SEALING DUCTS

CALKING MATERIALS

1. GENERAL

1.01 The materials described in this section are applied to the ducts by calking and are intended for use under the conditions described in Section 628-220-200.

1.02 The section has been reissued to substitute B Cleaning Fluid as a solvent for B Duct Sealer. The precautions to be followed when using this cleaner have been added.

2. WATERPLUG (or approved equivalent)

Description

2.01 Waterplug is a dry, powdered material which, when mixed with water, sets within a few minutes and becomes hard and inelastic. It is supplied in 1 quart, 1 gallon and 5 gallon (3, 12, and 60 pound) friction top cans. Depending on the duct area to be sealed, from 1/4 pound to 1 pound of dry material is required per seal.

Caution: When not in use, keep the container tightly covered to prevent deterioration of the Waterplug through absorption of moisture from the atmosphere.

Preparing Duct for Sealing

2.02 In preparation for sealing ducts with Waterplug, have on hand, in addition to the powder and a container of water, a small receptacle such as an enamelware saucepan in which to mix the material and a small trowel or putty knife with which to apply it to the duct.

2.03 Clean thoroughly all surfaces to which Waterplug is to be applied, removing silt, grease, paraffin or other foreign material from both duct and cable. Moisten all surfaces with water to ensure a good bond with the Waterplug.

2.04 Prepare *occupied ducts* for sealing with Waterplug as follows.

(1) Wrap a spiral of lead serving tape or 1-inch strips cut from lead sheath around the cable to center the cable in the duct and act as a backing for the Waterplug (see Fig. 1).

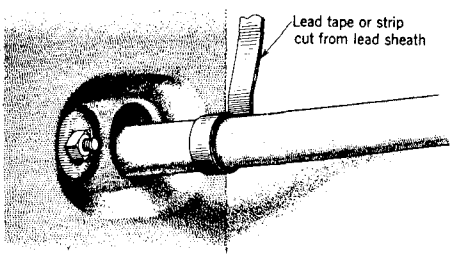

Fig. 1 — Placing Centering Tape

(2) Wrap the tape to a diameter such that it will just enter the duct (see Fig. 2).

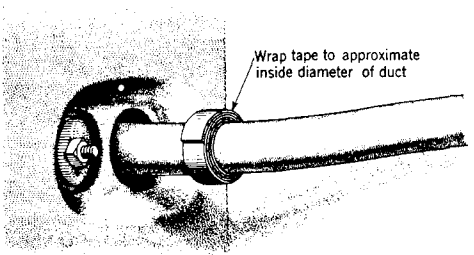

Fig. 2 — Completed Wrap

(3) Raise the cable and push the tape wrapping along it to a point about 1 inch inside the face of the duct (see Fig. 3).

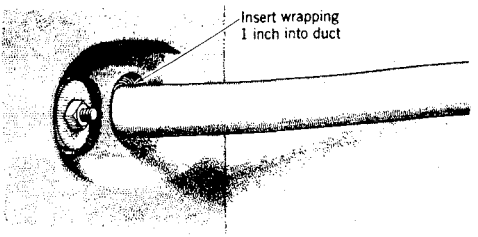

Fig. 3 — Placing Wrap in Duct

2.05 If the cable can be held centered in the duct by a sling or by other means, a backing for a Waterplug seal can be made with Plastic Duct Seal (see 3.01 for caution in use of duct seal). Apply a rope of duct seal to the cable as described in 3.04 and force it into the duct to a depth of 1 to 1-1/2 inches. Leave the support for the cable in place until the Waterplug seal has set.

2.06 Prepare ***vacant ducts*** for sealing with Waterplug by inserting a backing of paper or waste in the duct, leaving a space about 1 inch to 1-1/2 inches deep to be filled with Waterplug.

Applying Waterplug

2.07 Place a small quantity of Waterplug in the mixing pan and add to it sufficient water to form a cake or pat about the consistency of putty. If the cake is too wet to handle, add dry Waterplug to bring it to the desired consistency. Stir just enough to have the cake mildly saturated throughout. Depending on the temperature of the mixing water, the material will begin to set in 2 or 3 minutes; consequently, do not mix more than can be applied to the duct within that time. Do not use warm water as this will hasten the set, and do not attempt to soften Waterplug by adding water to material which has become too stiff to use.

2.08 With the trowel or, if more convenient, with the fingers, apply the mixture to the duct, working it firmly against the walls (and cable) to avoid leaving air pockets. Finish off seals in vacant ducts even with the face of the duct, and, in occupied ducts, bevel off the seal between the duct face and the cable.

2.09 If water is running from the duct, apply Waterplug first to the upper portion of the space to be filled, leaving a small opening at the bottom through which water can flow to avoid building up pressure until the Waterplug first applied has set. After a few minutes, mix a small quantity of Waterplug and shape it in the hand in the form of a conical plug. When a sudden warm feeling and dry appearance comes over the plug, apply it to the opening from below. Force the material well into the opening and exert pressure against the plug for a full minute or longer until the flow of water has stopped. After a few minutes the surface can be smoothed off with a sharp trowel or chisel to conform with the remainder of the seal.

2.10 If the water pressure is heavy, as in the case of a duct running full with water, it can usually be relieved by removing a rubber plug from a vacant duct at a lower level in the duct bank. If this is not possible, it is better in sealing a vacant duct to obtain a solid rubber plug rather than to attempt to seal with Waterplug. With the same situation in an occupied duct, the flow of water can be stemmed sufficiently to permit a Waterplug seal to be made by using part of the rubber portion of a split plug as a dam. Cut the rubber in half across the length of the plug and place a half section around the cable. Lift the cable and push the rubber into the duct to the depth required for the Waterplug seal.

2.11 In ***cable vaults*** or other areas where riser ducts or sleeves wholly within the building are sealed with Waterplug, provide a backing for the seal by forcing rock wool or glass wool into the opening. Leave about 1/2- to 3/4-inch space to be filled with Waterplug.

Removal

2.12 Waterplug can be removed from ducts by rapping the seal sharply with a hammer or by using a hammer and cold chisel or other cutting tool to crack the seal. After the seal is fractured in this manner the pieces can readily be removed from the duct.

3. PLASTIC DUCT SEAL

Description

3.01 Plastic Duct Seal is a putty-like compound which retains a degree of plasticity in service with only a slight tendency toward stiffening of the surfaces exposed to the air. It is suitable for sealing ducts which are dry at the time of application and which will not be subject to appreciable pressures of long duration. ***It should not be used to seal around alpeth or any other polyethylene sheath cable.*** It is supplied in 1 pound and 5 pound packages and is ready for use as received.

3.02 At 20° F and lower, Plastic Duct Seal stiffens and loses tackiness to some degree. When working at these temperatures, the workability of the material will be improved if it can be stored in a warm place until just before it is used.

Preparing Duct for Sealing

3.03 Before applying duct seal, make certain that the duct opening is dry and that all loosely adhering material, grease, or paraffin has been removed.

Applying Plastic Duct Seal

3.04 In sealing cable in a vertical position, as in bends at poles or at the top of riser pipes, roll a quantity of the material between the hands to form a rope slightly larger in diameter than the space to be filled between cable and duct. Wrap the material around the cable and, while holding the cable centered in the duct, force the duct seal into the duct to a depth of about 2 inches. Apply successive lengths of the material, forcing them firmly into position until the space is sealed to the top of the duct. Bevel the top of the seal, sloping slightly upward from the edge of the duct to the cable.

3.05 In sealing cable in a horizontal position, apply a wrapping of lead tape, as described in 2.04, to center the cable in the duct. Place the tape 2 inches in from the face of the duct and apply duct seal as described in 3.04.

3.06 ***Vacant ducts*** should be sealed by first forming a backing of paper or waste set about 3 inches back from the face of the duct. The remaining space should be filled with duct seal, working the material firmly against the walls of the duct.

4. B DUCT SEALER

Description

4.01 B Duct Sealer comes in a two-part package consisting of a collapsible tube and a friction-top can. The two paste-like materials, one red and one cream colored, are combined just prior to use. On being mixed, the two materials begin to stiffen and set up hard in about 1 hour at room temperature. One package will make from one to two seals, depending on the duct and cable size.

4.02 The sealer adheres strongly to all conduit materials and to lead and to polyethylene sheath. It hardens without shrinking and, when set, is tough and can be removed only with difficulty. It can be used in all situations where a permanent, watertight and gastight seal is required.

Precautions in Using B Duct Sealer

4.03 The materials in B Duct Sealer include chemicals which can have irritating effects on the user. Care must be taken to keep the materials away from the eyes and to avoid inhaling the vapors any more than is necessary. Contact with the skin of some individuals may result in a skin reaction similar to that caused by creosote. Refer to Section 637-241-011 on resin cable plugs for additional precautions.

Preparing Duct for Sealing

4.04 Before applying B Duct Sealer, clean all sand, grease, or old sealing materials from the cable and walls of the duct to a depth of about 1-1/2 to 2 inches into the duct. Wipe the inside of the duct wall free of surface water. If the duct is running with water, stop the flow by applying Waterplug, leaving a clear space of about 1 inch from the Waterplug dam to the face of the duct. If the duct is dry, apply a strip of lead tape around the cable to act as backing and center the cable in the manner described in 2.04.

Mixing

4.05 Squeeze the entire contents of the tube into the can. With the wood spatula furnished in the package, mix the two materials until the colors are blended evenly. From this point on, about 1/2 hour remains before the sealer becomes unworkable. Save the spatula for applying the sealer.

Applying B Duct Sealer

4.06 Using the spatula as a putty knife, spread sealer over the sheath and the wall of the duct. Apply the sealer to the space between cable and duct, forcing the material well into the duct to expel any trapped air. Finish off the seal by guiding the end of the spatula around the face of the seal to smooth it and form a slight bevel sloping from the cable to the edge of the duct.

4.07 If it is known that the cable in the duct to be sealed will be replaced, later removal can be made easier by applying the seal as follows.

(1) Cut a piece of B Polyethylene Tape about 1-1/4 inches wide and about 1/8 inch longer than the circumference of the cable. Place this around the cable and secure it overlap with a strip of cable paster or other adhesive tape.

(2) Slide the polyethylene collar into the duct as far as it will go. The purpose of the tape is to prevent the sealer from cementing to the cable inside the duct. About 1/4 inch of the tape should extend outside the face of the duct.

(3) Apply the sealer, as described in 4.06, over the polyethylene tape. In finishing off the seal, increase the length of the bevel so that the material in contact with the sheath extends about 3/8 to 1/2 inch beyond the outer end of the polyethylene tape (see Fig. 4).

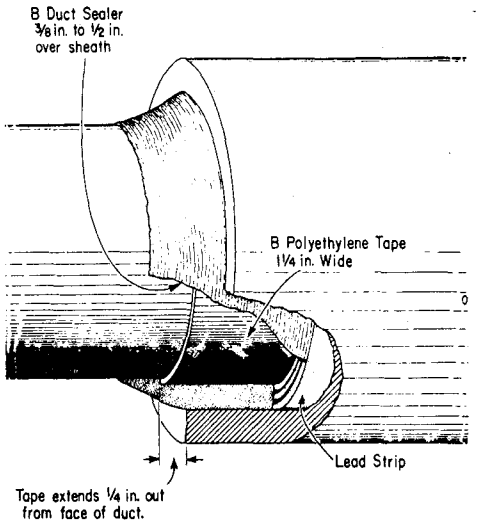

Fig. 4 — Sealing Duct — B Duct Sealer

4.08 B Cleaning Fluid can be used as a solvent for cleaning B Duct Sealer from the hands or tools, provided it is applied before the sealer has set.

Precautions in Using B Cleaning Fluid

4.09 Observe the following precautions when using B Cleaning Fluid.

(a) Use only with adequate ventilation.

(b) Avoid prolonged or repeated breathing of vapor.

(c) Avoid prolonged or repeated contact with the skin.

(d) ***DO NOT USE IN CABLE VAULT OR MANHOLE*** or in any similarly confined space. Take tools into open air for cleaning.

(e) Do not take internally.

Removal

4.10 Seals made as described in 4.06 can be removed by drilling a series of holes in the seal around the cable and chiseling or sawing through the drilled section. A long shank drill may be necessary in congested locations.

4.11 Cables sealed with the use of polyethylene tape, as in 4.07, can be released by using a wood chisel to chip the sealer from the sheath outside the duct until the end of the tape is exposed.