

Fabrication Instructions For Epoxy Centricast® Plus RB-2530, And Centricast® RB-1520 Pipe And Fittings With Weldfast® 440 Adhesive

INTRODUCTION

Following these Fabrication Instructions will enable you to make leak free, long lasting joints on Smith Fibercast Epoxy Centricast Pipe and Fittings.

It is important that you read these instructions completely and follow all of the procedures very carefully. Please contact your local Smith Fibercast authorized distributor if you have questions, or need clarification regarding any procedures in these Fabrication Instructions. Thank you for using Smith Fibercast products.

SAFETY PRECAUTIONS

The Adhesive and Curing Agents you will use in making the installation are slightly **FLAMMABLE!** Warning: Chemical reaction of the adhesive and curing agent generates high temperatures. Protective gloves **MUST** be worn to handle the can during mixing and use. The unused mixed adhesive remaining in the can may bubble and smoke slightly after the pot life has expired. Allow the can to cool prior to discarding. The Curing Agent is slightly corrosive. Other safety precautions:

- Always wear chemical splash goggles for eye protection when using the Adhesive and Curing Agent. If eye contact should occur, flush immediately with water and call your physician.

- Always wear impermeable gloves to avoid direct skin contact with the Adhesive and Curing Agent. If direct contact should occur, wash immediately with soap and water.

- Never cover a container of mixed Adhesive and Curing Agent.

- Material Safety Data Sheets (MSDS) are available on request or at www.smithfibercast.com.

CONTENTS OF WELDFAST EPOXY ADHESIVE KITS

Displayed below are the contents of your Weldfast Adhesive Kit:

1. Weldfast 440 Adhesive (Part A)
2. Weldfast 440 Curing Agent (Part B)
3. Wooden Stir Stick.
4. Plastic Putty Knife.
5. Instructions.



STORAGE OF WELDFAST EPOXY ADHESIVE KITS

Do not store Weldfast at temperatures above 90°F. Maximum storage life for the adhesive kit is one year at room temperature. The adhesive can be refrigerated to extend storage life.

BONDING ENVIRONMENT:

Surfaces to be bonded must be thoroughly sanded, clean, dry, oil-free, and in the right temperature range to ensure a proper bond.

Bonding procedures are based on temperature ranges of 70°F to 100°F. For bonding where conditions exceed these ranges, follow the Cold Weather or Hot Weather Installation tips. The recommended temperature limits of the Weldfast, and surfaces to be bonded must be maintained in order to assure proper cure of the

joints. All bonding surfaces and materials must remain completely dry and at temperatures above 70°F.

NOTE: Air temperature is not the only factor affecting cure times.

EXAMPLE: When the air temperature is 70°F and a pipe is exposed to direct sunlight, surface temperatures of the pipe may approach 100°F or higher. Conversely, at 70°F, a pipe exposed to a cold wind and no sunlight will affect adhesives as if conditions were colder.

COLD WEATHER

INSTALLATION INSTRUCTIONS

(Below 70°F)

The curing time for Weldfast Adhesive Kits is directly related to the temperature. Colder temperatures can result in uncured Adhesive joints.

The following steps are recommended when fabricating in cold weather:

1. Adhesive Kits should be placed in a warm room for 6 to 12 hours before application so they reach temperatures of 70°F to 80°F. **THE ADHESIVE AND CURING AGENT SHOULD NOT BE HEATED IN EXCESS OF 90°F.**

2. Fabricate piping sub-assemblies in an inside area when possible.

3. Warm the pipe ends and fittings before joint make up.

4. Use a heat gun to start adhesive cure. Hold the nozzle of the gun 8" to 12" away from the joint and slowly rotate the heat over the joint until a tack-free surface is obtained.

5. Apply the heat blanket to the joint and leave on according to the Cure Times Chart on Page 4.

HOT WEATHER INSTALLATION INSTRUCTIONS (Above 100°F):

Hot weather will reduce the working time and viscosity of the mixed Adhesive and Curing Agent. The following steps are recommended when fabricating in hot weather:

1. Avoid direct sunlight on the joining surfaces, Adhesive, and Curing Agent.

2. Cool unopened containers of Adhesive and Curing Agent in an ice chest with ice.

3. Plan and organize the job to reduce working time.

Site Equipment: Each Weldfast Kit contains the correct amount of materials for the size and number of joints specified below.

Number of bonds Per Kit

Pipe Size (In.)	Number of Joints
1	12
1 ½	10
2	8
3	5
4	3
6	2
8	1
10	1/2
12	1/2
14	1/3

In addition to the material supplied in each Kit, the following items should be on hand:

1. Clean, dry rags or paper towels.
2. Impermeable gloves.
3. Chemical splash goggles.
4. Drum or disc sander, with 36 to 60 grit abrasive, 36 to 60 grit emery cloth may also be used for hand sanding. Do not use flapper wheels or belt sanders.
5. Smith Fibercast heat gun and heat blanket may be required.

Tools For Cutting Centricast

Pipe: Centricast Pipe should be at least 55°F before cutting and may be cut with several acceptable tools, including:

1. Circular power saw with an aluminum oxide abrasive blade, a grit edged carbide blade, or a diamond blade. DO NOT use toothed blades as they may damage the pipe corrosion barrier.
2. Band saw with 16-22 teeth/inch at speeds of 200' – 600' per minute.
3. Saber saw with grit edged carbide blade.
4. Chop saw with aluminum oxide blade.
5. Hack saw with 22-28 teeth per inch.

Steps For Cutting Centricast Pipe:

1. Measure the pipe remembering to allow for fitting dimensions.



2. Scribe a cutting guide around the pipe to ensure a perpendicular cut for proper fit.

3. Hold the pipe firmly. If chain vises or other mechanical holding devices are used, care should be taken to prevent crushing or point loading the pipe.

4. Saw the pipe as smoothly as possible. Coarse sawing, with the wrong tool, can result in damage to the chemically resistant inner surface of the pipe.



Surface/End Preparation: NOTE:

It is essential to good fabrication that pipe and fitting surfaces be sanded, clean, dry, and free of oil, grease, and solvent contamination.

1. Prepare both ends of the pipe, or pipe and fittings to be joined together, by sanding the bonding surfaces with 36 to 60 grit abrasive (see Site Equipment, Item 4).

The sanded area should be completely roughened, gloss free and extend ½" beyond the length of the fitting socket or pipe bell.



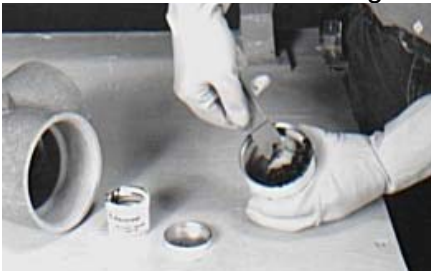
2. Never sand more than two (2) hours before making the joint.
3. Wipe the sanded area with a clean, dry, lint-free cloth, and avoid touching the surfaces with bare hands or dirty gloves. Do not use solvents.

Mixing Weldfast Epoxy Adhesive: **CAUTION:** Follow Safety Precautions on Page 1.

1. Thoroughly mix the Weldfast Part "A" Adhesive to fully disperse any liquid which may have separated during storage.
2. Add the entire Part "B" Curing Agent to the Part "A" Adhesive can.
3. Immediately mix for a minimum of two minutes or until the color is consistent. When properly mixed, the Adhesive becomes **dark gray or black**. Check for unmixed white streaks of Adhesive, in the bottom and around the edge of the can.

Pot Life:

Pot life (working time) of Weldfast Adhesive may vary with changes in temperature and humidity. See the Cure Times Chart on Page 4.



Applying Mixed Adhesive And Bonding Piping

1", 1 1/2", & 2" Centricast Pipe

Small diameter Fibercast adhesive socket joints may be obstructed by excessive adhesive if the following instructions are not followed. Apply Adhesive to the fitting socket forcing it into the sanded surface. Make sure all of the bonding surfaces are

completely coated with Adhesive. Remove the Adhesive with the applicator leaving only a very thin film to wet all the bonding surfaces. Any excessive Adhesive left in the fittings socket will be forced into the pipe during joining and may obstruct fluid flow in the system. Wet the end of the pipe leaving a small bead of Adhesive. The Adhesive will prevent chemical attack of the pipe end. Apply a thin film of Adhesive to the pipe forcing it into the sanded bonding surface. Next coat the bonding area of the pipe only with Adhesive at least 1/4" thick. Make sure there is not excessive Adhesive on the end of the pipe or in the pipe bore before placing the fitting on the pipe.

3" – 14" Centricast Pipe

Apply a thin layer of mixed Adhesive to the fitting socket, then add more Adhesive and build up to no more than 1/16".

Excessive Adhesive in the fitting will cause an obstruction in the piping.

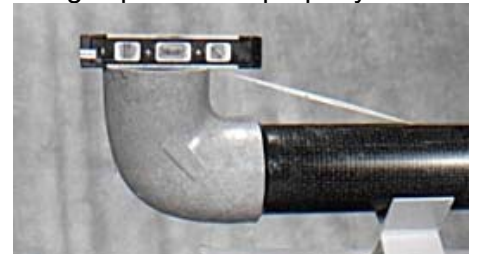


Repeat this procedure with the pipe, but build up the adhesive to no less than 1/8". Too little Adhesive on the pipe will cause voids and result in a weak joint. Make sure you coat any cut edges of the pipe to seal the exposed fiberglass.

1" – 14" Fittings

Align the fitting to minimize its rotation and movement after the fitting is in place. More than one inch rotation and excessive movement can cause joint leaks. Push the fitting onto the pipe until it is fully engaged. Do not scrape the sides of the socket when placing the fitting on the pipe. Use

a square or level to make sure the fitting is positioned properly.



Create a fillet of Adhesive at the end of the fitting using the 45° bevel on the putty knife.

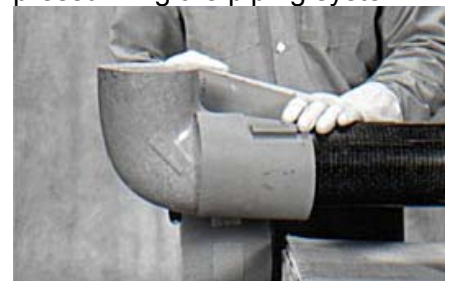
Make sure the fitting is held level by supporting it while it cures. One way is to use fiberglass reinforced tape stretched from the fitting's uppermost edge to the pipe and/or to the table.

Joint Cure: The joint will cure in 24 hours at ambient temperatures from 70° to 100°F. Cure time can be decreased and joint strength increased by heating the joint to 225°F to 275°F.

After the fillet has become tacky and hard to the touch, use a heat gun held 8" to 10" from the fillet to start the heat cure process. Constantly move the gun over the fillet to prevent burning. Use the heat gun to harden the joint surface to the point that it is tack-free. Then, apply the heat blanket to the joint, referring to the Cure Times Chart on Page 4 for the appropriate curing time.

Applying the heat blanket before the adhesive is tack free can cause bubbling of the adhesive. Heat cure is highly recommended for piping systems carrying fluids at temperatures above 120°F.

Before moving the piping the joint must be hardened. Completely cure the joint per the Cure Times Chart on Page 4 before pressurizing the piping system.



WELDFAST 440 CURE TIMES CHART

	Cure Time (hours)				Gel Time (minutes)	Pot Life (minutes)
	Bell & Spigot Pipe Joints		Coupling & Fitting Socket Joints			
Below 60	Heat Assisted Cure Required				NR	NR
61-70					24	
71-80	24		24		30-40	25-36
81-90	24		24		20-30	15-25
91-100	24		24		15-20	10-15
Heat Assisted Cure (heat blanket wrapped on outside of pipe behind flange or over socket.)	Pipe size (inch)	Hours	Pipe size (inch)	Hours	Not Applicable	
	1-4	1	1-1 ½	1		
	6-10	1 ½	2-4	1 ½		
	12-14	2	6	2		
			8-10	3		
		12-14	4			

*Provided container is well sealed.
N/R = Not Recommended

HYDROSTATIC TESTING

Smith Fibercast piping systems should be hydrostatically tested prior to being put into service. Avoid water hammer during testing to prevent serious damage to the piping system.

All anchors, guides, and supports must be in place prior to testing the line. Hydrostatically test the line as follows.

1. Water should be introduced at the lowest point in the test section and the air bled off through partially open valves or loose flanges at all the highest points. Slowly introduce water into the system to prevent water hammer. Slowly close the bleed points when all the air has been forced from the system.
2. Bring the system gradually up to the test pressure. Test pressure should not be more than 1½ times the working pressure of the piping system, and must never exceed 1½ times the rated operating pressure of the lowest rated component in the system.
3. When testing is completed, open all of the high point air bleeds before draining the

piping through the fill lines. This will prevent vacuum collapse of the pipe.

COMPRESSED AIR/GAS TESTING

Compressed air or gas testing of Smith Fibercast piping systems is not recommended. When air or compressed gas is used for testing, tremendous amounts of energy can be stored in the system. If a failure occurs, the energy may be released catastrophically, which may result in property damage and personal injury. When system contamination or fluid weight prevents the use of hydrostatic testing, use compressed air or gas testing with extreme caution. To reduce the risk of air testing, pressurize the system to no more than 15 psig.

When pressuring the system with compressed air or gas, the area surrounding the piping must be cleared of personnel to prevent possible injury. Hold the pressure for one hour; then, reduce the pressure to ½ the original pressure. Personnel may then enter the area to

perform “soap testing” of all the joints. If compressed air or gas testing is used, Smith Fibercast will not be responsible for any resulting injury to personnel or damage to property, including the piping system.

Compressed air or gas testing is done entirely at the discretion and complete risk of the customer, contractor and user.

**SMITH
Fibercast™**

A Varco Company

25 South Main
Sand Springs, OK 74063
(918) 245-6651 Tel
(918) 245-7566 Fax

2700 West 65th Street
Little Rock, AR 72209
(501) 568-4010 Tel
(501) 568-6836 Fax
www.smithfibercast.com

©Copyright VARCO International, Inc.
2002. 40M 10/02