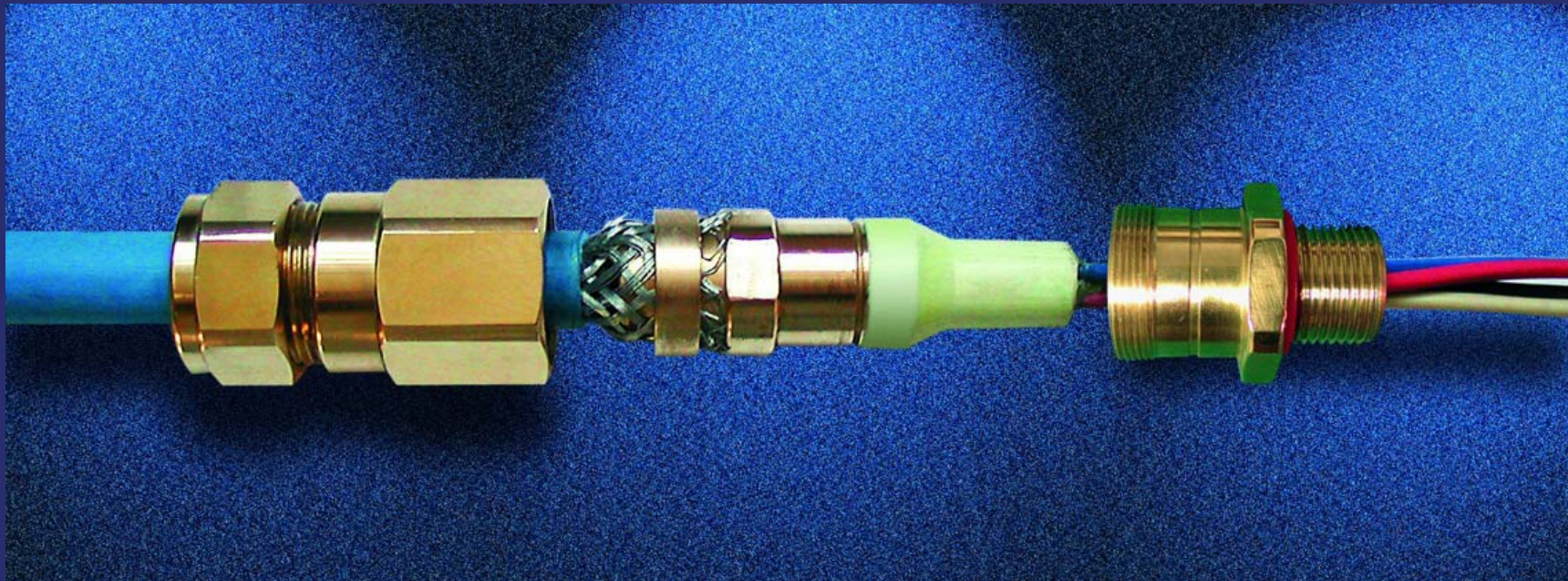




Peppers Cable Glands Limited



Barrier Glands





Definition

What is a barrier gland?

A barrier gland is an Ex d cable gland incorporating a compound filled chamber sealing around the individual cores of the cable to maintain the Flameproof integrity of the equipment into which it has been fitted.



Application

Why use a barrier gland?

A barrier gland must be used where the standard method of glanding (elastomeric seals) an Ex cable entry is considered unlikely to maintain the integrity of Flameproof equipment and contain an explosion within the enclosure due either to:

- the construction of the cable

and/or

- the magnitude of the potential explosion



Selection

Compound Filled Barrier Glands

Glands featuring elastomeric Flameproof seals are often used where barrier glands are required. Their specification and marking appear to confirm that the glands are suitable for use in ATEX categories 2G (Zones 1 & 2), gas group IIC and as passive components they have no temperature classification limitations.

When the installation code covering electrical installations in hazardous areas IEC 60079-14 is considered it is clear that a more detailed examination of specific Flameproof applications must be made.



Selection

The Cable Construction

The first questions that must be asked are with regard to the construction of the cable:

- Is the cable substantially round and compact?
- Can the cable be deemed to be effectively filled?
- Is the cable is effectively filled are the fillers non-hygroscopic?

If the answer to any of these questions is no, a barrier gland must be used

If the answer to all 3 questions is yes, the application must then be considered using the selection chart_within_IEC 60079-14



Selection

The Cable Construction

Note:

Determining whether the cable is effectively filled can often be difficult as cable companies do not declare their cable's compliance and it is left to the specifying engineer to decide whether or not an explosion within the enclosure could be transmitted to the surrounding atmosphere through the cable.



Selection

*IEC 60079-14 Electrical Apparatus for Explosive Gas Atmospheres
Part 14 Electrical Installations in Hazardous Areas (other than
mines) 3rd Edition 2002-10*

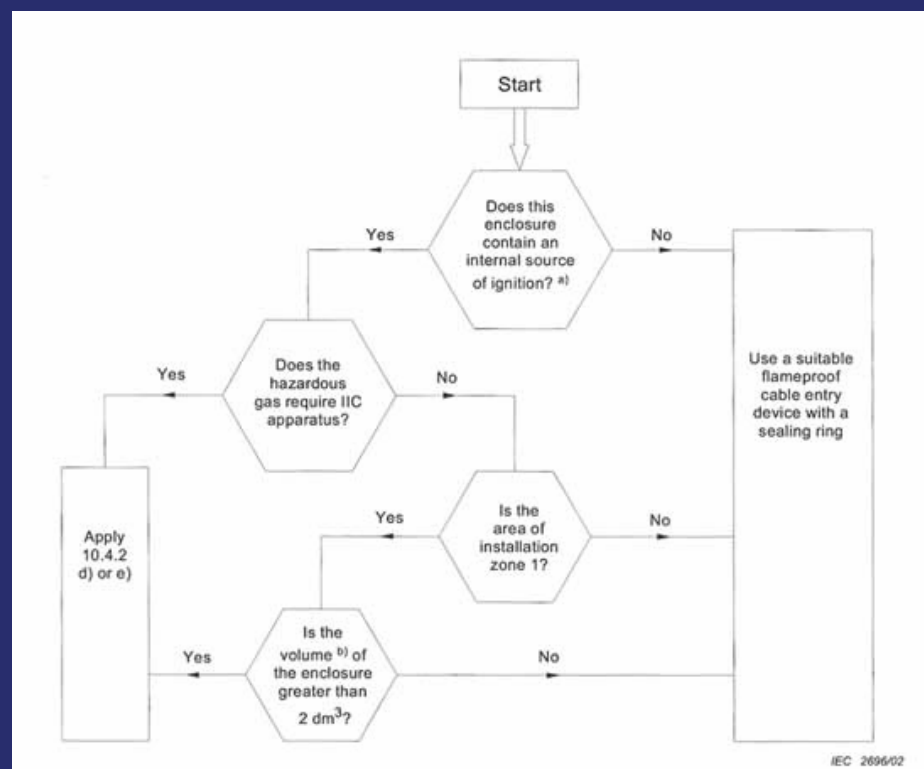


Figure 1- Selection chart for cable entry devices into flameproof enclosures for cables complying with item B of 10.4.2



Selection

Following The Selection Chart:

- Q1 Does the equipment have an Internal Source of Ignition?
If no, a gland with an elastomeric seal may be used.
If yes, go to Q2
- Q2 Does the hazardous gas require IIC Apparatus?
If yes, a barrier gland must be used.
If no, go to Q3



Selection

Questions From The Selection Chart – Continued:

- Q3 Is the installation on Zone 1?
If no, a gland with an elastomeric seal may be used.
If yes go, to Q4

- Q4 Is the Enclosure Volume greater than 2 litres?
If no, a gland with an elastomeric seal may be used.
If yes, a barrier gland must be used

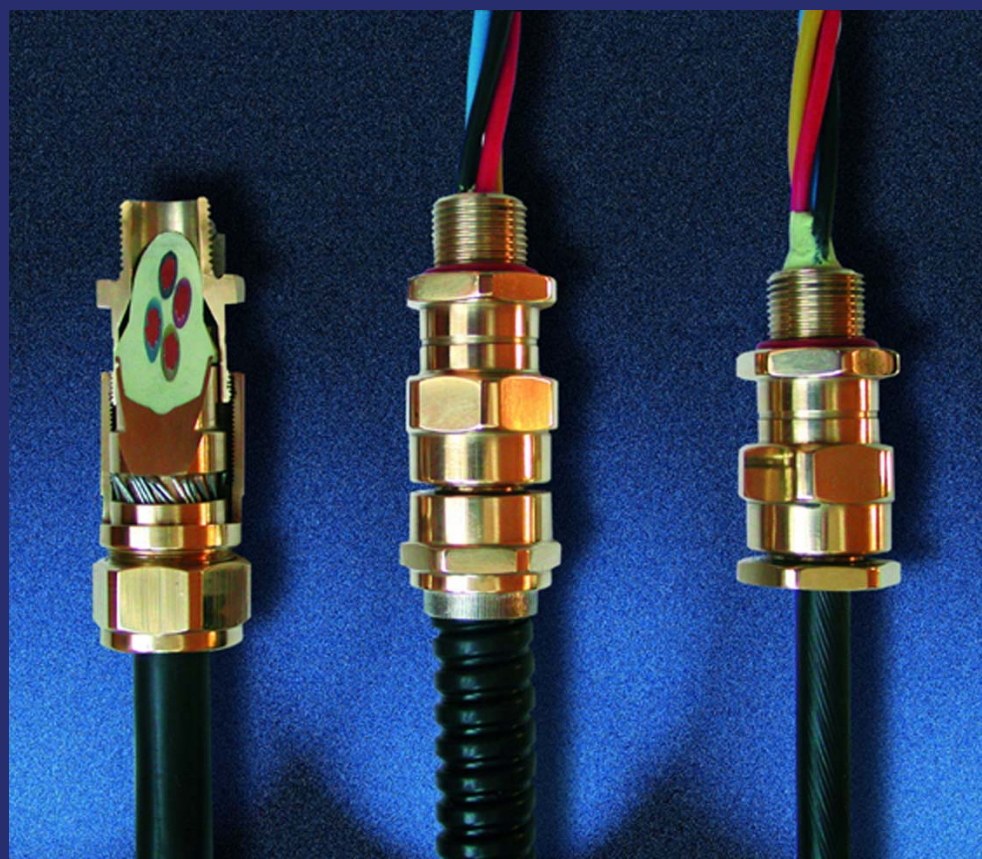


Peppers Cable Glands Limited



CR Series Barrier Glands

CR Series A New Concept In Barrier Gland Design





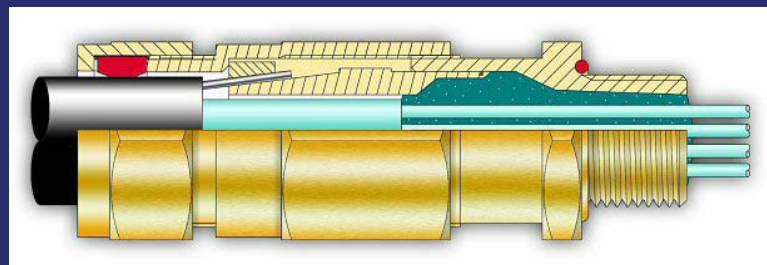
Peppers' Range

Gland Type	Outer Seal	Inner Seal	Armour clamp	Certification	IP Rating
ATEX / CSA / GOST Approved Barrier Glands					
CR-C	✓	Compound	Universal Croclock®	Exd	Deluge, IP66 68, NEMA 4X
CR-X	Compound	Compound	×	Exd	Deluge, IP66 68, NEMA 4X
CR-U	✓	Compound	×	Exd	Deluge, IP66 68, NEMA 4X
CR-S (Stopper Box)	×	Compound	×	Exd	Deluge, IP66 68, NEMA 4X



Peppers' Range

Type CR-C



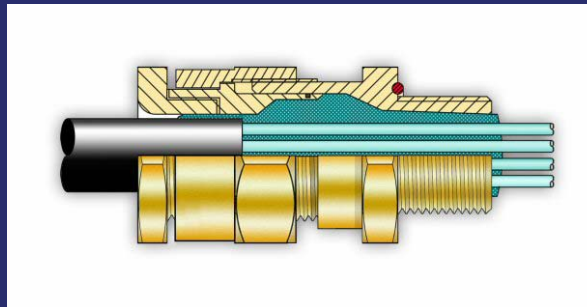
Featuring Peppers' single orientation universal armour clamp Croclock® and approved for use with the following types of cable:

- Steel Wire Armoured
- Steel Tape Armoured
- Pliable Wire Armoured
- Braided or Screened
- Unarmoured



Peppers' Range

Type CR-X



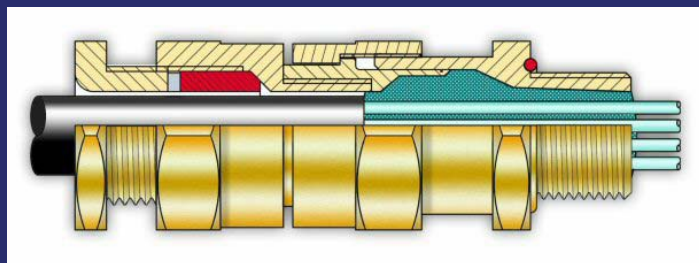
Approved for use with unarmoured cable, the minimalist design of CR-X provides:

- Minimum weight and gland protrusion
- Union assembly preventing cable twist
- Highly cost effective solution



Peppers' Range

Type CR-U



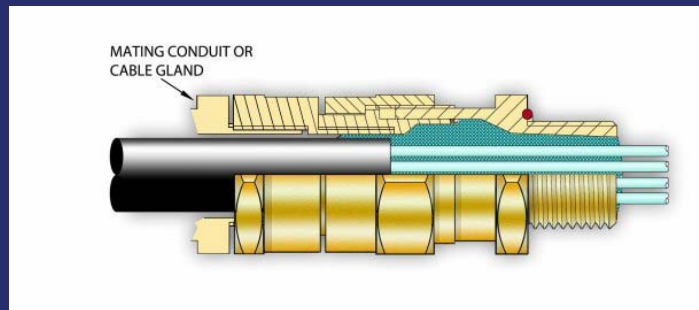
Approved for use with unarmoured cable, the design of CR-U provides:

- Union assembly preventing cable twist
- A secondary seal



Peppers' Range

Type CR-S, Compound Filled Stopper Box



Approved for use with conduit or industrial cable glands the design of CR-S provides:

- Union assembly preventing twist
- A female entry thread available in Metric, NPT, NPS, ISO Pipe (BSPP BSPT)
- An approved method for terminating unusual or exotic cables



Specification

APPROVALS

The range is approved to both the CENLEC EN50 014 and IEC 60079 series of standards:

ATEX IM2 II 2GD, E Ex d I & IIC

Notes:

GOST and CSA approval will be completed by mid-2004

A UL version is in the approval process with completion anticipated during 2004



Specification

INGRESS PROTECTION

The range features an integral 'O' ring seal removing the users need to provide additional sealing at the gland/equipment interface, maintaining:

- IP66
- IP68 to 100 meters
- DTS01 1991 (Deluge Proof)

Type CR-C features Peppers' integral Deluge Protection system ensuring that the integrity is maintained without:

- The risk of the seal being damaged when threads are run over it
- The need to fit the seal into the correct position during installation
- The risk of an elastomeric seal deteriorating in harsh environments



Specification

IMPACT RESISTANCE

The range has been approved for Group I (mining applications) as well as Group II (surface applications) requiring an impact resistance of:

- 20Nm

OPERATING TEMPERATURE

All elastomeric seals are LSOH silicone providing excellent performance characteristics over an extended operating temperature range of:

- -60°C to +85°C



Specification

MATERIALS

- Brass (nickel, zinc & electroless nickel plating available)
- 316 Stainless Steel

AVAILABLE ENTRY THREAD FORMS

- Metric
- NPT & NPS
- ISO Pipe (BSPP, BSPT)



Why Choose Peppers?

Development Programme

When the development programme began the design team had two main goals, to enhance safety and to be cost conscious

Safety

- Simple design using proven technology
- Easy assembly
- Fully Inspectable

Cost

- Reduce installation time
- Simple design
- Comprehensive range



Why Choose Peppers?

Compound Chamber

Our unique compound chamber uses the gland's entry component to extrude the putty and mould the seal. No additional components are required, simplifying the installation.

The design concept also offers 2 significant advantages:

- The compound seal is fully inspectable, enhancing the integrity of the final installation
- A cable acceptance that is on average 18% greater than existing barrier gland designs, allowing users to select smaller glands, smaller glands mean substantial cost reduction





Why Choose Peppers?

Compound

@ 21°C (a more realistic ambient than than the often quoted 25°C) Peppers' compound allows:

- The conductors to be disturbed and terminated after 1 hour
- The equipment to be energized after 4 hours
- The compound seal to be fully inspected after 4 hours



Why Choose Peppers?

EXPERIENCE

Peppers have manufactured and marketed our own range of cable glands for over 40 years and have an enviable reputation for delivering quality product along with the highest possible levels of customer service and flexibility.

SUPPLY

With the help of our distribution network, we are able to provide the global market with regular quantities of glands either from stock or within a matter of days, and project quantities within a just a few weeks.

QUALITY

To ensure consistent product quality Peppers work within a Quality Assurance System that is approved to ISO 9001:2000



Peppers Cable Glands Limited



Barrier Gland Assembly

Simple Assembly





Barrier Gland Assembly

Step 1

Prepare the cable as shown in the installation instructions

Slide the outer assembly along the cable

Slide cone under the cable armour

Pass the clamp ring over the cable armour





Barrier Gland Assembly

Step 2

Insert the entry component of the gland into the enclosure

Pass cable through the entry component

Draw up the mid cap by hand

Tighten with a spanner to lock the armour

Remove the cable from the entry component





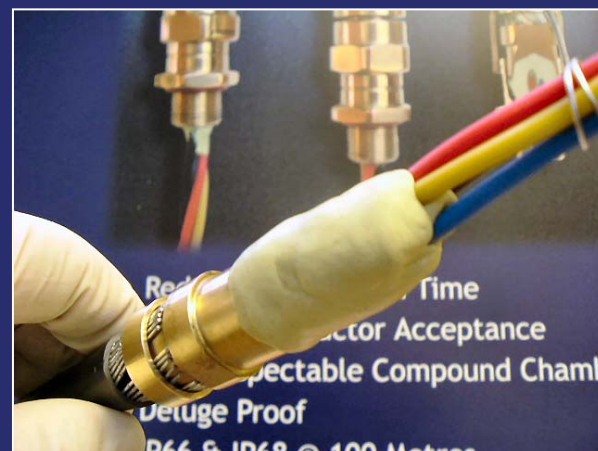
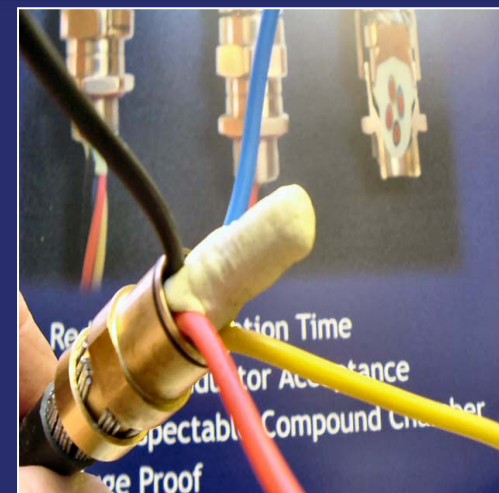
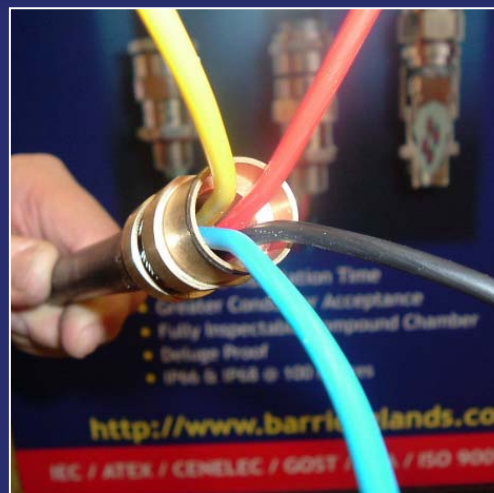
Barrier Gland Assembly

Step 3

Mix the putty until the colour is consistent (wearing the gloves provided)

Splay the conductors and insert a plug of putty into the centre creating a core

Pack the putty around the individual cores forming the basic seal





Barrier Gland Assembly

Step 4

Pass cable through the entry component and draw up the mid cap extruding the putty and moulding the seal

Remove any excess putty

Tighten down the outer seal





Barrier Gland Assembly

Step 5

@ 21°C

The conductors can be terminated after 1 hour

The equipment can be energized after 4 hours

The compound seal can be removed and fully inspected after 4 hours





Peppers Cable Glands Limited