Explosion Proof Seal Compound - Seal for C1D1 and C2D2 Hazardous Locations - 6oz
Instruction Manual

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

⚠ CAUTION

CHICO CHICO-SPS-6OZ compound is to be used only with CHICO-SPS-6OZ EYS type sealing fittings in ½" to 2" trade sizes. **CHICO-SPS-6OZ compound is suitable for Class I, Groups C, D, Class II, Groups E, F, G, and Class III when used with EYS and EYD sealing fittings.**

⚠ CAUTION

To avoid explosion hazard, the temperature of the CHICO CHICO-SPS-6OZ Compound must be between 50°F (10°C) and 85°F (29°C) before mixing. Sealing fittings must be at a temperature above 40°F (4°C).

To avoid explosion hazard, discard any unused CHICO CHICO-SPS-6OZ compound1-1/2 years after date of manufacture marked on packaging.

⚠ CAUTION

Wear proper eye protection and protective plastic gloves when mixing and injecting CHICO-SPS-6OZ Compound to prevent personal injury.

⚠ WARNING

Contents will develop internal pressure after mixing; remove mixing rod immediately after mixing to prevent pressure build-up and possible sudden eruption that could result in personal injury.

Contains isocyanate - may be skin and respiratory sensitizer. May cause irritation of eyes, skin, nose and throat.

Do not breathe vapors. Use with adequate ventilation. Avoid contact with eyes, skin and clothing.

NOTE: Latest Safety Data Sheet for the CHICO Compound is available in the Resources section of the www.larsonelectronics.com.

APPLICATION

The National Electrical Code® (NEC) requires that seals be installed in specific places in Class I, Divisions 1 & 2 classified areas. This is to minimize the passage of gases and vapors and to prevent the passage of flames through the conduit from one portion of the electrical installation to another portion.

While not a code requirement, it is considered good practice to sectionalize long conduit runs by inserting seals not more than 50 to 100 feet apart, depending on the conduit size, to minimize the effects of "pressure piling."

The NEC requires seals in Class II locations under certain conditions. CHICO-SPS-6OZ sealing fittings can be used to meet these requirements.

Conduit seals are not intended to prevent the passage of liquids, gases or vapors at a continuous pressure differential across the seal. Even at differences in pressure across the seal equivalent to a few inches of water, there may be a slow passage of gas or vapor through a seal and through the conductors passing through the seal.

CHICO-SPS-6OZ sealing fittings are for use in Class I and Class II hazardous locations with CHICO A Sealing Compound and CHICO X Fiber. Alternatively, CHICO-SPS-6OZ series type EYS sealing fittings ½" to 2" and EYS type sealing fittings ½" to 1-1/2" are also UL Listed for use with CHICO CHICO-SPS-6OZ Compound in Class I, Divisions 1 & 2, Groups C, D; Class I, Division 2, Group B (see Figure 2); and Class II, Divisions 1 & 2, Groups E, F, G hazardous areas.

CHICO CHICO-SPS-6OZ Compound may be used to seal in both horizontal and vertical installations. CHICO-SPS-6OZ Compound must be used with CHICO X Fiber in vertical installations. The CHICO X Fiber is used to create a dam to prevent the CHICO-SPS-6OZ material from running down the conduit system before it sets. Damming is not required in horizontal conduit runs. However, to prevent the sealing compound from expanding into conduit or adjacent enclosure, CHICO X Fiber dams should be used in the sealing fittings integral bushings.

CHICO-SPS-6OZ Compound, when properly mixed, starts to gel in about 4 minutes at 70°F (21°C) or 6 minutes at 40°F (4°C) into a dense, strong mass which is unaffected by water, is not attacked by petroleum products and is not softened by heat. It will harden within 20 minutes and will withstand, with an ample safety factor, pressure from an exploding gas or vapor.

Conductors sealed in CHICO-SPS-6OZ Compound should be an approved thermoplastic or rubber insulated type.

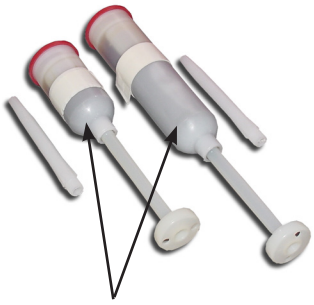
Installers should be trained before making the dam, mixing and pouring the compound.

INSTALLATION

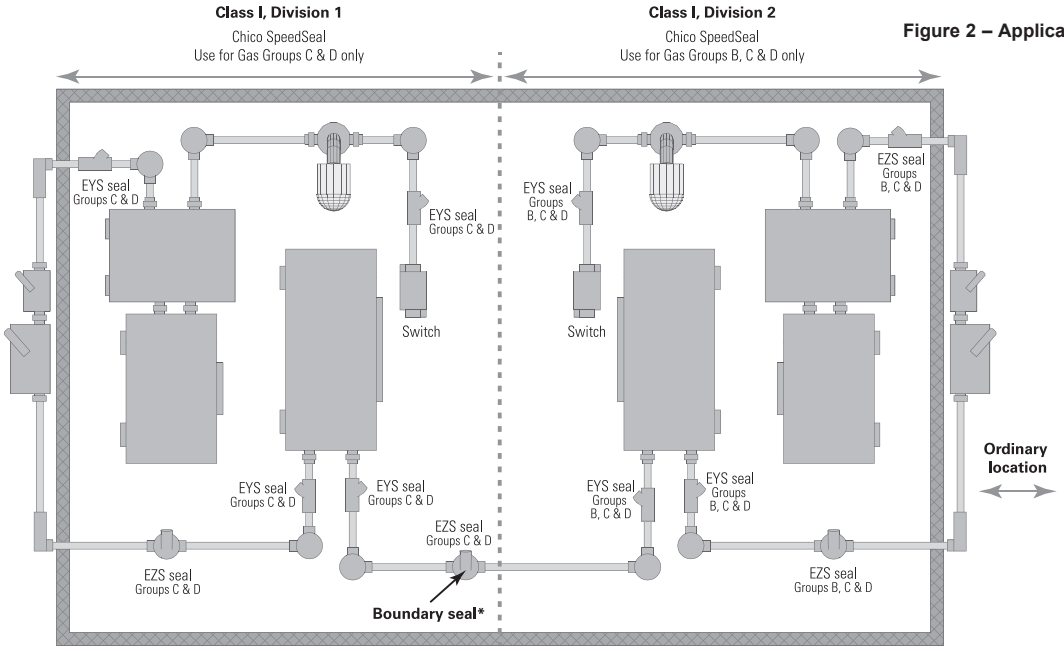
Figure 1 – CHICO-SPS-6OZ Compound Chart

Use chart to determine which size CHICO-SPS-6OZ cartridge to use for selected sealing fittings.

Fitting Catalog Number	Amount of CHICO-SPS-6OZ material needed (in ounces) per fitting	Suggested CHICO-SPS-6OZ Catalog Number	Required Cartridge Quantity
EYS1, EYS16, EYS11, EYS116 EYS2, EYS26, EYS21, EYS216 EYS11	1	CHICO SS2 (2 oz. Cartridge)	1
EYS3, EYS36, EYS31, EYS316 EYS21,	2	CHICO SS2 (2 oz. Cartridge)	1
EYS41, EYS416, EYS4, EYS46 EYS31	3	CHICO SS6 (6 oz. Cartridge)	1
EYS41 EYS51, EYS516, EYS5, EYS56 EYSX51, EYDX51 EYS61, EYS616, EYS6, EYS66	6	CHICO SS6 (6 oz. Cartridge)	1



CHICO SS2 (2 oz.)
CHICO SS6 (6 oz.)



*Boundary seal - Division 1 to Division 2: Sealing fitting must be installed within 10 ft. of either side of the boundary line and the complete assembly (Seal and Sealing Compound) must carry ratings for Class I, Division 1.

Figure 2 – Application Guide CHICO CHICO-SPS-6OZ

For seals installed in a Class I, Division 1, Group B hazardous area, CHICO A Sealing Compound should be used.

For Group B applications, CHICO CHICO-SPS-6OZ Compound can be used in a Class I, Division 2 setting at each exit or entrance to an enclosure containing an arcing or sparking device within 18 inches, and as a boundary seal from a Division 2 to ordinary location setting.

Preparing EYS Sealing Fittings

1. Remove the pipe plug(s) from the EYS sealing fitting.
2. For vertical installations, it is necessary to use CHICO X Fiber to make a dam in the bottom conduit hub. The dam will prevent the un-gelled CHICO-SPS-6OZ Compound from leaking out of the sealing chamber. No dam is required for horizontal installations unless it is desired to have compound expand in one direction or to keep compound out of conduit or adjacent enclosures. **NOTE:** SEPARATION OF INDIVIDUAL CONDUCTORS IS NOT REQUIRED –THE CHICO-SPS-6OZ COMPOUND WILL SEPARATE THE CONDUCTORS AS IT EXPANDS.
3. To properly make dam in conduit hub, use EYS TOOL KIT or hardwood stick, to force the conductors forward. Do not use metal tools.
4. Pack the fiber into the bottom conduit hub behind the conductors.
5. Push the conductors toward the back of the fitting and pack fiber in bottom conduit hub in front of conductors. It is not critical that the conductors are separated because the CHICO-SPS-6OZ Compound will expand and fill around the individual conductors. However, a good dam is required to prevent the fluid material from leaking out of the sealing chamber.
6. Do not leave any shreds of fiber clinging to the side wall of sealing chamber or to the conductors. Such shreds, when embedded in the sealing compound, may form leakage channels. The completed dam should be even with the integral bushing (conduit stop).
7. In vertical installations, if the EYS sealing fitting is the type with two (2) threaded openings, replace the threaded plug in the bottom (larger) opening. The sealing compound will be poured into the top opening. In horizontal installations, replace the plug in the smaller opening; the sealing compound will be poured into the larger opening.

Mixing and Dispensing CHICO-SPS-6OZ Compound

1. **READ ALL INSTRUCTIONS PRIOR TO MIXING.** CHICO-SPS-6OZ COMPOUND BEGINS TO EXPAND VERY QUICKLY. BE SURE TO FAMILIARIZE YOURSELF WITH THE INSTRUCTIONS ON THE FOLLOWING PAGES BEFORE MIXING. THIS WILL ENSURE PROPER INSTALLATION.
2. Make sure that CHICO-SPS-6OZ material is at a temperature between 50°F (10°C) and 85°F (29°C).
3. WEAR SAFETY GLASSES AND PROTECTIVE GLOVES.
4. Check the mixing rod to ensure that it isn't overly tight or loose. To do this, hold the cartridge with the red end cap facing up and squeeze the cartridge in the area around the plunger. This will hold plunger in place. See Figure 3. Turn counterclockwise slightly to loosen, then clockwise to re-tighten snugly.

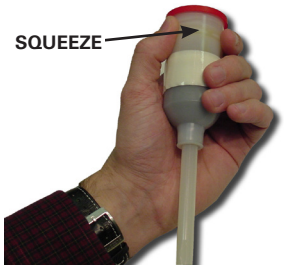


Figure 3

5. Remove the tape band from the cartridge.
6. Pull the mixing rod up to the top of the cartridge. See Figure 4.



Figure 4

7. Squeeze the cartridge in the area of the removed tape band to deform the foil barrier between the two materials. See Figure 5.
8. Hold the tube with the red cap **on a flat surface.** Push the mixing rod all the way in to the bottom of the cartridge (red side).

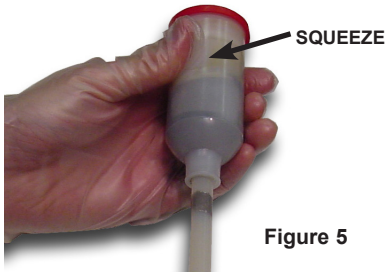


Figure 5

9. Mix rapidly for 40 to 50 strokes (a stroke is one complete in and out cycle). While mixing, hold cartridge firmly and turn in a clockwise rotation to make sure that the plunger is swiping all material in the cartridge. **DO NOT MIX FOR MORE THAN 30 SECONDS. PRESSURE WILL BUILD UP ON THE INSIDE AFTER 30 SECONDS AS THE MATERIAL STARTS TO EXPAND.**
10. At the last stroke, push the mixing rod all the way in to the bottom (red side), grasp the cartridge firmly at the bottom to hold plunger in place, and immediately unscrew the mixing rod and remove carefully. See Figure 6.

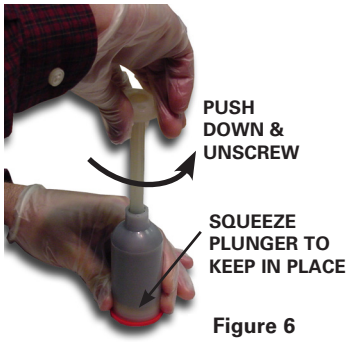


Figure 6

11. Screw nozzle onto cartridge where mixing rod was removed. See Figure 7.



Figure 7

12. Use the mixing rod to push the plunger. Inject the proper amount of sealing compound material into the fitting through the EYS threaded opening. See Figure 8. See Table 1 at the beginning of installation instructions for proper amount of material. Cartridge is marked at 1/2 used point.

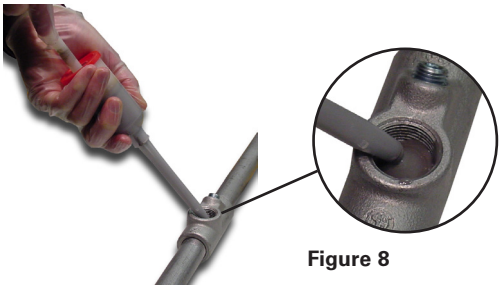


Figure 8

13. Replace and tighten the sealing fitting's plug immediately to avoid the CHICO-SPS-6OZ compound from gelling and fouling the threads. See Figure 9.



Figure 9

14. CHICO-SPS-6OZ material should be used immediately. After one minute, dispose of any unused material.

15. For EYS sealing fittings, after replacing the plugs, attach the red nameplate to the sealing fitting with the plastic band. Each modification kit is provided with an appropriate number of nameplates and bands. Position the nameplate for maximum visibility.

Table 1 - The Maximum Number of Conductors that can be Sealed in a Fitting

Example of how to use Table 1

The maximum number of #6 type THHN conductors (Column B) permitted by UL Std. 1203 in a 1-1/2" size sealing fitting is 9. The nine (9) #6 THHN conductors represent the maximum wire fill of 25% or less for sealing fittings. Increasing the sealing fitting to a 2" trade size will provide space for the 40% wire fill, or sixteen (16) #6 conductors, and comply with UL Std. 1203.

Trade Size	Conductor Size	Type	Max No. Permitted for 25% Fill	Permitted for 40% Fill/Trade Size Sealing
1-1/2"	#6	THHN	9	(16/2")

In our example, use an EYS6 sealing fitting.

The maximum number of wires that can be sealed in a fitting are as follows: **Source: UL Std. 1203/NFPA 70-National Electric Code ©**

Size AWG or Kcmil	1/2" Seal (Qty/NPT Size)		3/4" Seal (Qty/NPT Size)		1" Seal (Qty/NPT Size)		1-1/4" Seal (Qty/NPT Size)		1-1/2" Seal (Qty/NPT Size)		2" Seal (Qty/NPT Size)	
	A	B	A	B	A	B	A	B	A	B	A	B
18	7(8-3/4)	11	12(15/1-1/4")	20	12(24/1-1/2")	20	20(42/2")	33	35(57/2-1/2")	58	49(94/3")	80
16	6(7-3/4)	9	10(12/1")	16	17(20/1-1/2")	27	17(35/2")	27	30(48/2-1/2")	47	41(79/3")	64
14	3(4-3/4")	8(13-3/4")	6(7/1")	15(22/1")	10(12/2-1/2")	24(36/1-1/2")	10(21/2")	24(63/2-1/2")	18(28/2-1/2")	43(85/2-1/2")	25(46/3")	58
12	3	6(9-3/4")	5(6/1")	11(16/1")	8(10/1-1/2")	18(26/1-1/2")	8(17/2")	18(46/2-1/2")	15(23/2-1/2")	32(62/2-1/2")	21(38/3")	43(102/3")
10	1(3-3/4")	4(6-3/4")	4(5/1")	7(10/1")	7(8/1-1/4")	11(17/1-1/4")	13(14/2")	20(29/2-1/2")	13(19/2")	20(39/2-1/2")	20(31/3")	27(64/3")
8	1	2(3-3/4")	2	4(6/1")	4	6(9/1-1/4")	7	11(16/1-1/2")	9(10/2-1/2")	16(22/2-1/2")	9(16/2-1/2")	16(37/3")
6	1	1(2-3/4")	1	2(4/1")	2(3/1-1/4")	4(7/1-1/4")	4(6/1-1/2")	7(12/2")	6(8/2")	9(16/2")	10(13/2-1/2")	16(27/3-1/2")
4	1	1	1	1(2/1")	1(2/1-1/4")	2(4/1-1/4")	3(4/1-1/2')	4(7/2")	5(6/2")	6(10/2-1/2")	8(10/2-1/2")	9(16/3")
3			1	1	1(2/1-1/4")	2(3/1-1/4")	3(4/1-1/2")	3(6/2")	4(5/2")	5(8/2")	7(9/2-1/2")	8(14/3")
2			1	1	1	1(3/1-1/4")	3	3(5/2")	3(4/2")	4(7/2")	6(7/2-1/2")	7(11/3")
1			1	1	1	1	1	2(4/2")	3	3(5/2")	4(5/2-1/2")	5(8/3")
1/0					1	1	1	2(3/2")	2	2(4/2")	4	4(7/3")
2/0					1	1	1	1(2/1-1/2")	1(2/2")	2(3/2")	3(4/2-1/2")	3(6/3")
3/0					1	1	1	1	1	1(3/2")	3	3(5/3")
4/0							1	1	1	1(2/2")	2(3/2-1/2")	2(4/3")
250							1	1	1	1	1	2(3/2-1/2")
300							1	1	1	1	1	1(3/2-1/2")
350							1	1	1	1	1	1(2/2-1/2")
400									1	1	1	1(2/2-1/2")
500									1	1	1	1
600											1	1
700											1	1
750											1	1
800											1	1

Source: UL Std. 1203 / National Electric Code

Column A = Types RFH-2, FFH-2, RFHH-2 (AWG 18-16) RHH, RHW, RHW-2 (AWG 14-2000 KCmil)

Column B = THHN, THWN, THWN-2 (AWG 14-100 Kcmil)