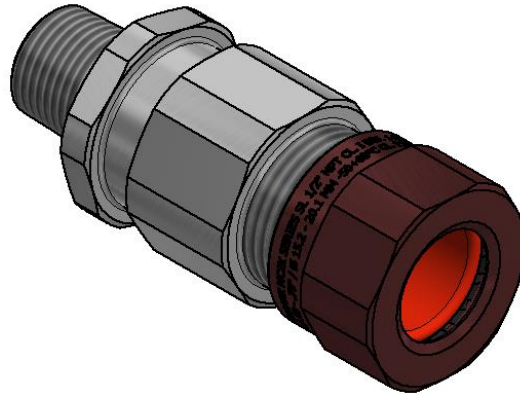


MC2X SERIES CABLE GLANDS

See Tables 1 & 2 below for HazLoc ratings based on installed cable/conductor types (per the NEC and CEC).



Type 3, 4, 4X, 6, IP66, IPX8 (1 hr. 6 ft)
Operating Temperature Range -50°C +60°C



Table 1: US Cable Ratings

Cable Type	Armor	US Class & Division Rating	US Class & Zone Rating
MC-HL	Continuous	Cl. I, Div. 1, ABCD, Cl. II, Div. 1 EFG, Cl. III	Cl. I, Zone 1 AEx d, IIC, IIB, IIA, Zone 20
ITC-HL	Continuous	Cl. I, Div. 1, ABCD, Cl. II, Div. 1 EFG, Cl. III	Cl. I, Zone 1 AEx d, IIC, IIB, IIA, Zone 20
TC-ER-HL	Unarmored	Cl. I, Div. 1, ABCD, Cl. II, Div. 1 EFG, Cl. III	Cl. I, Zone 1 AEx d, IIC, IIB, IIA, Zone 20
PLTC	Unarmored	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III	Class I, Zone 2, IIC, IIB, IIA, Zone 22
PLTC-ER	Unarmored	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III	Class I, Zone 2, IIC, IIB, IIA, Zone 22
ITC	Unarmored	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III	Class I, Zone 2, IIC, IIB, IIA, Zone 22
ITC-ER	Unarmored	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III	Class I, Zone 2, IIC, IIB, IIA, Zone 22
MC	Interlocked	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III	Class I, Zone 2, IIC, IIB, IIA, Zone 22
MV	Interlocked	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III	Class I, Zone 2, IIC, IIB, IIA, Zone 22
TC	Unarmored	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III	Class I, Zone 2, IIC, IIB, IIA, Zone 22
TC-ER	Unarmored	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III	Class I, Zone 2, IIC, IIB, IIA, Zone 22

Table 2: Canadian Cable Ratings

Cable Type	Armor	Canada Rating
AC90-HL	Interlocked	Cl. I, Div. 1, ABCD, Cl. II, Div. 1 EFG, Cl. III
ACG90-HL	Interlocked	Cl. I, Div. 1, ABCD, Cl. II, Div. 1 EFG, Cl. III
ACWU90-HL	Interlocked	Cl. I, Div. 1, ABCD, Cl. II, Div. 1 EFG, Cl. III
ACGWU90-HL	Interlocked	Cl. I, Div. 1, ABCD, Cl. II, Div. 1 EFG, Cl. III
TECK-90-HL	Interlocked	Cl. I, Div. 1, ABCD, Cl. II, Div. 1 EFG, Cl. III
RA-90-HL	Continuous	Cl. I, Div. 1, ABCD, Cl. II, Div. 1 EFG, Cl. III
TC	Unarmored	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III
TECK-90	Interlocked	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III
ACWU90	Interlocked	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III
RA-90	Interlocked	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III
RC-90	Interlocked	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III
ACIC	Interlocked	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III
CIC	Interlocked	Cl. I, Div. 2, ABCD, Cl. II, Div. 2 EFG, Cl. III

CAUTION:

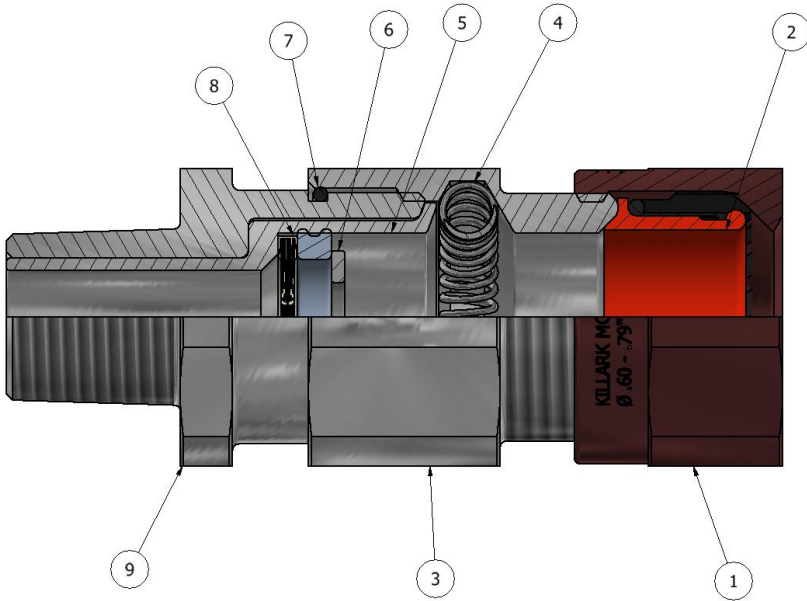
Before installing, make sure you are compliant with area classifications, as failure to do so may result in bodily injury, death and property damage. Do not attempt installation until you are familiar with the following procedures. All installation must comply with the applicable Electrical Code(s). Make sure that the circuit is de-energized before starting installation or maintenance. Verify that the installation is grounded. Failure to ground will create electrical shock hazards, which can cause serious injury and or death.

IMPORTANT:

Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.

Technical information, advice and recommendations contained in these documents is based upon information that Killark believes to be reliable. All the information and advice contained in these documents is intended for use only by persons having been trained and possessing the requisite skill and know-how and to be used by such persons only at their own discretion and risk. The nature of these instructions is informative only and does not cover all of the details, variations or combinations in which this equipment may be used, its storage, delivery, installation, check out, safe operation and maintenance. Since conditions of use of the product are outside of the care, custody and control of Killark, the purchaser should determine the suitability of the product for his intended use, and assumes all risk and liability whatsoever in connection there with.

MC2X Components

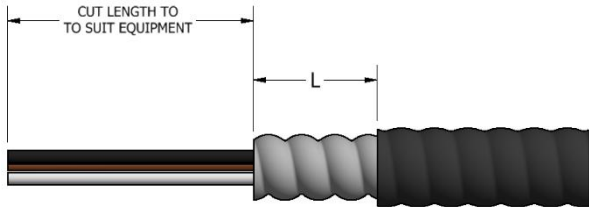


1. Backnut
2. Environmental Seal
3. Middlednut
4. Ground Spring
5. Potting Chamber
6. Armor Stop
7. Submersion Proof O-ring
8. Resin Barrier & Retaining Grommet
9. Entry Component

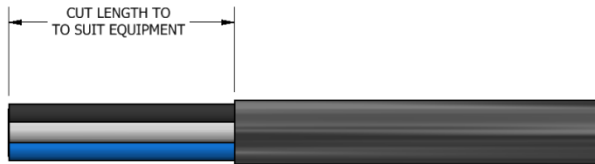
*Resin Barrier (8) not provided on MC2X1B.

Cable Preparation

Armored Cable



Tray Cable



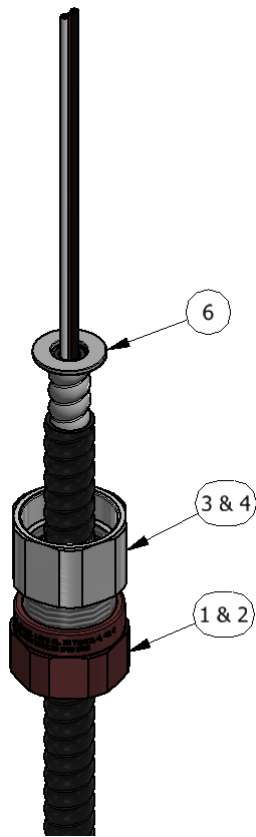
1. Strip cable to suit equipment as shown.
2. For armored cable, see Table 1 for exposed armor length (L).

TABLE 1

Catalog Number	Entry Thread Size (NPT)	Armored & Tray Cable			
		Max Number of Cores	Min O.D.	Max O.D.	L (mm)
MC2X1B	1/2"	6	0.51	0.63	1.25 (32)
MC2X1C	1/2"	10	0.60	0.82	1.22 (31)
MC2X2	3/4"	21	0.73	1.03	1.31 (33)
MC2X3	1"	42	0.97	1.31	1.32 (34)
MC2X4	1-1/4"	73	1.23	1.56	1.63 (41)
MC2X5	1-1/2"	80	1.47	1.78	2.50 (64)
MC2X6	2"	80	1.47	2.04	2.50 (64)
MC2X7	2-1/2"	100	1.93	2.51	2.75 (70)
MC2X8	3"	120	2.27	3.01	2.90 (74)
MC2X9	3-1/2"	120	2.77	3.46	2.62 (67)
MC2X0	4"	120	3.46	4.07	3.00 (76)

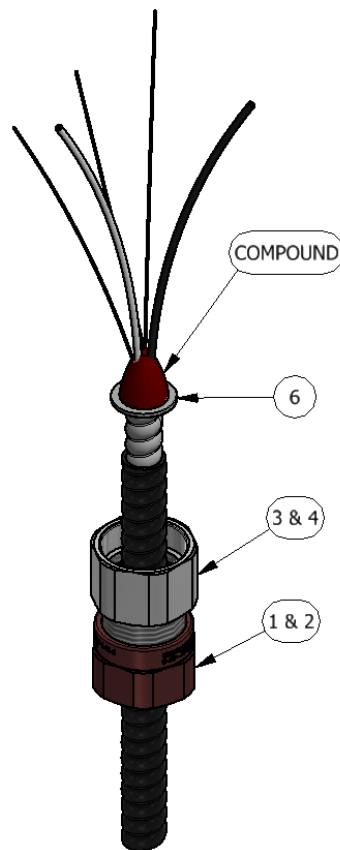
CAUTION: For medium voltage cables 5kV through 35kV – Remove the copper shield, phase identification tape, & semiconducting insulation screen before installing the sealing compounds.

Installation Instructions: Sealing with Epoxy (Putty) Compound



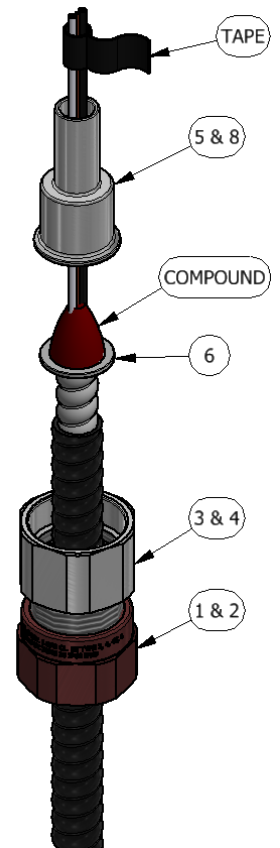
A)

Push the prepared cable through the back nut (1), middle nut (3), and grounding spring (4). Locate the armor stop (6) at the end of the armor as shown above. If the conductors are too large to fit through the armor stop (6) it can be removed from the assembly. The entry component (9) has a built-in armor stop for larger cables.



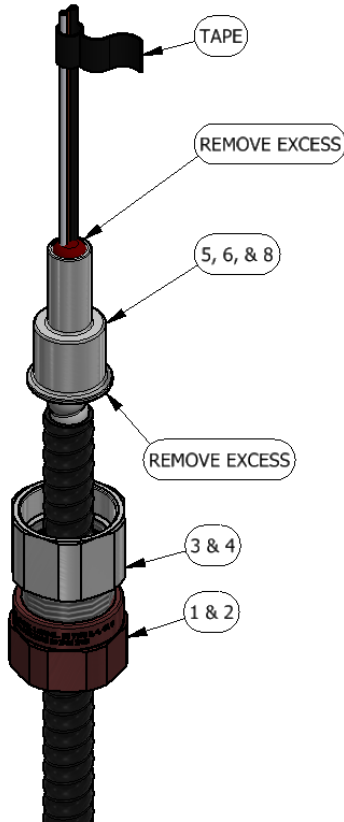
B)

Spread out the cable cores and the individual strands of un-insulated conductors for the packing of the compound. Pack the compound between the cores and strands as shown above. See page 7 for compound preparation details.



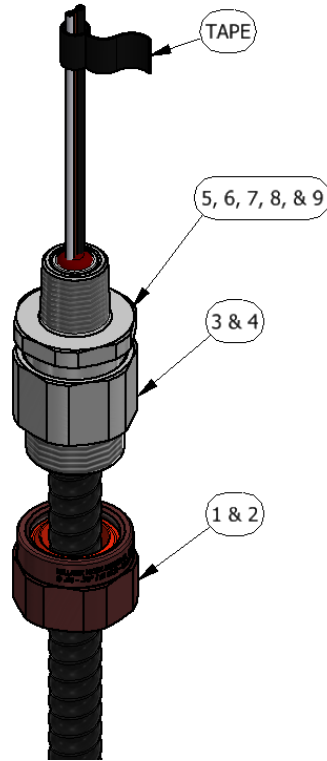
C)

With all gaps and voids filled, bring the conductors back together and pack more compound around the outside of the conductors. Tape the conductors together to prevent disturbance of the compound. Press the potting chamber (5) over compound until it hits the armor stop (6) or the end of the armor. Do not twist the potting chamber (5) while pressing it over the compound. Twisting may create voids in the seal.



D)

Ensure that the entire potting chamber (5) is filled with compound then remove any excess compound from the potting chamber (5). Ensure that all the compound is removed from the tapered surface of the potting chamber (5) that contacts the grounding spring (4). Failing to remove compound from this surface will interfere with the compression of the spring and may impede the grounding path of the gland.



E)

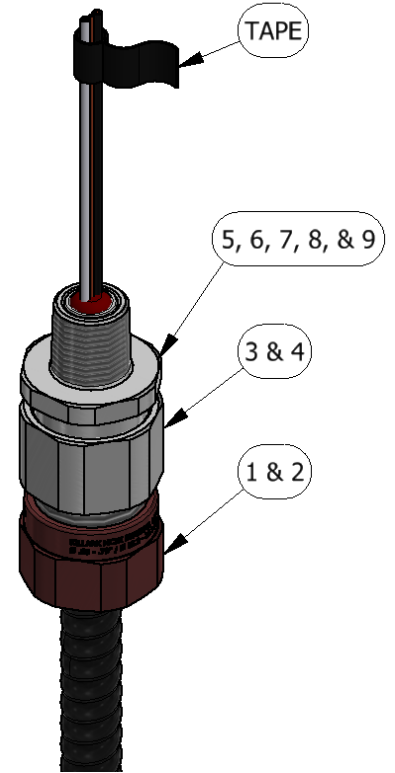
**IMPORTANT NOTE:
 THE CONDUCTORS MUST NOT BE
 MOVED FOR A MINIMUM OF FOUR
 HOURS. TAKE CARE DURING STEPS
 E AND F TO ENSURE THAT THE
 CONDUCTORS DO NOT MOVE.**

If the gland is to be installed in a threaded opening first thread the entry component (9) into the enclosure to prevent twisting of the cable. When installing the entry component (9) into a NPT entry the component should be installed hand tight and then one additional turn with a wrench.

If the entry component (9) is installed with a locknut it should tighten to the torque shown in Table 2. (Approximately hand tight +1 turn)

Slide the potting chamber (5) into the entry component (9). Take care to prevent compound from adhering to the inside of the entry component (9).

Thread the middle nut (3) onto the entry component (9) to the torque show in Table A (Approximately hand tight +1 turn). This will compress the spring (4) to grip the armor for grounding.

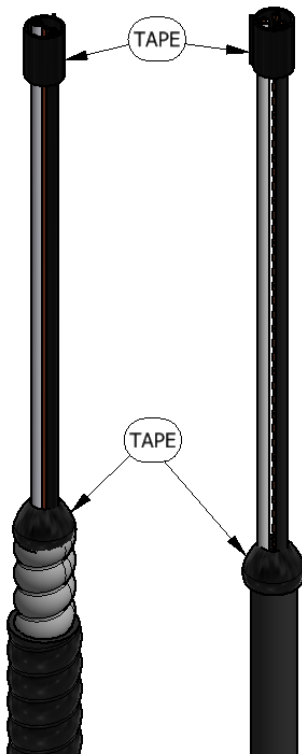


F)

Thread the back nut (1) onto the middle nut (3) to the torque show in Table 2. This will compress the seal (2) inside the back nut (1) to grip the jacket of the cable for mechanical retention and the formation of an environmental seal. Allow the compound to fully cure before energizing the circuit.

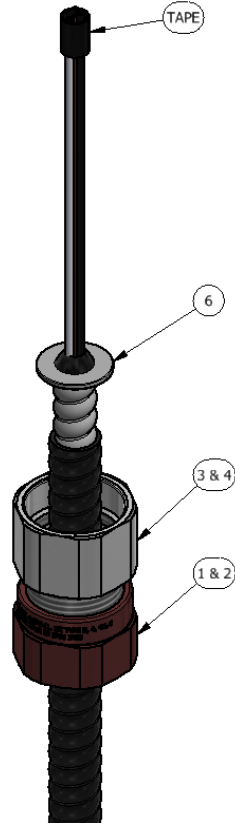
Gland Size	Assembly Torque (lbf-ft)
1/2"	20
3/4"	20
1"	30
1-1/4"	40
1-1/2"	136
2"	136
2-1/2"	158
3"	181
3-1/2"	181
4"	181

Installation Instructions: Sealing with Liquid Resin



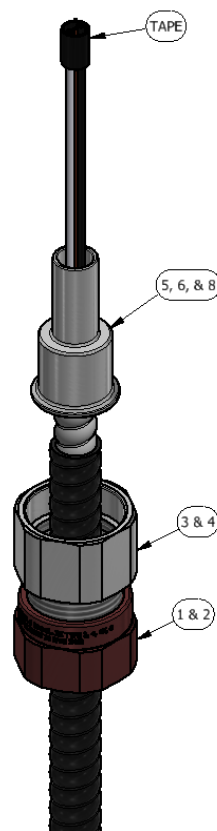
A)

Tape the ends of the conductors together. To prevent resin from leaking down the conductors, tightly wrap tape at the base of the cable.



B)

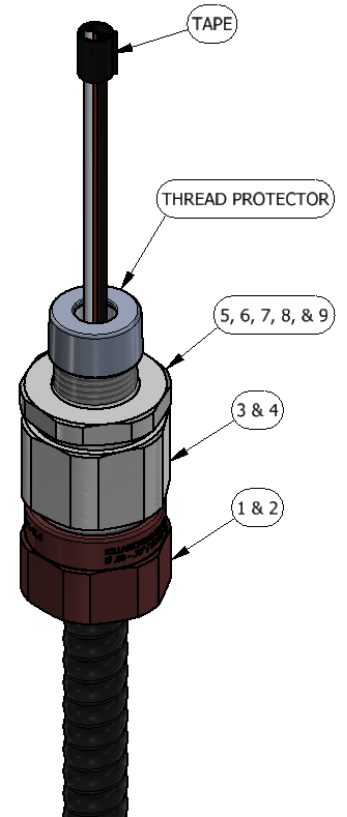
Push the prepared cable through the back nut (1), middle nut (3), and grounding spring (4). Locate the armor stop (6) at the end of the armor as shown above. If the conductors are too large to fit through the armor stop (6) it can be removed from the assembly. The entry component (9) has a built-in armor stop for larger cables.



C)

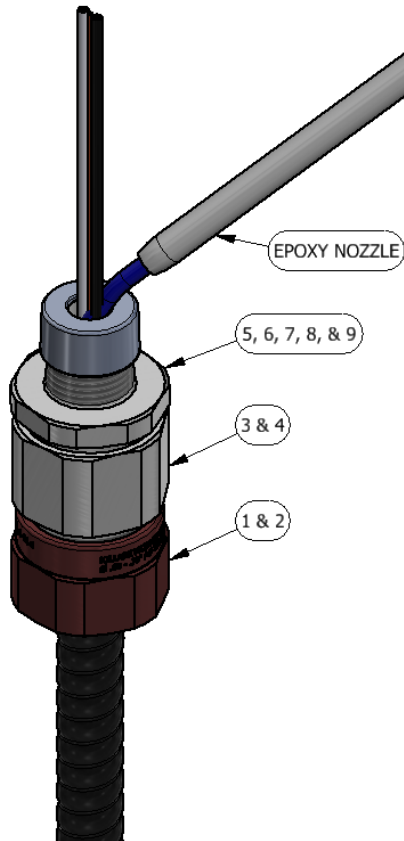
Slide the taped conductors thru the potting chamber (5) & seal (8)* until the potting chamber rests against the armor stop. For best results, bristles should seal against the tape at the base of the cable. Ensure there are no gaps between the seal & conductors. If any gaps, use packing fiber to fill.

* MC2X1B does not have a seal and must be dammed with packing fiber.



D)

To keep the conductors straight while potting, slide the entry component (9) over the potting chamber (5) and assemble the middle nut (3) hand tight. Then assemble backnut (1) hand tight.

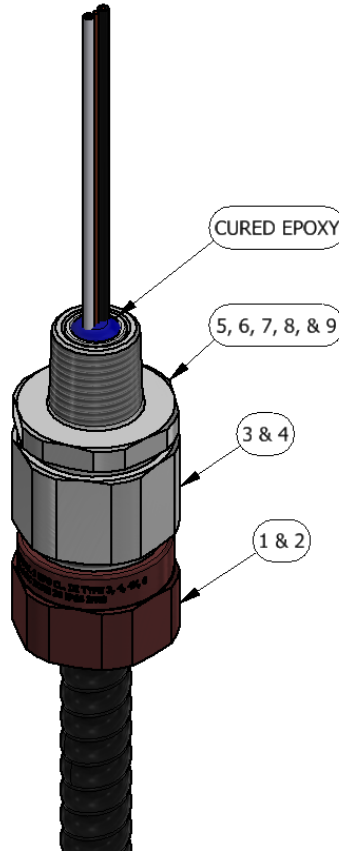


D)

See page 8 for liquid resin preparation & curing details.

Secure the gland vertically and remove tape from the end of the conductors. Separate the conductors and if bare ground wire is present, separate the strand so liquid resin can create a complete seal. Begin filling the potting chamber with liquid resin.

Allow a minimum of 15 minutes for the liquid resin to harden before moving conductors. The thread protector can now be removed.



E)

Once the liquid resin has hardened, the gland can be disassembled for installation onto equipment.

If the gland is to be installed in a threaded opening first thread the entry component (9) into the enclosure to prevent twisting of the cable. When installing the entry component (9) into an NPT entry the component should be installed hand tight and then one additional turn with a wrench.

If the entry component (9) is installed with a locknut it should tighten to the torque shown in Table 2. (Approximately hand tight +1 turn) Slide the potting chamber (5) into the entry component (9). Take care to prevent compound from adhering to the inside of the entry component (9).

Gland Size	Assembly Torque (lbf-ft)
1/2"	20
3/4"	20
1"	30
1-1/4"	40
1-1/2"	136
2"	136
2-1/2"	158
3"	181
3-1/2"	181
4"	181

F)

Thread the middle nut (3) onto the entry component (9) to the torque show in Table A (Approximately hand tight +1 turn). This will compress the spring (4) to grip the armor for grounding.

Thread the back nut (1) onto the middle nut (3) to the torque show in Table 2. This will compress the seal (2) inside the back nut (1) to grip the jacket of the cable for mechanical retention and the formation of an environmental seal. Allow the compound to fully cure before energizing the circuit.

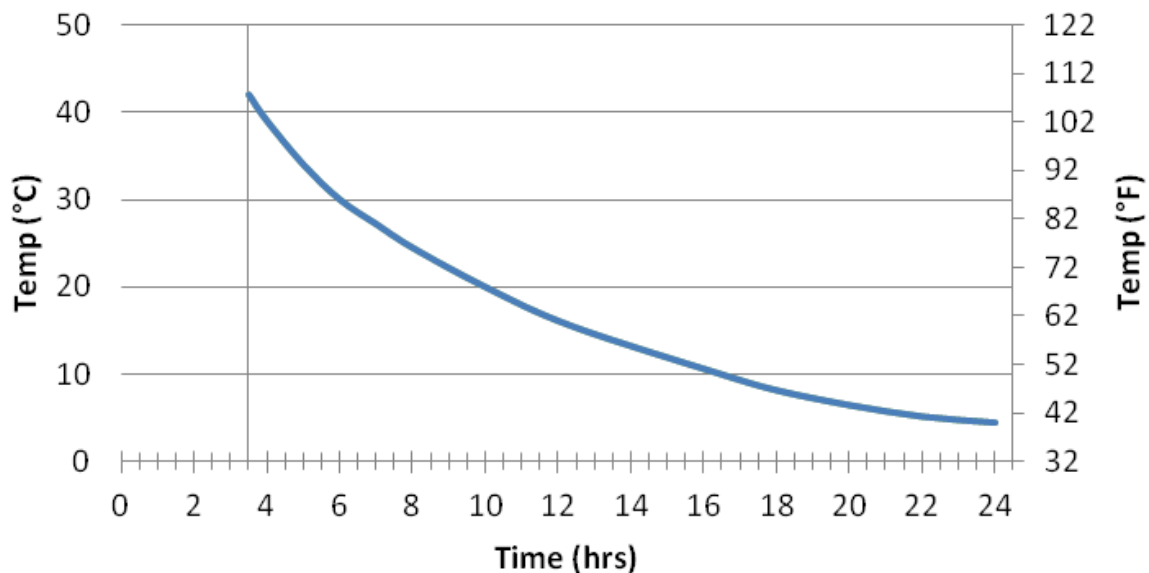
EPOXY (PUTTY) COMPOUND PREPARATION

1. The gloves provided must be worn when handling the epoxy.
2. The epoxy compound is supplied in a two part package. These parts are supplied in a ratio of 1:1 and should be mixed with this ratio until both colors have blended into one, without any streaks. Rolling and folding is the most effective method of obtaining an even blend.
3. Once mixed, the compound must be used within 30 minutes. After this time it will begin to stiffen. The compound should be kept at an ambient temperature of no less than 20°C (68°F) prior to using. At lower temperatures it becomes difficult to mix.
4. Once the compound is packed into the potting chamber it should be kept at an ambient temperature of at least 20°C (68°F) for 30 minutes to allow the curing process to start.
5. The compound must be allowed to fully cure prior to energizing the fitting. The minimum cure time is 3.5 hours and is dependent on the ambient temperature as shown by the graph below.
6. Should any compound come into contact with the skin it should be cleaned off with skin cleaner and not allowed to dry on the skin.

NOTES:

1. Only compound for immediate use in terminations should be mixed.
2. The mixing and installation of the compound at an ambient temperature below 5°C (41°F) is not recommended due to extended curing periods.
3. The compound may be adversely affected by some solvent vapors. If such vapors are likely to be present in the vicinity of the cable gland in service, suitable precautions may be necessary. (Contact Killark Customer Service).

**Epoxy Compound
 Cure Time vs Temperature**



LIQUID RESIN PREPARATION

1. When using Killark KQS “CELOX” or Hawke Express “HQS” Sealing Compound, remove cap by twisting 90° counterclockwise for 50mL cartridge. For larger 250mL cartridge unscrew cap counterclockwise and remove plug (Plug can be saved for re-use of cartridge).
2. Place mixing nozzle onto cartridge and lock into place by twisting 90° for 50mL and screw clockwise for 250mL cartridge. Place 50mL cartridge into the dual dispensing applicator and 250mL cartridge into a high ratio caulking tool.
3. Prime mixing nozzle by depressing handle and pump a small amount of sealing compound through nozzle until a uniform mixture is dispensed (Gray mixture for KQS, Blue mixture for HQS).
4. See chart below for Cure Time vs Temperature when using KQS or HQS.

NOTES:

1. The mixing and installation of the compound at an ambient temperature below 4°C (39°F) is not recommended due to extended curing periods.
2. The compound may be adversely affected by some solvent vapors. If such vapors are likely to be present in the vicinity of the cable gland in service, suitable precautions may be necessary. (Contact Killark Customer Service).
3. If un-used liquid resin cartridge is stored below 0°C, bring cartridge to room temperature for 24 hours before using for installation.

**KQS & HQS
 Cure Time vs Temperature**

