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Translation

EC-Type Examination Certificate



Equipment and protective systems intended (2)for use in potentially explosive atmospheres - Directive 94/9/EC



EC-Type Examination Certificate Number (3)

TÜV 05 ATEX 2799 X

Capacitive measuring probe type VEGACAL CL6*.D **HD** Equipment: (4)

Manufacturer: **VEGA Grieshaber KG** (5)

Address: Am Hohenstein 113 (6)

D-77761 Schiltach

- (7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- The TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Certification Body, notified body number (8)N° 0032 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), 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 the confidential report N° 05 YEX 552075

Compliance with the Essential Health and Safety Requirements has been assured by (9)compliance with:

EN 50 014:1997 + A1 + A2 EN 50 018:2000 + A1 EN 50 020:2002 EN 50 284:1999

- (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 in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment or protective system must include the following:

 $\langle \varepsilon_{\times} \rangle$ II 1/2 G or II 2 G EEx d ia IIC T6

TÜV NORD CERT GmbH & Co. KG

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Head of the **Certification Body** Hanover, 2005-04-20



(13) SCHEDULE

(14) EC-Type Examination Certificate N° TÜV 05 ATEX 2799 X

(15) Description of equipment

The capacitive measuring probes type VEGACAL CL6*.D_**HD** are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The capacitive measuring probes type VEGACAL CL6*.D_**HD* consist of an electronic housing for the barriers with an Ex-d connection room, an Ex-i connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

Mechanical execution of the capacitive measuring probes:

type	electrodes
CL62.D_**HD**	partly insulated electrode, optionally with screening tube or concentric tube
CL63.D_**HD**	fully insulated electrode, optionally plated
CL64.D_**HD**	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65.D_**HD**	partly insulated cable electrode optionally with additionally insulated cable
CL66.D_**HD**	fully insulated cable electrode

If the capacitive measuring probes are mounted in the partition wall between explosion hazardous areas which require apparatus of the category 1 (electrode) and category 2 (electronics), the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

temperature class	ambient temperature	medium temperature
	range	range
T6	-40°C +57 °C	-20°C +60 °C
T5, T4, T3, T2, T1	-40°C +68 °C	-20°C +60 °C

The electrodes of the capacitive measuring probes are allowed to be operated in an explosion hazardous area, that requires apparatus of the category 1, only if atmospheric conditions exist (pressure from 0.8 bar to 1.1 bar).

If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.



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If the capacitive measuring probes are mounted in explosion hazardous areas which require apparatus of the <u>category 2</u> the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

temperature class	ambient temperature range	medium temperature range for electrodes with PE/PA-insulation	medium temperature range for other electrodes
T6	- 40°C + 57°C	- 40°C + 80°C	-50°C +85 °C
T5	- 40°C + 68°C	- 40°C + 80°C	-50°C +100 °C
T4	- 40°C + 68°C	- 40°C + 80°C	-50°C +135 °C
T3*, T2*, T1*	- 40°C + 68°C	- 40°C + 80°C	-50°C +150 °C

^{*} with temperature adapter for medium temperatures > 150°C ... 200°C

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

Electrical data

Supply and signal circuit (Terminals KI1/1, KI1/2; "d"-connection room)

U = 12 ... 36V $U_m = 253 V a. c.$

PA terminal of the capacitive measuring probe with barrier P2-2LH (Screw terminal)

Connection to the potential equalisation in the explosion hazardous area

Operation and indication circuit (Terminals 5, 6, 7, 8 resp. plug connection in the "i"-connection room)

in type of protection "Intrinsic Safety "EEx ia IIC only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 (PTB 02 ATEX 2136 X)

The interconnection of the both intrinsically safe circuits was taken into account.

maximum values of the connection cable:

 $C_o = 2.4 \mu F$ $L_o = 160 \mu H$

Operation and indication module circuit (Spring contacts in the "i"connection room) in type of protection "Intrinsic Safety" EEx ia IIC only for connection to the VEGA operation and indication module (Plicscom)



Schedule EC-Type Examination Certificate Nº TÜV 05 ATEX 2799 X

Communication circuit (I²C bus in the "i"-connection room)

in type of protection "Intrinsic Safety" EEx ia IIC only for connection to the intrinsically safe signal circuit of the VEGA interface converter type VEGACONNECT3 (PTB 01 ATEX 2007)

The VEGA interface converter may only be operated together with the capacitive measuring probe, if no explosion hazardous atmosphere exists.

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier KLEMMP2-2LHD are safe galvanically separated from the non intrinsically safe supply and signal circuit and the parts which can be earthed.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier P2-2LH are galvanically connected with the earth potential (measuring circuit excluded).

- (16) The Test documents are listed in the test report N° 05 YEX 552075.
- (17) Special conditions for safe use
 - At the plastic parts of the capacitive measuring probes type VEGACAL CL6*.C_**HD**
 there is a danger of ignition by electrostatic discharge. Observe manual of the
 manufacturer and warning label.
 - 2. For category 1/category 2 applications, at the metallic electrode parts of the capacitive measuring probes type VEGACAL CL6*.C_**HD** made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
 - For category 1/category 2 applications and at risks by pendulum or vibration the respective parts of the capacitive measuring probes type capacitive measuring probes type VEGACAL CL65.D_**HD** and type VEGACAL CL66.D_**HD** have to be secured effectively against these dangers.
 - 4. For category 1/category 2 applications the medium tangent materials have to be resistant to the media.
 - 5. The PA terminal of the capacitive measuring probes with the barrier P2-2LH (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area. Since the intrinsically safe circuits are galvanically connected with the earth potential, potential compensation has to exist in the complete course of the erection of the intrinsically safe operation and indication circuit.



Schedule EC-Type Examination Certificate N° TÜV 05 ATEX 2799 X

- 6. The flameproof terminal housing shall be connected by means of suitable cable entries resp. conduit systems, which meet the requirements of EN 50 018, sections 13.1 and 13.2, and for which a separate test certificate is available.
- 7. Cable entries as well as sealing plugs of simple construction shall not be used. For connection of the flameproof terminal housing by means of an approved conduit entry the associated sealing facility must be arranged directly on the enclosure.
- 8. Non-used openings shall be sealed according to EN 50 018, section 11.9.
- (18) Essential Health and Safety Requirements

no additional ones



1. SUPPLEMENT

to Certificate No.

TÜV 05 ATEX 2799 X

Equipment:

Capacitive measuring probe type VEGACAL CL6*.D_**HD**

Manufacturer:

VEGA Grieshaber KG

Address:

Am Hohenstein 113 D-77761 Schiltach

Order number:

8000553042

Date of issue:

2006-07-03

In the future, the capacitive measuring probes type VEGACAL CL6*.C **H** are allowed to be manufactured according to the documents listed in the test report.

The changes refer to the mechanical and electrical construction of the measuring probes as well as to the electrical data for the intrinsically safe circuits.

Mechanical execution of the measuring probes

Туре	Electrodes		
CL62.D_**HD**	partly insulated electrode, optionally with screening tube or concentric tube		
CL63.D_**HD**	fully insulated electrode, optionally plated		
CL64.D_**HD**	fully insulated electrode, optionally with screening tube, concentric tube or plated		
CL65.D_**HD**	partly insulated cable electrode optionally with additionally insulated cable		
CL66.D_**HD**	fully insulated cable electrode		
CL69.D_**HD**	fully insulated 2-rod electrode		

Electrical data

Operation and indication circuit (Terminals 5, 6, 7, 8 or plug connection in the "i"-connection room)

in type of protection "Intrinsic Safety"

EEx ia IIC

only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 (PTB 02 ATEX 2136 X)

The interconnection of the both intrinsically safe circuits was taken into account.

maximum values of the connection cable:

 C_{\circ} = 2.4 uF = 160 μH

Communication circuit (I²C bus in the "i"-connection room))

in type of protection "Intrinsic Safety"

EEx ia IIC

only for connection to the intrinsically safe signal circuit of the VEGA interface converter type VEGACONNECT 3 (PTB 01 ATEX 2007)



1. Supplement to Certificate No. TÜV 05 ATEX 2799 X

- the VEGA interface converter type VEGACONNECT 3 and
- the external VEGA indication unit type VEGADIS61

are connected, the following maximum values of the connection cable to the VEGADIS61 do result:

$$C_o = 2.8 \mu F$$

 $L_o = 100 \mu H$

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier KLEMMP2-2LHD are safe galvanically separated from the non intrinsically safe supply and signal circuit and the parts which can be earthed.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier P2-2LH are galvanically connected with the earth potential (measuring circuit excluded).

All other details as well as the "Special conditions for safe" use apply unchanged for this supplement.

The equipment incl. of this supplement meets the requirements of these standards:

EN 50 014:1997+A1+A2

EN 50 018:2000+A1

EN 50 020:2002

EN 50 284:1999

- (16) The test documents are listed in the test report No. 06 YEX 553040.
- (17) Special conditions for safe use

no changes

(18) Essential Health and Safety Requirements

no additional ones

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The head of the certification body

Schwedt

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Address:

2. SUPPLEMENT

to Certificate No. **TÜV 05 ATEX 2799 X**

Capacitive measuring probes Equipment:

type VEGACAL CL6*.D****HD***

Manufacturer: VEGA Grieshaber KG Am Hohenstein 113

D-77761 Schiltach

Order number: 8000554576

Date of issue: 2008-07-04

In the future, the capacitive measuring probes type VEGACAL CL6*.D_**HD** are also allowed to be manufactured according to the documents listed in the test report.

The changes refer to the type designation, the mechanical and electrical construction and the marking.

Mechanical execution of the measuring probes

Туре	Electrodes
CL62.D****HD***	partly insulated electrode, optionally with screening tube or concentric tube
CL63.D****HD***	fully insulated electrode, optionally plated
CL64.D****HD***	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65.D****HD***	partly insulated cable electrode optionally with additionally insulated cable
CL66.D****HD***	fully insulated cable electrode
CL69.D****HD***	fully insulated 2-rod electrode

Electrical data

Operation and indication circuit (Terminals 5, 6, 7, 8 resp. plug

connection in the "i"-connection room)

in type of protection "Intrinsic Safety "Ex ia IIC only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61

(PTB 02 ATEX 2136 X)

The interconnection of the both intrinsically safe circuits was

taken into account.

maximum values of the connection cable:

 $C_0 = 2.4 \mu F$ $= 160 \mu H$

Operation and indication module circuit ... (Spring contacts in the "i"-connection

room)

in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the VEGA operation and indication module (Plicscom)



2. Supplement to Certificate No. TÜV 05 ATEX 2799 X

in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the intrinsically safe signal circuit of the VEGA interface converter type VEGACONNECT (PTB 01 ATEX 2007 or PTB 07 ATEX 2013 X)

lf

- the VEGA interface converter type VEGACONNECT and
- the external VEGA indication unit type VEGADIS61

are connected, the following maximum values of the connection cable to the VEGADIS61 do result:

$$C_o = 2.8 \mu F$$

 $L_o = 100 \mu H$

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier KLEMMP2-2LHD are safe galvanically separated from the non intrinsically safe supply and signal circuit and the parts which can be earthed.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier P2-2LH are galvanically connected with the earth potential (measuring circuit excluded).

All other details apply unchanged for this supplement.

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2006 EN 60079-26:2004 EN 60079-1:2004

EN 60079-11:2007

(16) The test documents are listed in the test report No. 08 203 554576.



(17) Special conditions for safe use

- At the plastic parts of the capacitive measuring probes type VEGACAL CL6*.D****HD***
 there is a danger of ignition by electrostatic discharge. Observe manual of the
 manufacturer and warning label.
- 2. For category 1/category 2 applications, at the metallic electrode parts of the capacitive measuring probes type VEGACAL CL6*.D****HD*** made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
- 3. For category 1/category 2 applications and at risks by pendulum or vibration the respective parts of the capacitive measuring probes type capacitive measuring probes type VEGACAL CL65.D****HD*** and type VEGACAL CL66.D****HD*** have to be secured effectively against these dangers.
- 4. For category 1/category 2 applications the medium tangent materials have to be resistant to the media.
- 5. The PA terminal of the capacitive measuring probes with the barrier P2-2LH (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area. Since the intrinsically safe circuits are galvanically connected with the earth potential, potential compensation has to exist in the complete course of the erection of the intrinsically safe operation and indication circuit.
- 6. The flameproof terminal housing shall be connected by means of suitable cable entries resp. conduit systems, which meet the requirements of EN 60079-1, sections 13.1 and 13.2, and for which a separate test certificate is available.
- 7. Cable entries as well as sealing plugs of simple construction shall not be used. For connection of the flameproof terminal housing by means of an approved conduit entry the associated sealing facility must be arranged directly on the enclosure.
- 8. Non-used openings shall be sealed according to EN 60079-1, section 11.9.

(18) Essential Health and Safety Requirements

no additional ones

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The head of the certification body

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3. SUPPLEMENT

to Certificate No. TÜV 05 ATEX 2767 X

Equipment: Capacitive measuring probe

type VEGACAL CL6*.D****HD****

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113

77761 Schiltach

Order number: 8000555745

Date of issue: 2010-04-20

In the future, the capacitive measuring probes type VEGACAL CL6*.D****H**** are also allowed to be manufactured according to the documents listed in the test report.

The changes refer to

- the mechanical execution (new temperature adapter, new execution of the cable electrode),

- the construction of the capacitive measuring probes (Ex-d connection housing according ton EC Type examination certificate TÜV 09 ATEX 555501 U exclusively with the galvanically separating barrier P3-2LH; intrinsically safe part according to EC Type examination certificate TÜV 05 ATEX 552767 X, 3rd supplement),
- the tables for the temperature ranges
- the electrical data.
- the "Special conditions for safe use" and
- the marking.

This reads as follows:

II 1/2 G or II 2 G Ex d ia IIC Tx Ga/Gb or Gb (Tx: See tables below).

If the capacitive measuring probes are mounted in the partition wall between explosion hazardous areas which require apparatus of the <u>category 1 (electrode)</u> and <u>category 2 (electronics)</u>, the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature	Medium	
	range	temperature range	
T6	-40°C +54 °C	-20°C +60 °C	
T5, T4, T3, T2, T1	-40°C +60 °C	-20°C +60 °C	

The electrodes of the capacitive measuring probes are allowed to be operated in an explosion hazardous area, that requires apparatus of the category 1, only if atmospheric conditions exist (pressure from 0.8 bar to 1.1 bar).

If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.



If the capacitive measuring probes are mounted in explosion hazardous areas which require apparatus of the <u>category 2</u> the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range	Medium temperature range for electrodes with PE/PA-insulation	Medium temperature range for other electrodes
T6	- 40°C + 54°C	- 40°C + 80°C	-50°C +85 °C
T5	- 40°C + 60°C	- 40°C + 80°C	-50°C +100 °C
T4	- 40°C + 60°C	- 40°C + 80°C	-50°C +135 °C
T3*, T2*, T1*	- 40°C + 60°C	- 40°C + 80°C	-50°C +150 °C

^{*} with temperature adapter for medium temperatures > 150°C ... 200°C

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

Electrical data

With Barrier P3-2LH in the Ex-d-connection room

Supply and signal circuit $U = 14 \dots 36 \quad V \text{ d. c.}$ (Terminals 1[+], 2[-] $U_m = 253 \qquad V \text{ a. c.}$ in the Ex-d connection room)

in type of protection "Intrinsic Safety"

Ex ia IIC

only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 (PTB 02 ATEX 2136 X)

The interconnection of the both intrinsically safe circuits was taken into account.

maximum values of the connection cable:

 $C_o = 2,4 \mu F$ $L_o = 160 \mu H$



3. Supplement to Certificate No. TÜV 05 ATEX 2799 X

Communication circuit		
(I2C bus in the "i" connection room))	

in type of protection "Intrinsic Safety"

Ex ia IIC

only for connection to the intrinsically safe signal circuit of the VEGA interface converter type VEGACONNECT (PTB 01 ATEX 2007 or PTB 07 ATEX 2013 X)

If

- the VEGA interface converter type VEGACONNECT and
- the external VEGA indication unit type VEGADIS61

are connected, the following maximum values of the connection cable to the VEGADIS61 do result:

$$C_o = 2.8 \mu F$$

 $L_o = 100 \mu H$

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

Operation

and indication module circuit (Spring contacts in the housing for the electronics and additionally in the terminal housing in the execution with the 2 cell housing)

in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the VEGA operation and indication module (Plicscom)

In the execution with the 2 cell housing the VEGA operation and indication module may only be implemented either in the housing for the electronics or in the terminal housing.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier P3-2LH are safe galvanically separated from the non intrinsically safe supply and signal circuit and the parts which can be earthed.

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2009 EN 60079-26:2007 EN 60079-1:2004

EN 60079-11:2007

All other details remain unchanged.

(16) The test documents are listed in the test report No. 10 203 555745.



(17) Special conditions for safe use

- 1. At the plastic parts of the capacitive measuring probes type VEGACAL CL6*.D****HD*** there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.
- 2. For category 1/category 2 applications, at the metallic electrode parts of the capacitive measuring probes type VEGACAL CL6*.D****HD*** made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
- 3. For category 1/category 2 applications and at risks by pendulum or vibration the respective parts of the capacitive measuring probes type capacitive measuring probes type VEGACAL CL65.D****HD*** und type VEGACAL CL66.D****HD*** have to be secured effectively against these dangers.
- 4. For category 1/category 2 applications the medium tangent materials have to be resistant to the media.
- 5. The flameproof terminal housing shall be connected by means of suitable cable entries resp. conduit systems, which meet the requirements of EN 60079-1, sections 13.1 and 13.2, and for which a separate test certificate is available.
- 6. Non-used openings shall be sealed according to EN 60079-1, section 11.9.
 - (18) Essential Health and Safety Requirements no additional ones

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4. SUPPLEMENT

to Certificate No.

TÜV 05 ATEX 2799 X

Equipment:

Capacitive measuring probe

type VEGACAL CL6* D****H****

Manufacturer:

VEGA Grieshaber KG

Address:

Am Hohenstein 113

77761 Schiltach

Order number:

8000393985

Date of issue:

2011-07-20

In the future, the capacitive measuring probes type VEGACAL CL6*.D****HD*** are also allowed to be manufactured according to the documents listed in the test report.

The changes refer to

- the mechanical execution (material of the insulating bushing, execution of the sealing between cable insulation and the tightening weight),

the construction of the capacitive measuring probes (Ex-d connection housing according to EC-Type Examination Certificate TÜV 09 ATEX 555501 U, 1st and 2nd supplement with new Ex-dbushing and galvanically separating barrier P3-2LH) and

- the type designation.

In the future, this reads VEGACAL CL6*.D****H****.

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2009

EN 60079-1:2007

EN 60079-11:2007

EN 60079-26:2007

All other details remain unchanged.

(16) The test documents are listed in the test report No. 11 203 080449.

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(17) Special conditions for safe use

- 1. At the plastic parts of the capacitive measuring probes type VEGACAL CL6*.D****H**** there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.
- 2. For category 1/category 2 applications, at the metallic electrode parts of the capacitive measuring probes type VEGACAL CL6*.D****H**** made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
- 3. For category 1/category 2 applications and at risks by pendulum or vibration the respective parts of the capacitive measuring probes type capacitive measuring probes type VEGACAL CL65.D****H**** und type VEGACAL CL66.D****H**** have to be secured effectively against these dangers.
- 4. For category 1/category 2 applications the medium tangent materials have to be resistant to the media.
- 5. The flameproof terminal housing shall be connected by means of suitable cable entries resp. conduit systems, which meet the requirements of EN 60079-1, sections 13.1 and 13.2, and for which a separate test certificate is available.
- 6. Non-used openings shall be sealed according to EN 60079-1, section 11.9.

(18) Essential Health and Safety Requirements no additional ones

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