EXPANDABLE DUCT SEAL DESCRIPTION AND USE

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1. GENERAL

1.01 This practice describes the procedures for sealing conduits in manholes, splice or pull boxes or any opening that requires sealing against water and gases. Expandable duct seal is not intended for use on lead sheath cables.

1.02 This section is being revised to correct the address in paragraph 10.03.

2. DESCRIPTION

2.01 The PR-851 Kit is a two-part polyurethane foam which when mixed for a 15-second period will expand approximately 15 times in volume to form a dense, strong, touch foam with a density of 3 to 4 pounds per cubic foot.

2.02 PR-851 is supplied in two-part disposable cartridges for easy mixing and application in the field. (see Figure 1)

FIGURE 1

3. SAFETY PRECAUTIONS

3.01 Safety goggles and disposable gloves must be worn while handling the compound.

3.02 If accidental contact of compound with the skin occurs, an approved type hand cleaner should be used to remove the compound before it cures.

3.03 In cold weather do not allow compound to freeze. Warm the compound prior to use. Do not heat the compound with an open flame. In hot weather keep compound as cool as possible. Do not set compound in direct sunlight.

3.04 The uncured components can cause irritation to eyes, skin and mucous membranes, and are harmful if swallowed. When handling avoid all contact with eyes, skin (especially open breaks in the skin), and clothing. In case of contact, immediately wash off with plenty of water for at least 15 minutes. For eyes, obtain medical attention. Always wash hands before eating or smoking. Obtain immediate medical attention in case of ingestion. PR-851 contains isocyanates, and may cause allergic skin or respiratory reaction. Use with adequate ventilation.

4. ACCESSORIES

4.01 The following are the accessory items required for sealing conduits with PR-851 compound: (see Figure 2)

Packing Material: Paper towels stock item

Disposable plastic gloves included with compound

Pressure tubing ⅜" ID stock item

Ramrod (included in case) included with compound

Cardboard (6" x 6") obtain from scrap

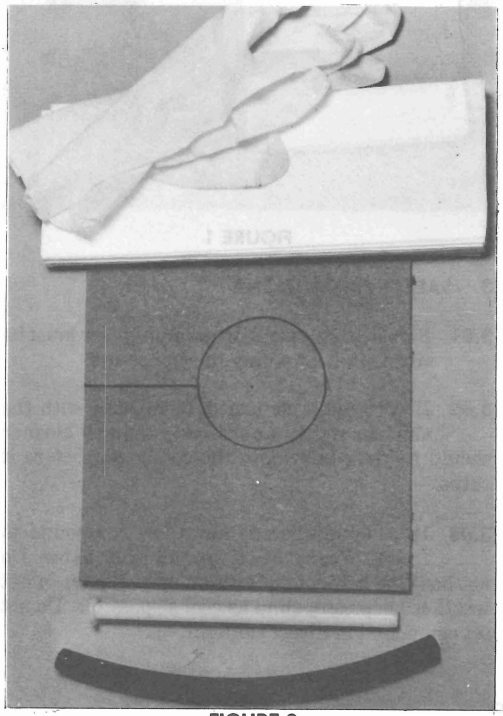

FIGURE 2

5. MIXING INSTRUCTIONS

5.01 Remove the cartridge from the foil bag, then remove the tape band from the cartridge. (see Figure 3)

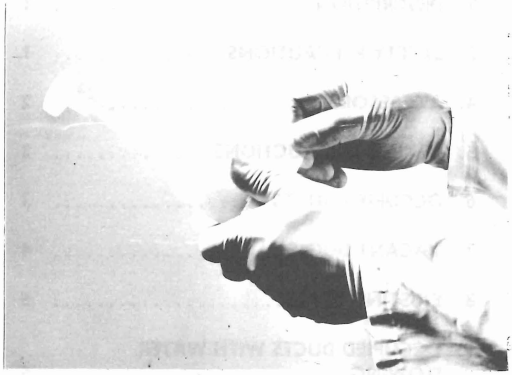

FIGURE 3

5.02 Pull the mixing rod straight up towards the top of the cartridge.

5.03 Squeeze the cartridge lightly in the area of the removed tape band to deform the foil barrier. (see Figure 4)

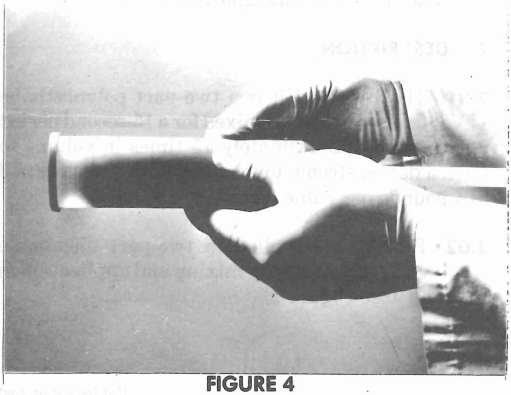

FIGURE 4

5.04 Push the mixing rod all the way to the bottom of the cartridge and with a clockwise motion, begin stroking the rod 25 strokes in and out. In and out constitutes one complete stroke. (see Figure 5)

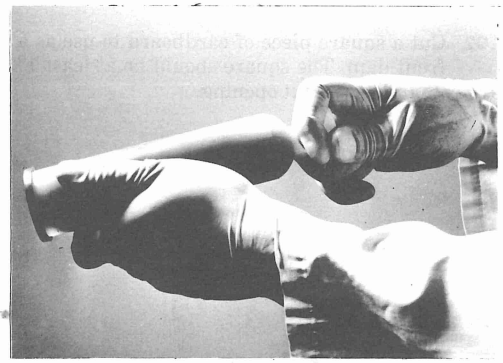

FIGURE 5

5.05 Pull the mixing rod straight up to the top of the cartridge. Unscrew the mixing rod. Do not discard the mixing rod.

Hold the cartridge with the neck up. Observe the compound through the opening at the top. When foaming starts, the compound is ready to apply. (see Figure 6)

NOTE: (a) For easier flow, cut ½" off the tip of nozzle.

(b) If the opening is large enough where the compound is to be injected, it is not necessary to use the nozzle.

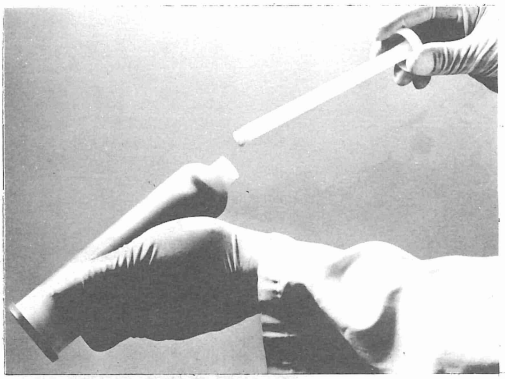

FIGURE 6

5.06 Inject the compound as follows: Place mixing rod in the hole of the red end cap at the bottom end of the cartridge and push the rod forward. (see Figure 7)

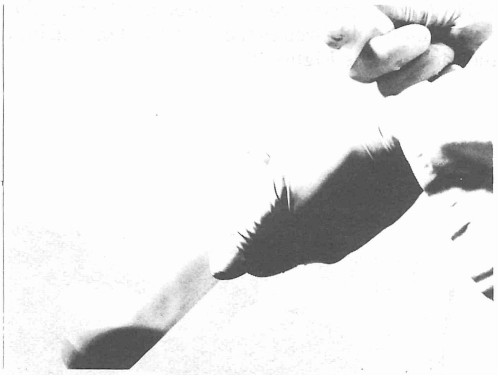

FIGURE 7

6. OCCUPIED DUCTS

6.01 Clean thoroughly all surfaces to which the compound is to be applied, removing silt, grease, parafin or other foreign material from both conduit and cable.

6.02 Raise the cable from the bottom of the conduit, insert packing material approximately 6" back into the conduit around the cable. Use the ramrod supplied in the case.

NOTE: If centering the cable within the conduit is difficult, place a piece of packing under the cable inside the face of the conduit. This will allow the compound to flow around the entire cable.

6.03 Place a dam around the cable at the face of the conduit. The dam may be made from scrap cardboard cut to fit. (see Figure 8)

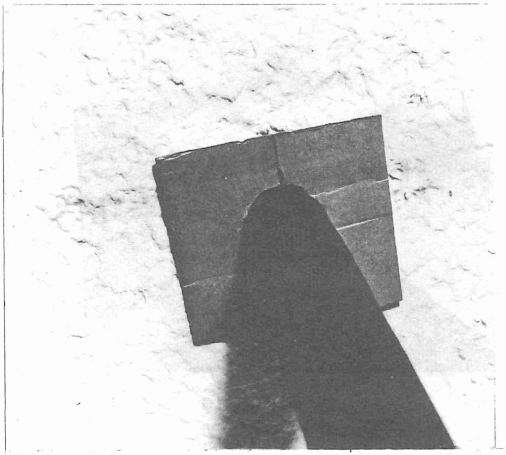

FIGURE 8

6.04 Mix a cartridge of compound. Inject the compound through the slit in the dam and into the conduit. (see Figure 9)

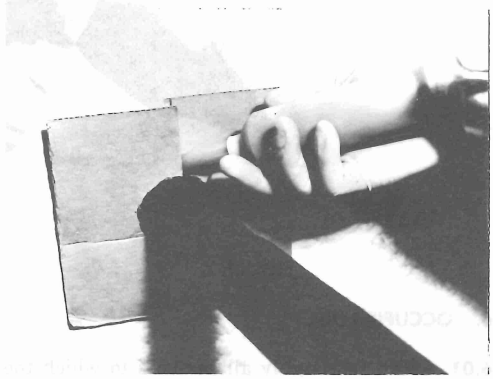

FIGURE 9

6.05 Expansion of the compound starts immediately after injection. Hand pressure must be placed on the packing at the conduit entrance during expansion to prevent the compound from coming out of the duct entrance.

NOTE: A 6" square of foam rubber placed over the cardboard makes an excellent seal around the cable. (see Figure 10)

6.06 Remove the front dam when foaming stops. (2-3 minutes)

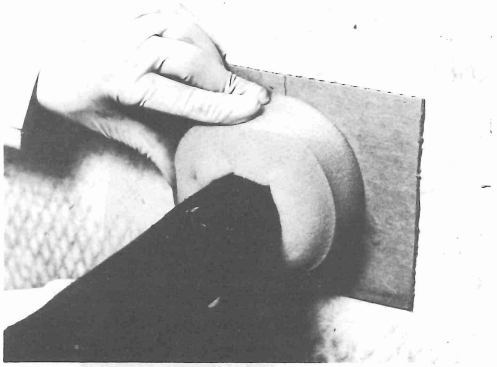

FIGURE 10

7. VACANT DUCTS

7.01 Prepare vacant conduits with the same packing procedure as Paragraph 6.02 (see Figure 11)

7.02 Cut a square piece of cardboard to use as a front dam. The square should be at least 1" larger than the conduit opening.

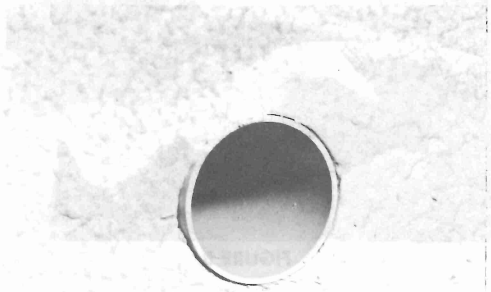

FIGURE 11

7.03 Mix a cartridge of compound. Inject the compound behind the cardboard. (see Figure 12)

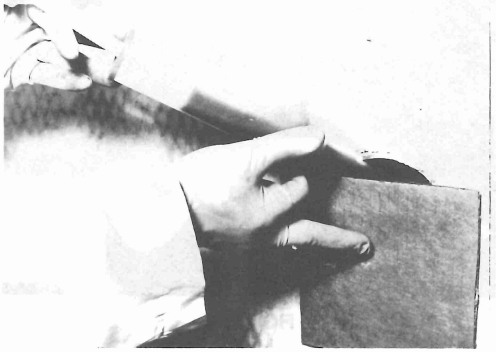

FIGURE 12

7.04 Apply pressure to the cardboard until foaming stops. (2-3 minutes) (see Figure 13)

FIGURE 13

7.05 In approximately 2 to 3 minutes expansion and backpressure should be completed. Remove the piece of cardboard. (see Figure 14)

FIGURE 14

8. EXISTING SEALS

8.01 Where cement or putty seals are leaking, punch a ½" hole at the top of the conduit through the existing seal. (see Figure 15)

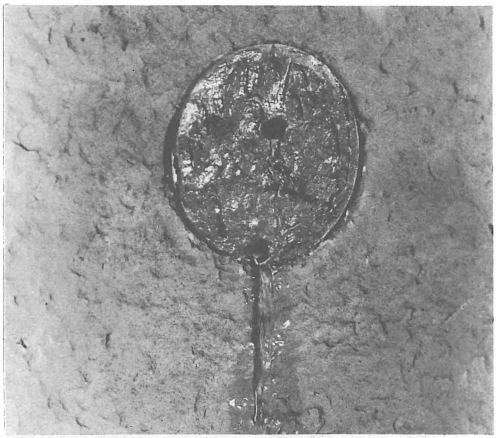

FIGURE 15

8.02 Cut ½" of tip of nozzle provided with the cartridge. Insert the nozzle into the hole of the existing seal making sure the nozzle goes through the seal into the open conduit. If water is present it may run through the nozzle. (see Figure 16)

NOTE: If the nozzle does not go completely through the seal, insert a length of ⅜" pressure tubing inside the end of the nozzle and place through the hold of the seal.

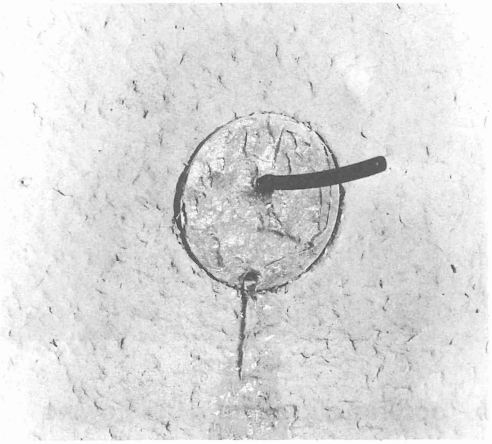

FIGURE 16

8.03 Mix a cartridge of compound. Screw the cartridge onto the nozzle and wait until the compound starts to foam, then inject. (see Figure 17)

NOTE: Whenever possible and especially when sealing a duct which has flowing water, allow the compound to start foaming before injection.

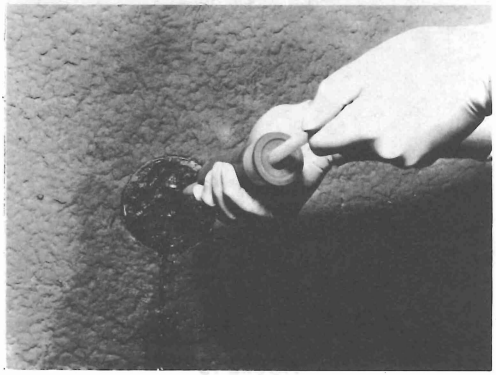

FIGURE 17

8.04 Leave the cartridge in place until the compound stops foaming. (2-3 minutes) Remove the cartridge and trim the tubing flush with the seal. (see Figure 18)

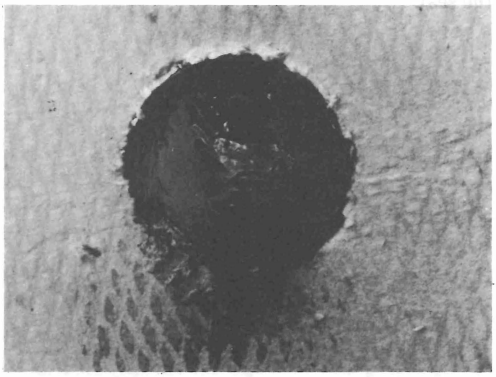

FIGURE 18

9. OCCUPIED DUCTS WITH WATER FLOWING

9.01 Place an 8" section of ⅜" plastic tubing into the duct alongside the cable. Pack paper towels around the cable and tubing to stem the flow of water. (see Figure 19)

FIGURE 19

9.02 Cut about ½" from the tip of the nozzle. Insert this shortened nozzle into the ⅜" tubing. (see Figure 20)

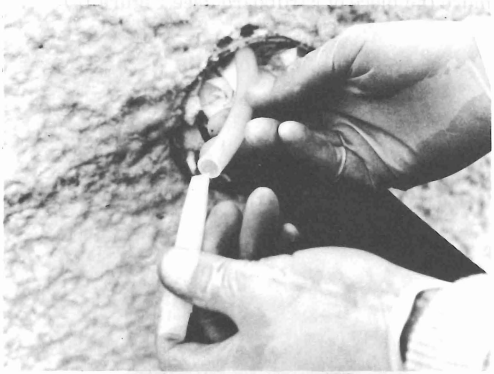

FIGURE 20

9.03 Mix a cartridge of compound. Screw the cartridge onto the nozzle, wait until foaming starts, then inject. Leave the cartridge in place until foaming stops. Trim excess tubing. (see Figures 21 and 22)

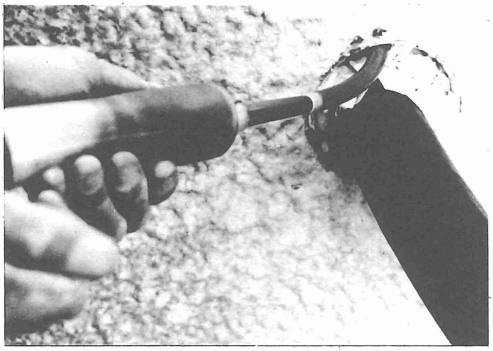

FIGURE 21

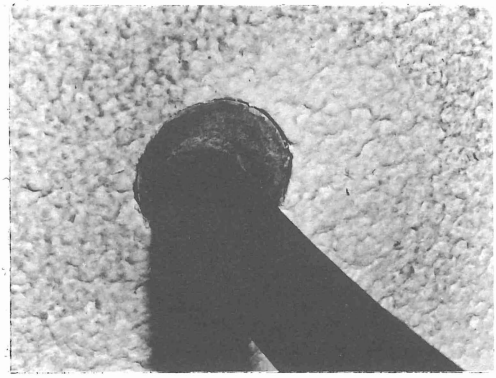

FIGURE 22

10. ORDERING INFORMATION

COMPOUND USE AND QUANTITY REQUIREMENTS

10.01 Table A gives kit sizes, expanded foam values and approximate conduit size it will seal.

KIT	KIT SIZE	APPROX. FOAM VOL.	APPROX. CONDUIT SIZE
PR-851-2	2 Oz.	60 Cu. In.	1 In. & 2 In.
PR-851-6	6 Oz.	143 Cu. In.	3 In. & 4 In.
PR-851-8	8 Oz.	198 Cu. In.	6 In. & 8 In.
PR-851-20	20 Oz.	525 Cu. In.	Large Openings

NOTE: Volumes are based on a density of 3 to 4 lbs./cu. ft. When the compound is compressed in the conduit there will be a higher density and fewer cubic inches in expansion.

10.03 The expanded foam in Table A per conduit size is based on conduits without cables. The same size kit should be used in conduits with cables. The compound will fill the voids around the cables with less expansion.

10.03 Order from:

SEMCO
1409 Brook Drive
Downers Grove, Illinois 60515
Phone: (312) 953-9700