter burrs or raised beads with an internal deburring tool or file. Remove the burrs or raised beads on the outside diameter of the pipe by using a file or external deburring tool that will produce a 3/32", 10-15° chamfer (bevel). Burrs can wipe solvent cement from the fitting socket during the insertion of the pipe preventing proper contact between pipe and fitting during assembly.
- With a clean, dry rag, remove any dirt, grease, shavings or moisture from the inner and outer surfaces of the pipe and fitting. Moisture can slow the cure time. Excessive water at this stage of assembly can reduce joint strength. Dirt, grease, or any foreign material can prevent proper joint fusion.
- Check pipe and fittings for dry fit before cementing. For proper interference fit, fitting should go over end of pipe easily but become tight about ⅓ to ⅔ of the way on. 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, but without slop. A quick, dry fit "slop" test: Hold a short length of pipe vertically with a fitting "bottomed" on the pipe. If the fitting falls off the end of the pipe, do not start assembly. Contact your pipe and fitting supplier. All pipe and fittings must conform to ASTM and/or other recognized product standards.
- Use a dauber that is properly sized for the pipe. For ¾ inch (25 mm) and 1 inch (32 mm) pipe, use a dauber that is ½ inch in size. For 1 ¼ inch (40 mm) through 3 inch (90 mm) pipe, use a dauber that is ¾ inch in size. It is important that a satisfactory size dauber be used to help ensure that sufficient layers of cement are applied.

SOLVENT CEMENTING APPLICATION

- Vigorously stir WELD-ON 550 CPVC solvent cement before use. If gelled, replace.
- Aggressively apply a heavy, even layer of cement to the outside 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 too quickly.
- Apply a medium layer of cement into the fitting socket. Avoid puddling cement in the socket. Too much solvent cement can cause clogged waterways or pipe failure resulting in leakage or property damage.
- For pipe size greater than 1 ¼ inch (40 mm), apply a second full, even layer of cement on the pipe

FIRST APPLY CEMENT ON THE PIPE END, THEN IN THE FITTING SOCKET, AND, FINALLY, ON THE PIPE END AGAIN (IF A 2ND COATING IS REQUIRED).

NOTE: Special care shall be exercised when assembling CPVC fire sprinkler systems in temperatures below 40°F (4°C). In colder temperatures extra time must be allowed for the solvent cement to set and cure. Extra care should be taken to prevent damaging the pipe during handling. When solvent welding pipe and fittings in colder temperatures, make certain that the cement has not become lumpy or has "gelled". Gelled cement must be discarded.

At temperatures above 80°F (27°C) make sure both surfaces to be joined are still wet with cement during assembly. Higher temperatures and/or wind accelerate the evaporation of the volatile solvents in the cement. Pipe stored in direct sunlight may have surface temperatures 20°F to 30°F (10°C-15°C) above the air temperature. If possible store the pipe and fittings, or, at least, the ends to be solvent welded, out of the direct sunlight prior to cementing. The solvents will penetrate hot surfaces more deeply. In conditions like this, it is very important to avoid puddling the solvent cement inside the fitting socket.

For more details, refer to WELD-ON Technical Bulletins:

Solvent Cementing PVC and CPVC Plastic Pipes - Cold Weather Tips

Solvent Cementing PVC and CPVC Plastic Pipes - Hot Weather Tips

JOINT ASSEMBLY

- Immediately, while cement is still wet, assemble the pipe and fittings. If not completely wet, recoat parts before assembly. If cement coatings have hardened, cut pipe, dispose of fitting and start over. Do not assemble partially cured surfaces. While inserting, twist 1/8 to 1/4 turn until reaching pipe stop. Do not continue to rotate after the pipe has reached the socket bottom. Properly align the fitting for the installation at this time.
- Hold the pipe and fitting together for a minimum of 30 seconds to eliminate movement or pushout.After assembly, a joint should have a bead of cement completely around the juncture of the pipe and fitting. If this bead is not continuous around the socket shoulder, it may indicate that insufficient cement was applied and the joint may be defective. If insufficient cement is applied, the fitting must be cut out and discarded.
- Using a rag, remove the excess cement from the pipe and fitting, including the bead around the socket entrance. Excess cement around the socket entrance will soften the pipe and fitting and also extend the cure time.
- Avoid disturbing or moving the joint. Handle newly assembled joints carefully until initial set has taken place. Follow WELD-ON set and cure times before handling or hydro-testing piping system. See the next section.
- Care shall be exercised when installing sprinkler heads. Sprinkler head fittings, including the sprinkler head adapters, shall be allowed to cure for a minimum of 30 minutes prior to installing the sprinkler head. When installing sprinkler heads, be sure to anchor or hold the pipe drop securely to avoid rotating the pipe in previously cemented connections. Previously joined fittings shall also be permitted to cure

for a minimum of 30 minutes.

- Sprinkler head fittings should be visually inspected to ensure that the water way and threads are clear of any excess cement.
- Once the installation is completed and cured per Table I, II or III, the system shall be hydrostatically tested.
- Sprinklers shall not be installed in the fittings prior to the fittings being cemented in place.

SET AND CURE TIMES FOR WELD-ON® 550™ FIRE SPRINKLER CPVC SOLVENT CEMENT

Solvent cement set and cure times are a function of pipe size, temperature, relative humidity, and tightness of fit. Curing time is faster for drier environments, smaller pipe sizes, higher temperatures and tighter fits. Cure times should be increased when moisture is present such as during cut-ins to live sprinkler lines. The assembly must be allowed to set, without any stress on the joint, for 1 to 5 minutes, depending on pipe size and temperature. Following the initial set period, the assembly can be handled carefully, avoiding significant stresses to the joint.
INADEQUATE CURING OF SOLVENT CEMENT JOINTS WILL RESULT IN LEAKAGE OR PROPERTY DAMAGE.

Refer to the following tables for minimum cure times prior to pressure testing.

TABLE I

225 psi (1552 kPa) Maximum Test Pressure Ambient Temperature During Cure Period			
PIPE SIZE IPS (Metric Diameter)	**60°F to 120°F** (16°C to 49°C)	**40°F to 59°F** (4°C to 15°C)	**0°F to 39°F** (-18°C to 3°C)
¾” (25 mm)	1 hr	4 hrs	48 hrs
1” (32 mm)	1½ hrs	4 hrs	48 hrs
1¼” & 1½” (40 mm & 50mm)	3 hrs	32 hrs	10 days
2” (63 mm)	8 hrs	48 hrs	See Note
2½” & 3” (75 mm & 90 mm)	24 hrs	96 hrs	See Note

TABLE II

200 psi (1379 kPa) Maximum Test Pressure Ambient Temperature During Cure Period			
PIPE SIZE IPS (Metric Diameter)	**60°F to 120°F** (16°C to 49°C)	**40°F to 59°F** (4°C to 15°C)	**0°F to 39°F** (-18°C to 3°C)
¾” (25 mm)	45 mins	1½ hrs	24 hrs
1” (32 mm)	45 mins	1½ hrs	24 hrs
1¼” & 1½” (40 mm & 50mm)	1½ hrs	16 hrs	120 hrs
2” (63 mm)	6 hrs	36 hrs	See Note
2½” & 3” (75 mm & 90 mm)	8 hrs	72 hrs	See Note

TABLE III

100 psi (690 kPa) Maximum Test Pressure Ambient Temperature During Cure Period			
PIPE SIZE IPS (Metric Diameter)	**60°F to 120°F** (16°C to 49°C)	**40°F to 59°F** (4°C to 15°C)	**0°F to 39°F** (-18°C to 3°C)
¾” (25 mm)	15 mins	15 mins	30 mins
1” (32 mm)	15 mins	30 mins	30 mins
1¼” & 1½” (40 mm & 50mm)	15 mins	30 mins	2 hrs

NOTE: For these sizes, the solvent cement can be applied at temperatures below 40°F (4.5°C). However, the sprinkler system temperature must be raised to a temperature of 40°F (4.5°C) or above and allowed to cure per the above recommendations prior to pressure testing.

SYSTEM ACCEPTANCE TESTING (HYDROSTATIC PRESSURE TEST)

Once an installation is completed and joints are properly cured per the above recommendations, the system should be pressure tested with water at 200 psi (1379 kPa) for 2 hours. See Table II for curing conditions at 200 psi (1379 kPa).

The system should be pressure tested with water at 50 psi (345 kPa) in excess of maximum pressure when the maximum system pressure is to be maintained in excess of 150 psi (1034 kPa). See Table I for curing conditions at 225 psi (1552 kPa). This is in accordance with the requirements established by NFPA Standard 13, Section 24.2.1 (2007 Edition).

Sprinkler systems in one- and two-family dwellings and mobile homes may be pressure tested with water at line pressure, after following Table III curing conditions, in accordance with the requirements established by NFPA 13D, Section 4.3 (2007 Edition).

When pressure testing, the sprinkler system shall be slowly filled with water and the air bled from the highest and farthest sprinkler heads before pressure testing is applied. Air must be removed from piping systems (plastic or metal) to prevent it from being locked in the system when pressure is applied. Entrapped air can generate excessive surge pressures that can result in bodily injury and/or property damage, regardless of the piping materials used.

If a leak is found, the fitting must be cut out and discarded. A new section can be installed using couplings or a union. Unions should be used in accessible areas only.

WARNING: Air or compressed gas must never be used for system acceptance testing (hydrostatic pressure test). System failure when using compressed air/gas for system acceptance testing can result in bodily injury, death and/or property damage.

SPECIAL PRECAUTION:

WELD-ON solvent cements must never be used in PVC piping systems using or being tested by compressed air or gases; including air-over-water booster.

Do not use a dry granular calcium hypochlorite as a disinfecting material for water purification in potable water piping systems. The introduction of granules or pellets of calcium hypochlorite with PVC solvent cements and primers (including their vapors) may result in a violent chemical reaction if a water solution is not used. It is advisable to purify lines by pumping chlorinated water into the piping system – this solution will be nonvolatile. Furthermore, dry granular calcium hypochlorite should not be stored or used near solvent cements and primers.

This product is intended for use by skilled individuals at their own risk. Installers should verify for themselves that they can make satisfactory joints under varying conditions. Detailed directions on making solvent cemented joints are printed on the container label. It is highly recommended that the installer review the instructions supplied by the pipe and fitting manufacturer.

Refer to the current WELD-ON 550™ Safety Data Sheet for additional safety precautions, first-aid, handling, storage and transportation information.

WARRANTY:

WELD-ON warrants that all new WELD-ON products shall be of good quality and free from defects in material and workmanship for the shelf life as indicated on the product. If any WELD-ON product becomes defective, or fails to conform to our written limited warranty under normal use and storage conditions, then WELD-ON will, without charge, replace the nonconforming product. However, this limited warranty shall not extend to, nor shall WELD-ON be responsible for, damages or loss resulting from accident, misuse, negligent use, improper application, or incorporation of WELD-ON products into other products. In addition, any repackaging of WELD-ON products also shall void the limited warranty. WELD-ON shall not be responsible for, nor does this limited warranty extend to, consequential damage, or incidental damage or expense, including without limitation, injury to persons or property or loss of use. Please refer to our standard WELD-ON Limited Warranty for additional provisions.

WELD-ON®

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