

# EU RO Mutual Recognition Technical Requirements

<b>Cable glands</b>	Version	0.0
	Adoption Date:	01 January 2022
	Application Date:	01 July 2022
	Tier	9
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## 1. PRODUCT DESCRIPTION

### 1.a General description of the product

Cable glands are devices designed to permit the entry of a cable, flexible cable or insulated conductor into an enclosure, and which provides sealing and retention. It may also provide other functions such as earthing, bonding, insulation, cable guarding, strain relief or a combination of these.

### 1.b Application limitations<sup>†</sup>

- Cable glands for mineral insulated cables are not covered by these Technical Requirements;
- 'Ex' certification is not within the scope of these Technical Requirements. Equipment rated for use in explosive atmospheres will need separate IECEx certificate(s) issued by a notified body;

†The EU MR type approved product is generally not used as a stand-alone product, but integrated as component in a sub-system or system. When a product is presented with an EU RO MR Type Approval Certificate for given application, its acceptability with regards to conditions defined in 1b, 1c and 1d of this Technical Requirement will be evaluated by the EU RO in charge of classing the ship or being in charge of the unit/system certification.

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## **1.c Intended use**

For cable entrance into equipment subject to classification requirements.

## **1.d System context**

IEC 60092-101 requires that "Cable glands or bushings, or fittings for screwed conduits, shall be suitable for the intended cables and shall facilitate the cable entrance into the equipment. All cable entries shall maintain the degree of protection provided by the enclosure of the associated equipment."

## **2. DESIGN EVALUATION**

### **2.a Engineering evaluation requirements**

#### **2.a i. Technical Requirements**

- a) In general, the requirements of IEC 62444 shall be observed and used as guidance;
- b) Reliable performance shall be ensured under all conditions within the specifications of the cable gland;
- c) The design and specifications of the cable gland shall match or exceed the type testing requirements of 2.b below;
- d) The design and specifications of the cable gland shall match or exceed the environmental conditions in the location where it shall be installed with respect to temperature, humidity, vibration and enclosure. IACS Unified Requirements E10 shall be used as guidance. Depending on application, other environmental conditions such as UV resistance and resistance against certain chemicals may be relevant. Cable glands for use on open deck or in light fittings shall be UV resistant;
- e) For glands used in hazardous areas, testing and marking shall be as required according to IEC 60079-series Electrical apparatus for explosive gas atmospheres;
- f) Manufacturer's installation instructions shall be followed;
- g) Correct type of gland shall be selected for with respect to intended use and possible limitations.

#### **2.a.ii. Technical documents to be submitted**

**IMPORTANT: The English Language shall be used for all submitted documents.**

- a) product description;

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- b) drawing(s) of cable glands comprised by the type approval, showing construction
- c) references to design standards and specifications
- d) field of application
- e) specification of applied materials (gland and seal material)
- f) test results (from tests already carried out, if any, may be submitted for information)
- g) applicant's proposal to type tests
- h) documentation of reliability and endurance on board ships and mobile offshore units, if any
- i) installation instructions
- j) special operational limitations
- k) construction details:
- l) List of the glands covered by the type approval, giving the following information's for each variant (Classification according to IEC 62444):
  - 1) Material: metallic, non-metallic, composite;
  - 2) Mechanical properties non-armoured cable: anchorage Type A, anchorage Type B, retention only;
  - 3) Mechanical properties armoured cable: Anchorage Type C, Anchorage Type D;
  - 4) Impact category: Category 1, 2, 3, 4, 5, 6, 7, 8;
  - 5) Electrical properties:
    - a) equipotential bonding to enclosure,
    - b) equipotential bonding to metallic layer(s) of cable,
    - c) cable glands with connection to protective earth: Category A, B, C;
  - 6) Resistance to external influences:
    - a) IP code,
    - b) temperature range if different from -20°C to + 65°C,
    - c) resistance to ultraviolet light: resistant, not declared,
  - 7) Sealing system: with a single-orifice seal, with a multi-orifice seal;
  - 8) Seal material;
  - 9) Gland sizes [mm];
  - 10) For hazardous areas glands, Ex certificates from accredited laboratory.

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## 2.b Type testing requirements

Testing is divided into visual inspection, electrical/mechanical tests and environmental tests.

- a) By visual inspection it shall be verified that the test sample is in conformity with manufacturer's drawings and specifications;  
Relevant tests according to latest edition of IEC 62444 (currently Ed.1.0, 2010), depending on cable glands category:
- b) IEC 62444 9.1/9.2: Cable retention test  
(for glands declared in accordance with 6.2.1.3);
- c) IEC 62444 9.1/9.3: Cable anchorage test, non-armoured cable  
(for glands declared in accordance with 6.2.1.1 and 6.2.1.2);
- d) IEC 62444 9.5: Resistance to impact test;
- e) IEC 62444 9.6: Seal performance test;
- f) IEC 62444 10.1: Equipotential bonding to electrical equipment test  
(for glands declared in accordance with 6.3.1.1);
- g) IEC 62444 12.1: IP protection test, protection against solid materials and water;
- h) IEC 62444 12.2: Resistance to corrosion; (For indoor use. For outdoor use test according to item k) below is applicable.)
- i) IEC 62444 12.1: IP protection test, protection against solid materials and water;
- j) IEC 62444 12.2: Resistance to corrosion; (For indoor use. For outdoor use test according to item k) below is applicable.)
- k) IEC 62444 12.3: Resistance to ultraviolet light;
- l) IEC 62444 13.1: Resistance to abnormal heat test.  
Environmental tests according to the latest edition of IACS Unified Requirements E10 (currently Rev.7, 2018):
- m) IACS UR E10 Test No.12: Salt mist.

\* For further clarification of witnessing of tests and sampling the test specimen(s), refer to paragraphs 6, 7 and 8 of the EU RO "Design Evaluation Scheme" procedure (Appendix V of EU RO Framework Document for the Mutual Recognition of Type Approval found on <https://www.euomr.org/technical-requirements>)

## 2.c Type testing requirement for certificate renewal

- a) The manufacturer is to notify the RO of any modification or changes to the manufacturing specifications that may affect the MR TA to be renewed.

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## 3. PRODUCTION REQUIREMENTS

- a) Refer to EU RO "Product Quality Assurance (PQA)" procedure (Appendix VI of EU RO Framework Document for the Mutual Recognition of Type Approval) found on <https://www.euomr.org/technical-requirements>

## 4. MARKING REQUIREMENTS

Manufacturers of the approved equipment are, in principle, to mark the product before shipment for identification of approved equipment and, in addition, at least the following items to be marked at the suitable place:

- a) Manufacturer's name or equivalent;
- b) Type designation;
- c) Serial No. and date of manufacture;
- d) Particulars or ratings, including size and IP rating;
- e) For Ex-rated glands, marking according to IECEx certificate.

## 5. TYPE APPROVAL CERTIFICATE CONTENT

The EU RO MR Type Approval Certificate shall contain the minimum information as defined in the "EU RO Framework Document for the Mutual Recognition of Type Approval" - see Appendix I EU RO MR Type Approval Certificate Information.

The following information is specifically applicable to products relevant to this Technical Requirement and shall be included on the EU RO MR Type Approval Certificate:

- a) Size of cable gland;
- b) Material type of cable gland (metallic, non-metallic or composite);
- c) Thread type (metric or other);
- d) Mechanical properties (Non-armored cable retention or anchorage or armored cable anchorage);
- e) Impact category (1 to 8);
- f) Classification according to electrical properties (ref. IEC 62444 item 6.3);
- g) IP code according to IEC 60529;
- h) Ambient temperature range (if different from -20°C to at least 65°C);
- i) Resistance to UV light (yes or no).

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## 6. APPROVAL DATE AND REVISION NUMBER

Date	Revision	Comment
2021-07-01	0.0	Approved by EU RO MR Steering Committee

## 7. BACKGROUND INFORMATION / REFERENCES

- a) EU RO Framework Document for the Mutual Recognition of Type Approval;
- b) IEC 62444 "Cable glands for electrical installations";
- c) IACS Unified Requirements E10;
- d) IEC 60529 "Degrees of protection provided by enclosures (IP Code);
- e) IEC 60695-2-11 "Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products".

## 8. MAINTENANCE & CLARIFICATION OF TECHNICAL REQUIREMENTS

Anyone wishing to propose changes to this document or request clarification of technical issues should contact the EU RO MR Group Secretariat in the first instance:

[Secretariat@euomr.org](mailto:Secretariat@euomr.org).

Review and approval of change requests shall follow the EU RO MR Maintenance Process detailed in the EU RO Framework Document for the Mutual Recognition of Type

Approval: <https://www.euomr.org/technical-requirements>

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