

[1] **EC-TYPE EXAMINATION CERTIFICATE**



[2] **Equipment or Protective System intended for use
in potentially explosive atmospheres
Directive 94/9/EC**

[3] EC-Type Examination Certificate number:

CESI 00 ATEX 075

[4] **Equipment:** Sealed cable glands series FGAB for armoured cables and series FBF, FBN, FB for non-armoured cables.

[5] **Manufacturer:** EL.FIT S.p.A.

[6] **Address:** Via Aquileia 8, Villesse, Gorizia (Italy)

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[7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] CESI, notified body n. 0722 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n. EX-A0/042627.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + A1...A2 EN 50018: 2000 EN 50019:2000 EN 50281-1-1:1999

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

II 2 GD EEx d IIC EEx e II IP 66/67

This certificate may only be reproduced in its entirety and without any change, schedule included.

date December 22nd, 2000 - translation issued on December 22nd, 2000

prepared CERT - M. Balaz

approved CERT - U. Colombo

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[13]

Schedule

[14] **EC-TYPE EXAMINATION CERTIFICATE N. CESI 00 ATEX 075**

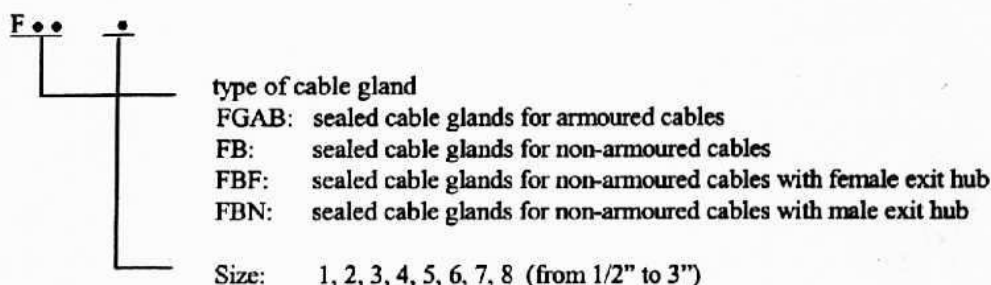
[15] **Description of equipment**

The cable glands series FGAB, FBF, FBN, FB are designed for the type of protection flameproof explosion EEx d IIC and for the type of protection increased safety EEx e II.

The cable glands of all the series above mentioned are also protected against the risk of explosion for the presence of combustible dusts according to the standard EN 50281-1-1.

The cable glands can be used in intrinsic safety EEx i circuits. In this case the cable glands have a part painted light blue.

The various types of cable glands are identified as follows:



Operating temperature range of cable glands: $-20 \div +80$ °C

Degree of protection

The cable glands subject of this certificate, when coupled with the enclosures as indicated in the documents annexed to this certificate, are in conformity with the specifications of the standard EN 60529 (1991) for the degree of protection IP 66 and IP 67.

The cable glands shall be coupled with the enclosures as indicated by the manufacturer in the documents annexed to this certificate in order not to jeopardise the type of protection of the electrical apparatus on which the cable glands are installed.

[16] **Report n. EX-A0/042627**

Routine tests

The manufacturer shall carry out the routine tests prescribed at clause 24 of the EN 50014 standard.

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[13]

Schedule

[14] **EC-TYPE EXAMINATION CERTIFICATE N. CESI 00 ATEX 075**

Descriptive documents (prot. EX-A0/042629)

- n° A4-689 Rev. 0 (5 p.)	dated 01.06.2000
- n° A4-687 Rev. 0	dated 01.06.2000
- n° A4-796 Rev. 0	dated 01.06.2000
- n° A4-797 Rev. 0	dated 01.06.2000
- n° A3-216 Rev. 0	dated 01.06.2000
- n° A3-225 Rev. 0	dated 01.06.2000
- n° A3-226 Rev. 0	dated 01.06.2000
- n° A3-227 Rev. 0	dated 01.06.2000
- n° A3-217 Rev. 0	dated 01.06.2000
- n° A3-218 Rev. 0	dated 01.06.2000
- n° A3-178 Rev. 0	dated 01.06.2000
- n° A4-690 Rev. 0	dated 01.06.2000
- n° A4-691 Rev. 0	dated 01.06.2000
- n° A4-692 Rev. 0	dated 01.06.2000
- n° A4-693 Rev. 0	dated 01.06.2000
- n° A4-694 Rev. 0	dated 01.06.2000
- n° A4-695 Rev. 0	dated 01.06.2000
- n° A4-697 Rev. 0	dated 01.06.2000
- n° A4-698 Rev. 0	dated 01.06.2000
- n° A4-699 Rev. 0	dated 01.06.2000
- n° A4-700 Rev. 0	dated 01.06.2000
- n° A4-701 Rev. 0	dated 01.06.2000
- n° A4-766 Rev. 0	dated 01.06.2000
- n° A4-767 Rev. 0	dated 01.06.2000
- n° A3-175 Rev. 0	dated 01.06.2000
- n° A3-176 Rev. 0	dated 01.06.2000
- n° A3-177 Rev. 0	dated 01.06.2000
- Mounting instructions Annexe A/15 Rev. 0 (4 p.)	dated 01.06.2000
- EC declaration of conformity n° CE/002	dated 08.08.2000

One copy of all documents is kept in CESI files.

[17] **Special conditions for safe use**

None.

[18] **Essential Health and Safety Requirements**

Covered by standards.

EXTENSION n. 01/02

to EC-Type Examination Certificate CESI 00 ATEX 075



Equipment: Sealed cable glands series FGAB for armoured cables and series FBF, FBN, FB for non-armoured cables.

Manufacturer: **EL.FIT S.p.A.**

Address: Via Aquileia 12, Villesse (Gorizia), Italy

Admitted variation

- modification of the conditions of installation of the cable glands on increased safety enclosures

Report n. EX-A2/011338

Descriptive documents (prot. EX-A2/011334)

- Technical note n° A4-689 rev. 1 (5 p.) dated 29.11.2001
- Drawing n° A4-796 rev. 1 dated 29.11.2001
- Drawing n° A4-797 rev. 1 dated 29.11.2001

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00 ATEX 075.

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date April 11th, 2002 - translation issued on April 11th, 2002

prepared CERT - M. Balaz

approved CERT - U. Colombo

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Prot. A2/011358 P: 1
Keywords 13010R 24030K 48010M 48020T 66540E

EXTENSION n. 02/05



to EC-Type Examination Certificate CESI 00 ATEX 075

Equipment: Sealed cable glands series FGAB for armoured cables and series FBF, FBN, FB for non-armoured cables.

Manufacturer: ELFIT S.p.A.

Address: Via Aquileia 12, Villesse, Gorizia (Italy)

Admitted variation

- Alternative service temperature from -40°C up to $+110^{\circ}\text{C}$ for new models FGABt for armoured cables and FBFt, FBNt, FBt for non-armoured cables.
- Added sealed cable glands with capillaries.
- Modification of same part codes (parts of cable glands).

The results of verifications and tests are reported in the confidential report EX-A5060533.

Identification and description of the equipment

The new models of sealed cable glands FGABt for armoured cables and FBFt, FBNt, FBt for non-armoured cables are made with new type of resin. The mounting of cables into gland and coating of resin can be made only by manufacturer due to the fact that resin requires a special polymerisation processing.

The service temperature of cable glands FGABt, FBFt, FBNt and FBt is $-40^{\circ}\text{C} \div +110^{\circ}\text{C}$.

The capillaries can be used only with cable glands size $\frac{1}{2}$ " and $\frac{3}{4}$ " type FB1, FB2, FBF1, FBF2, FBN1, FBN2 and type FBt1, FBt2, FBFt1, FBFt2, FBNt1, FBNt2. Inside of cable gland can be mounted from one to three capillaries (diameter 1,5 – 1,6 mm).

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00 ATEX 075.

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Date 23rd December 2005 translation issued on 23rd December 2005

Prepared CERT – M. Balaz

Approved CERT – U. Colombo

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EXTENSION n. 02/05

to EC-Type Examination Certificate CESI 00 ATEX 075

Descriptive documents (prot. EX-A5060536)

- n. A4-689 Rev. 02 (5 pg.)	dated	10.01.2005
- n. A4-1040 Rev. 0	dated	10.01.2005
- n. A4-1013 Rev. 0	dated	10.01.2005
- n. A4-690 Rev. 1	dated	13.06.2003
- n. A4-691 Rev. 1	dated	13.06.2003
- n. A4-692 Rev. 1	dated	13.06.2003
- n. A4-695 Rev. 1	dated	13.06.2003
- n. A4-699 Rev. 1	dated	13.06.2003
- n. A4-766 Rev. 1	dated	13.06.2003
- n. A4-767 Rev. 1	dated	13.06.2003
- n. A3-176 Rev. 1	dated	13.06.2003
- Technical sheets of resin (3 pg.)	dated	18.11.2005
- Safety instructions Annexe A/15 Rev. 1 (13 pg.)	dated	18.11.2005

One copy of the above mentioned documents is kept in CESI files.

Essential Health and Safety Requirements

Compliance with the Health and Safety Requirements has been assured by compliance with the following standards:

EN 50014: 1997 + A1..A2 – General requirements

EN 50018: 2000 + A1 - Flameproof enclosures "d"

EN 50019: 2000 – Increased safety "e"

EN50281-1-1: 1998 + A1 – Electrical apparatus for use in the presence of combustible dust. Part 1-1: Electrical apparatus protected by enclosures – Construction and testing.

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EXTENSION n. 03/07



to EC-Type Examination Certificate CESI 00ATEX 075

Equipment: Sealed cable glands for armoured cables series: FGAB
and for unarmoured cables series: FBF, FBN, FB.

Manufacturer: EL.FIT S.p.A.

Address: Via Aquileia 12, Villesse (GO)

Admitted variation


- Upgrade to EN 60079-0 (2006), EN 60079-1 (2004), EN 60079-7 (2003), EN 61241-0 (2006), EN 61241-1 (2004) Standards
- Upgrade of nameplate

Equipment identification

The cable glands type FGAB, FBF, FBN, FB, shall include the following markings:

 II 2GD Ex d IIC, Ex e II, Ex tD A21 IP66/67

The cable glands type FGABt, FB Ft, FBNt, Ft, shall include the following markings:

 II 2GD Ex d IIC, Ex e II, Ex tD A21 IP66/67 T-40

Operating temperature range of cables glands

Sealed cable glands type FGAB, FBF, FBN, FB: - 20 °C ÷ + 80 °C

Sealed cable glands type FGABt, FB Ft, FBNt, Ft: - 40 °C ÷ + 110 °C

The assembling of cables and coating resin into gland type. FGABt, FB Ft, FBNt, Ft, can be made only by manufacturer due to the special polymerisation process required

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00ATEX075.

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date 17/05/2007 - translation issued the 17/05/2007

prepared Sergio Mezzetti

verified Mirko Balaz

approved Fiorenzo Bregani

CESI

Centro Elettrotecnico Sperimentale Italiano
Giacinto Motta SpA

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EXTENSION n. 03/07

to EC-Type Examination Certificate CESI 00ATEX 075

Report n. EX-A7013662

Routine tests

The manufacturer shall carry out the routine tests prescribed at par. 27 of the EN 60079-0 (2006) and at par. 24 of the EN 61241-0 (2006) Standards.

Descriptive documents (prot. EX-A7013668)

- Technical Note A4-689 (4 pg.)	Rev. 03	dated	29/01/2007
- Drawing n°. A4-1040	Rev. 01	dated	06/04/2007
- Drawing n°. A4-1130	Rev. 00	dated	06/04/2007
- Drawing n°. A4-1131	Rev. 00	dated	06/04/2007
- EC Declaration of Conformity		dated	06/04/2007
- Safety Instruction A15 (13 pg.)	Rev. 02	dated	06/04/2007

One copy of all documents is kept in CESI files.

Essential Health and Safety Requirements

The Health and Safety Requirements are assured by compliance with the following Standards:

- EN 60079-0 : 2006: Electrical apparatus for explosive gas atmospheres.
General requirements
- EN 60079-1 : 2004 Flamoproof enclosures "d".
- EN 60079-7: 2003 Increased safety "e"
- EN 61241-0 : 2006 Electrical apparatus for use in the presence of combustible dust.
General requirements
- EN 61241-1 : 2004 Protection by enclosures "tD"

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**EXTENSION n. 04/14**

to EC-Type Examination Certificate CESI 00 ATEX 075X

Equipment: Sealed cable glands series **FGAB..** for armoured cables and series **FBF.., FBN.., FB..** for non-armoured cables.

Manufacturer: **EL.FIT S.p.A.**

Address: Via Aquileia, 12 – 34070 Villesse (GO) – Italy.

Admitted variation

- Update to new edition of EN 60079-0: 2012, EN 60079-1: 2007, EN 60079-7: 2007, EN 60079-31: 2009 standards.
- Update of marking.
- New service temperature range from -20°C up to +100°C.
- Special conditions for safe use (X) added.

Conformity to new edition of the harmonized European standard

The component subject of the certificate CESI 00 ATEX 075X and annexed extension are conform to the standards:

EN 60079-0: 2012 EN 60079-1: 2007 EN 60079-7: 2007 EN 60079-31: 2009

The components shall be marked as follows:

**II2GD**

**Ex d IIC Gb and Ex e IIC Gb and
Ex tb IIC Db
IP66/67**

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00 ATEX 075X.

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Date 29th May 2014 - translation issued the 29th May 2014

Prepared
Mirko Balaz

Approved
Fiorenzo Bregani

CESI S.p.A.
Testing & Certification Division
Business Area Certification
Responsabile
Fiorenzo Bregani

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PRD N. 018B
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC Signatory of EA, IAF and ILAC Mutual Recognition Agreements

CESI S.p.A.
Via Rubattino 54
I-20134 Milano - Italy
Tel: +39 02 21251
Fax: +39 02 21255440
e-mail: info@cesi.it
www.cesi.it

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EXTENSION n. 04/14

to EC-Type Examination Certificate CESI 00 ATEX 075X

Identification and description of the equipment

Sealed cable glands series **FB..** and **FGAB..** are similar to normal cable glands, except a filling compound material is used to seal and clamp the individual cores of the cable, to prevent the transmission of an accidental internal ignition to the outside of the enclosure of the equipment on which they are mounted.

The Sealed cable glands series **FB..** and **FGAB..** are suitable for inserting single cable or multiple circular cores into Ex-d enclosures having threaded entries and Ex-e or Ex-tb enclosures having either threaded or plane entries. Attachment of the glands to an enclosure is by means of the male threaded portion on the male body. An epoxy resin is used to facilitate sealing between the cores and gland body and to clamp the cables to prevent pulling or twisting forces being transmitted to the conductors connections. Ingress protection of IP66/67 is maintained when the glands are installed in accordance with the manufacturer's instructions.

The composition of Sealed cable gland series is as follow:

- Type **FB..** gland: Sealed cable gland for non armoured cable;
- Type **FBF..** gland: Sealed cable gland for non armoured cable with female hub at exit;
- Type **FBN..** gland: Sealed cable gland for non armoured cable with male hub at exit;
- Type **FGAB..** gland: Sealed cable gland for armoured cable.

The Sealed cable glands type **FB..** and **FGAB..** have an operating temperature range from -20°C up to +100°C, while the ambient temperature range of installation should be from -20°C up to +60°C.

The Sealed cable glands standard threads types are NPT ANSI/ASME B1.20.1 from 1/2" up to 3" and cylindrical ISO Metric 965/1 and ISO 965/3 from M20x1.5 up to M90x1.5. Alternative available tapered threads are ISO 7/1 while for cylindrical threads are ISO 228/1.

To guarantee the IP 66/67 degree of protection the Sealed cable glands series **FB..** and **FGAB..** with cylindrical threads have a silicon O-ring and for all other threads the IP 66/67 degree of protection is achieved with sealant put at least on two complete threads engaged of the threaded coupling.

The Sealed cable glands are generally made of Nickel plated brass. The alternative materials Galvanized Steel ASTM A203 or Stainless steel (type AISI316, AISI316L, AISI304 and AISI303) or Aluminium alloy can be supplied on demand.

Use of capillaries: Capillaries made of copper alloy are suitable for temperature and pressure closed measurement system only. They can be used with Sealed cable gland size 1/2" and 3/4" type FB1, FB2, FBF1, FBF2, FBN1 and FBN2. This mounting should be done only by the manufacturer.

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EXTENSION n. 04/14

to EC-Type Examination Certificate CESI 00 ATEX 075X

Identification of Sealed cable glands:

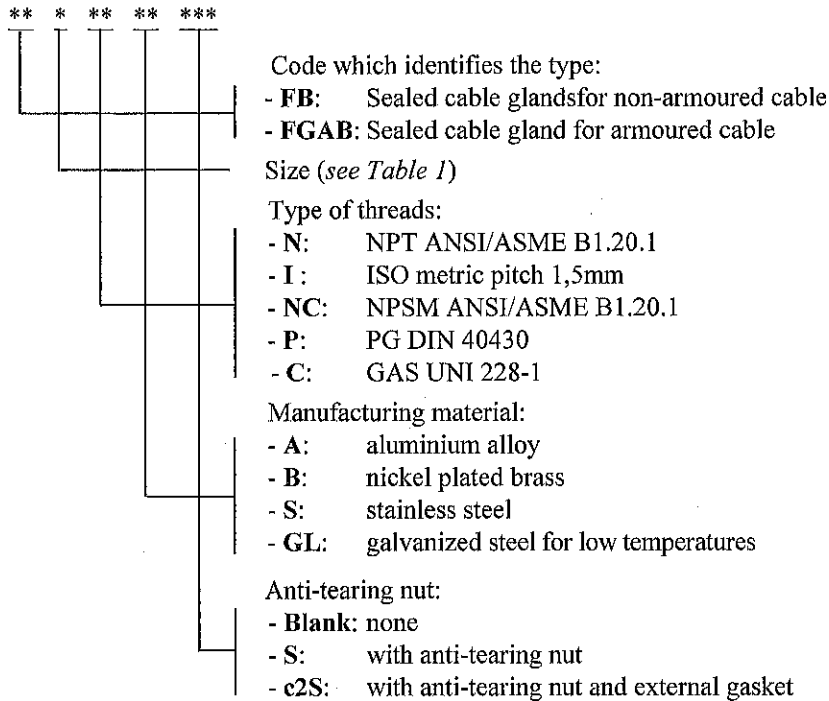


Table 1

Sealed cable glands type FB.. and FGAB..							
Size	Thread size		Cable characteristics				
	NPT	ISO pitch 1,5	Cable sheath dia. min. ÷ max.	Armour sheath dia. (for FGAB.. only) min. ÷ max.	Conductor size min. ÷ max. (mm ²)	Max. over core dia. (mm)	Max. No. of cores allowed (*)
1	1/2"	M 20	5 ÷ 13	8 ÷ 18	1,0 ÷ 35,0	11,6	7
2	3/4"	M 25	11 ÷ 18	17 - 25	1,5 ÷ 70,0	16,1	12
3	1"	M 32	17 ÷ 24	23 ÷ 32	1,5 ÷ 150,0	21,5	27
4	1 ¼"	M 40	23 ÷ 30	29 ÷ 39	1,5 ÷ 400,0	26,8	37
5	1 ½"	M 50	29 ÷ 38	36 ÷ 46	50,0 ÷ 630,0	34,0	4
6	2"	M 63	36 ÷ 49	44 ÷ 60	50,0 ÷ 630,0	43,8	5
7	2 ½"	M 75	44 ÷ 61	51 ÷ 70	150,0 ÷ 630,0	54,6	4
8	3"	M 90	59 ÷ 74	65 ÷ 84	240,0 ÷ 300,0	66,2	4

(*) – For Conductor size - Max. No. of cores limits relationship details, referring to the manufacturer's documents.

EXTENSION n. 04/14

to EC-Type Examination Certificate CESI 00 ATEX 075X

Report n. EX- B4013400

Routine tests

None.

Descriptive documents (prot. EX- B4013404)

- Technical note A4-689 (pg. 4)	rev.4	dated	2014.01.23
- Mounting Instruction A15 (pg. 12)	rev.3	dated	2014.01.23
- Fac simile declaration of conformity no. 0166 (pg. 1)		dated	2014.01.23
- Drawing no. A3-227 (1 sheet)	rev.1	dated	2014.01.23
- Drawing A4-4952 (pg. 1)	rev.2	dated	2013.01.29
- Drawing A4-5404 (pg. 1)	rev.1	dated	2013.01.29
- Epoxy resin RAIVER Italia BOND 157.4 Technical schedule (pg. 2)		dated	2014.01.23

One copy of all documents is kept in CESI files.

Special conditions for safe use (X)

With the updating to the new standards the following special condition for safe use are added; moreover the X suffix is added to the certificate number and beginning from this extension it becomes CESI 00 ATEX 075X.

- The coupling of the Sealed cable glands with the enclosures shall be made as indicated by the manufacturer in the documents annexed to this certificate in order to respect the type of protection of the electrical apparatus on which Sealed cable glands are mounted.
- The Sealed cable glands shall be mounted at the electrical apparatus in such a way that accidental rotation and loosening will be prevented.
- When the cores will be fitted inside the sealing ring by filling compound, the mounting should guarantee a sufficient quantity of compound around each single core to ensure the clamping of the cemented joint. This shall be done as indicated in the manufacturer instruction.
- The Sealed cable glands should be installed within the following service temperature range:
 - from - 20°C up to +100°C.
- The degree of protection IP 66/67 according to the IEC 60529 standard will be guaranteed for the Sealed cable glands if the holes into which Sealed cable glands are mounted are suitably sealed. To this scope the correct positioning of the flat washer (for cylindrical threads) or the application of sealant on the threads (for tapered threads), shall be done as indicated in the manufacturer instruction.

Essential Health and Safety Requirements

The Essential Health and Safety Requirements are assured by compliance to the following standards:

EN 60079-0: 2012	Explosive atmospheres – Part 0: Equipment - General requirements;
EN 60079-1: 2007	Explosive atmospheres – Part 1: Equipment protection by flameproof enclosure “d”;
EN 60079-7: 2007	Explosive atmospheres – Part 7: Equipment protection by increased safety “e”.
EN 60079-31: 2009	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure “t”.

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