

**ELECTRICAL APPARATUS FOR POTENTIAL EXPLOSIVE
ATMOSPHERES AS FLAMMABLE GASES AND VAPORS**

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1 – PURPOSE

This document establishes the supplementary criteria of the “Rules of Product Certification“ RC-002 to grant and maintain the license for using the SBAC Compliance Mark.

2 – APPLICATION

Applicable to all companies in the segment as manufactures or importers, of electrical apparatus for potential explosive atmospheres of gases and inflammable vapors – which request the granting of license for using the SBAC Compliance Mark.

3 – COMPLEMENTARY DOCUMENTS

3.1 General Requirements

ABNT NBR IEC 60079-6:2009 Electrical apparatus for explosive gas atmospheres
Part 0: General requirements.

3.2 Flameproof Enclosures

ABNT NBR IEC 60079-1:2009 Electrical apparatus for explosive gas atmospheres
Part 1: Flameproof enclosures “d”.

3.3 Intrinsically Safe Apparatus

ABNT NBR IEC 60079-11:2009 Explosive atmospheres
Part 11: Equipment protection by intrinsic safety “i”.

IEC 60079-11:1999 Electrical apparatus for explosive gas atmospheres
Part 11: Intrinsic safety “i”.

IEC 60079-25: 2003 Electrical apparatus for explosive gas atmospheres
Part 25: Intrinsically safe systems.

ABNT NBR IEC 60079-27:2006 Electrical apparatus for explosive gas atmospheres
Part 27: Fieldbus intrinsically safe concept (FISCO) and Fieldbus non-incendive concept (FNICO)

3.4 Increased Safety Apparatus

ABNT NBR IEC 60079-7:2008 Explosive atmospheres
Part 7: Equipment protection by increased safety.

3.5 Pressurized Apparatus

ABNT NBR IEC 60079-2:2009 Electrical apparatus for explosive gas atmospheres
Part 2: Pressurized enclosures “p”.

3.6 Oil Immersed Apparatus

ABNT NBR IEC 60079-6:2009 Electrical apparatus for explosive gas atmospheres
Part 6.: Oil-immersion o”.

3.7 Powder Filling Apparatus

ABTN NBR IEC 60079-5:2006

Electrical apparatus for explosive gas atmospheres
Part 5: Powder filling q".

3.8 Non Incendive Apparatus

ABNT NBR IEC 60079-15:2007

Electrical apparatus for explosive gas atmospheres
Part 15: Type of protection "n".

3.9 Encapsulated Apparatus

IEC 60079-18:1992

Electrical apparatus for explosive gas atmospheres
Part 18: Construction, test and marking of type of protection
encapsulation "m" electrical apparatus.

ABNT NBR IEC 60079-18:2007

Electrical apparatus for explosive gas atmospheres
Part 18: Construction, test and marking of type of protection
encapsulation "m" electrical apparatus.

3.10 Protection Level

ABNT NBR IEC 60079-26:2008

Explosive atmospheres
Part 26: Equipment with equipment protection level (EPL) Ga

3.11 Degree of Protection Provided by Enclosures

ABNT NBR IEC 60529:2005

Degrees of protection provided by enclosures
(IP Code).

ABNT NBR IEC 60034-5:2009

Rotating electrical machines – Part 5: Degrees of protection
provided by the integral design of rotating electrical machines (IP
Code) - Classification.

3.12 Assessment of the Quality Management System

NBR ISO 9001:2000

Quality management systems – Requirements.

3.13 Terminology

NBR NM IEC 60050-426:2002

Electrical apparatus for explosive atmospheres
Terminology.

3.14 Installations

ABNT NBR IEC 60079-14: 2008

Explosive atmospheres
Part 14: Electrical installations design, selection and erection.

ABNT NBR 14639: 2001

Point of Service – Electrical installations.

3.15 Legal Document

Procedure for compliance assessment for electrical apparatus in potentially explosive flammable gases and vapors atmospheres – Law n°. 83 from April 3rd, 2006.

Notes:

- 1) Upon publication of the Norma Técnica Brasileira – NBR (Brazilian Technical Standard) (NBR IEC or NBR NM) revised and related to the IEC Standard referred to in this item, this Brazilian Technical Standard will become applicable superseding the IEC equivalent Standard mentioned herein.
- 2) Apparatus manufactured based on the last version of IEC Standard shall be certified according to this Procedure and any deviation shall be validated by the Certification Committee of TÜV.

4 – CERTIFICATION OF ELECTRICAL APPARATUSES MANUFACTURED ABROAD

4.1. General

4.1.1. Electrical apparatuses manufactured abroad must meet this Requirement. Special situations are foreseen in A-2.

4.1.2. When required, the activities performed abroad must be complemented under TÜV's responsibility.

4.2. Special situations

4.2.1. It is defined as "special situation" the instances described below:

- a) electrical apparatuses or electrical components that make part of skid mounted machines, apparatuses or installations;
- b) batches of up to 25 (twenty five) units covered by the same certificate.

4.2.2. The certification within SBAC's scope is compulsory for the following apparatuses and components: installation accessories, lighting fixtures, flashlights, projectors, empty enclosures, junction boxes, solenoid valves, signaling and command components and motors (except for Ex d motors certified for use with variable frequency drives). Special cases may be analyzed by INMETRO;

4.2.3. Apparatuses imported under special situations do not need certification according to SBAC's scope, but a statement issued by TÜV, in two phases, being the first one for customs clearance, which shall be replaced by the definitive one. The statements will only be issued after the cumulative fulfillment of the following conditions:

- a) products and plants must have, respectively, the product's certificate of compliance for use in explosive atmospheres or other equivalent document from the origin country, as long as it is issued by a third party, and the quality management system certificate (ISO 9001) for the unit where they were manufactured and including the product in question. The ISO 9001 certificate may be replaced by a follow up report from the product certification body, at discretion of the Technical Committee of the accredited Compliance Assessment Body;
- b) present an Invoice or Proforma Invoice or Purchase Order, with a maximum of 25 (twenty five) units;
- c) all the components, object of the statement, shall have a single identification (e.g. serial number), informed in the documents listed in item "b" above;
- d) other supplementary documents which TÜV considers necessary;
- e) TÜV will only issue the Small Quantity Import Statement (DIPQ) up to 25 (twenty five) units, for the same product, in a three-month period. The applicant shall formally state it has not requested to other OCP, within this period, a Small Quantity Import Statement (DIPQ) for the same product;
- f) certificates from different entities of the same product will not be accepted for the purpose of issuing the Small Quantity Import Statement (DIPQ) in a three-month period.

Notes:

- The referred statements will be publicly made available by TÜV, monthly updated, informing the product, origin certificate of compliance number, manufacturer and quantity;

- For the same apparatus and applicant, it can be issued new statements, which do not exceed 25 (twenty five) units, at every three months;
- For “skids”, it is not applicable the limitations of 25 (twenty five) units of a single product and it is not compulsory to identify the installation accessories;
- Skids statement that includes certified apparatuses within SBAC’s scope does not need to list such apparatuses. If the skid is mounted with apparatuses, components or accessories that have certification within SBAC’s scope, such skid can only have these apparatuses, components and accessories in the version certified according to the SBAC’s scope;
- It can only be issued the Small Quantity Import Statement (DIPQ) for a product to be installed in Zone 2, if it meets the requirements in 12.5 c) of this Regulation and if it has a certificate or other equivalent document in the country of origin, issued by a third party body.

4.2.4. Statement for customs clearance purposes

This statement can only be used for customs clearance and cannot be used for any other purposes. This statement shall be available upon customs clearance.

4.2.5. Definitive small quantity import statement (DIPQ).

The apparatuses included in the DIPQ shall receive a label, provided by Inmetro, in Brazil but fixed by TÜV when issuing the referred DIPQ. It is the applicant’s responsibility to provide the labels with Inmetro, which will provide them to TÜV when issuing the DIPQ. The label will be regulated by Specific Administrative Rule.

4.2.6. Statements shall include:

- a) product description, number of origin compliance certificate, number and expiration date of the quality management system certificate, manufacturer, importer, applicant, quantity and respective serial numbers. Apart from that, in the definitive Small Quantity Import Statement (DIPQ), it shall be included the number of the labels associated to the serial numbers.
- b) the following observation: “The products shall be installed in accordance with the applicable Standards in Electrical Installations in Potentially Explosive Atmospheres”.
- c) other observations regarding the product application are at TÜV’s discretion.

4.2.7. Other situations of imported apparatuses not previously expressed, may be considered as special, provided that they are evaluated as such by INMETRO. This evaluation shall be performed within a period of 60 (sixty) days from the date of request to issue the Small Quantity Import Statement (DIPQ).

4.2.8. All statements, with no exception, are compulsorily and technically evaluated by the Committee, being the Committee’s resolution decisive to grant the statement. The Committee can delegate to the senior executive of TÜV an anticipated grant of the small quantity import statement, provided that the period between the request and the date of the Committee’s meeting exceeds 30 days, and the importer shall be previously notified on the possibility of no approval by the Committee. This process will be evaluated by the Committee in the first subsequent meeting. The maximum period to issue is 60 (sixty) days after the presentation of the required documentation.

4.2.9. The regularization of products already internalized can only be performed by batch certification. INMETRO shall be informed when TÜV identifies that the product has already been internalized, so that legal actions are taken.

4.2.10. In case of a skid which is already internalized, in order to perform its regularization, it shall be carried out the certification within SBAC, including the identification of all electrical apparatuses that are an integral part of the skid and indicating the place where the skid is installed.

5.1. Introduction

This Annex establishes the general requirements that must meet the measuring pumps for liquid fuels, in terms of adequacy for its use in potentially explosive atmospheres.

5.2. Definitions

5.2.1. Measuring Pumps for Liquid Fuels

Measuring system designed for providing fuel to motorized vehicles, boats and small aircrafts.

5.2.2. Vapor Barrier

Sealing system that limits classified areas.

5.3. Classification of Areas

5.3.1. All the references to IP54 protection degrees must be considered as IP54 Category 2.

5.3.2. Classified areas are created inside and around measuring pumps/dispensers, as shown in item 5 of this Annex. The extension of the classified area can be limited by the use of vapor barriers Type 1 or 2 or by the use of enclosures. Such enclosures can:

- a) be at least of "restricted breathing", as defined in IEC 60079-15 for a totally immersed enclosure in a Zone 2; or
- b) have a minimum ventilation level, so that the enclosure's respiration area has at least 80% of its surface in a non-classified area and, in this area, a well distributed cross ventilation on at least 1% of its surface.

5.3.3. Inside the hydraulic enclosure of the measuring pump / dispenser it must be considered as Zone 1, where the category 2 apparatus must be used, unless the potential sources of release are reduced according to IEC 60079-10. The enclosure must be at least IP23.

5.3.4. The extension of the classified areas external to the measuring pump / dispenser is determined by the following:

a) outside the enclosure, built for no less than IP23 and used to limit a Zone 1 area, exists a Zone 2, in which category 2 apparatus must be used, as defined below (see figure 7):

- limited upwards to 50 mm, and
- 200 mm horizontally in all directions and downwards to the ground.

b) outside the enclosure, built for no less than IP54 and used to limit a Zone 1 area, exists a Zone 2, where the category 2 apparatus must be used, as defined below (see picture 6.):

- 50 mm in all directions
- and downwards to the ground level.

c) outside the enclosure, built for no less than IP67 and used to limit a Zone 1 area, there is no classified area. (see also figures 1 and 2).

5.3.5. Inside the parts that contain vapor from the vapor recovering system is Zone 0, in which must be used category 1 apparatus.

A continuous and waterproof tube (waterproof means less than 0.1 g/m² /day) accounts for separating the classified areas (internal) from the non-classified areas (external), except for 7.2.

If the tube containing Zone 0 of vapor or fuel has a dismountable joint, then there is a Zone 2 area, where the category 2 apparatus must be used (as in item a) in which the joint is in the open air.

5.4. Vapor Barriers' Classification

Vapor barriers are classified according to the following:

Note: In the following figures, the non-classified area is identified with the number 2.

5.4.1. Vapor Barriers Type 1

It is considered as Type 1 barriers that offer a degree of protection IP67.

5.4.1.1. Horizontal Vapor Barriers

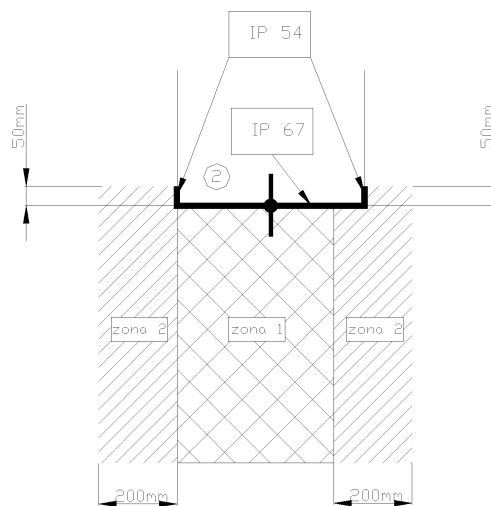


Figure 1: Horizontal vapor barrier - Type 1.

5.4.1.2. Vertical Vapor Barriers

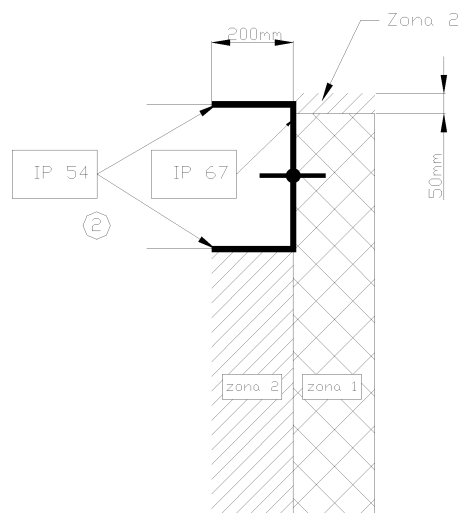


Figure 2: Vertical vapor barrier - Type 1

5.4.2. Vapor Barrier Type 2

A vapor barrier type 2 is comprised by 2 barriers, each one providing IP54 protection degree, and with a ventilation gap of, at least, 20 mm width.

The gap must be designed so that there is no vapor accumulation.

When the airflow is obstructed by cables, screens or other objects, the actual width of the gap must be greater than the absolute minimum of 20 mm.

When there are obstructions in the gap, the actual minimum ventilation area must be $L \times 20$ mm, where L is the longest length of the ventilated section of the barrier.

In order to define the width of the gap in case of obstructions, it shall be considered the following formula:

$$d = \frac{20}{(L - S)} \cdot \frac{L}{Atv} At$$

Where:

d - Gap width;

L - Largest length of the ventilated section of the vapor barrier;

S - Total width of the obstruction elements;

At - Total area on the drilled sheet used for ventilation;

Atv - Total area of the ventilation holes of the drilled board used.

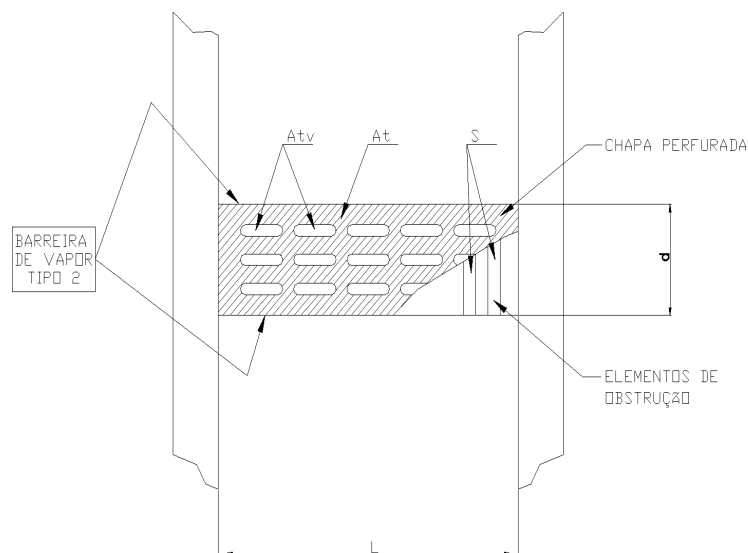


Figure 3: Vertical vapor barrier - Type 2

5.4.2.1. Horizontal Vapor Barrier

It is comprised by 2 vapor barriers, each one providing IP54 protection degree and with airflow gap of at least 20 mm

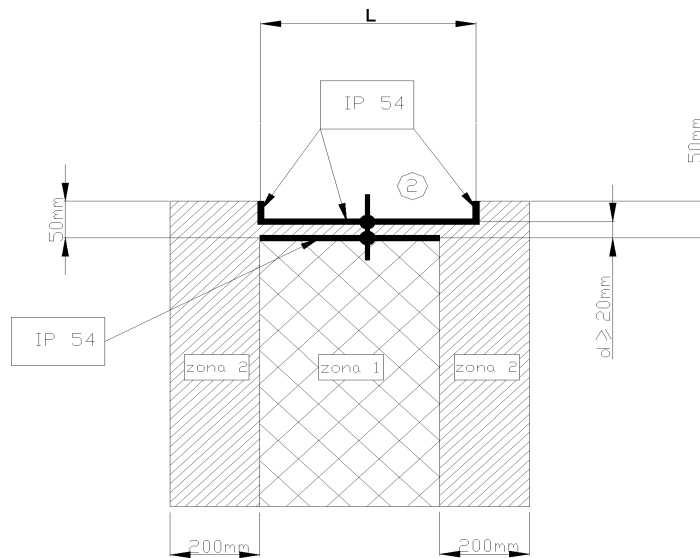


Figure 4: Horizontal Vapor Barrier - Type 2

5.4.2.2. Vertical Vapor Barrier

The vapor barriers are rated as Type 2 if they are composed by two barriers and meet one of the options mentioned below. The gap formed by the barriers must be open on the top and on the base.

a) $50 \text{ mm} > d \geq 20 \text{ mm}$

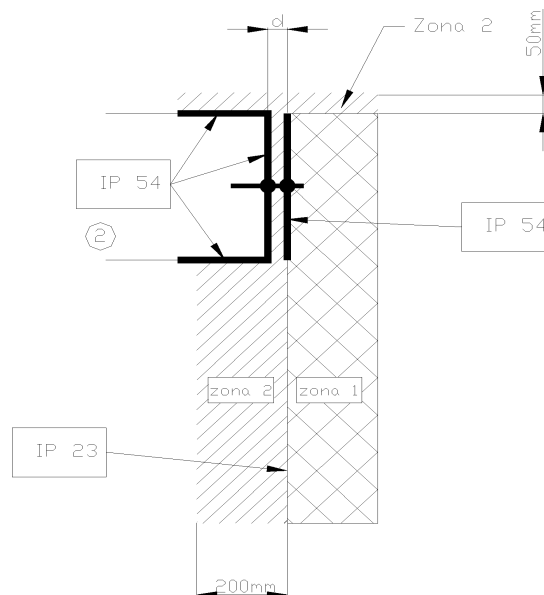


Figure 5: Vertical vapor barrier - Type 2

b) $200 \text{ mm} \geq d \geq 50 \text{ mm}$

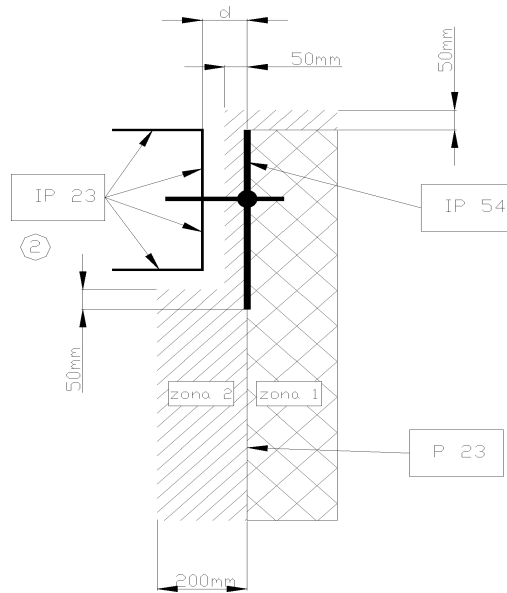


Figure 6: Vertical vapor barrier - Type 2

c) $d > 50 \text{ mm}$

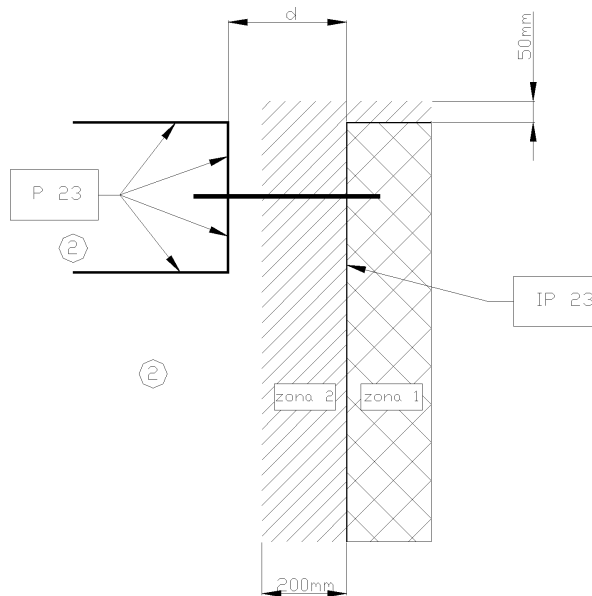
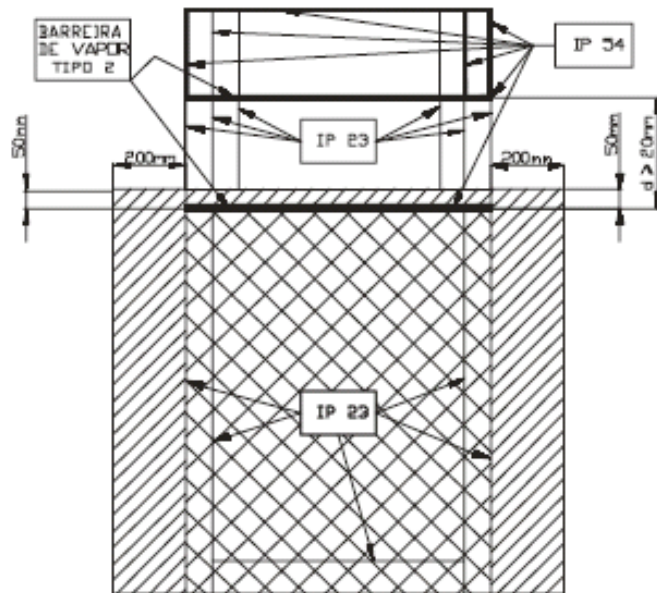
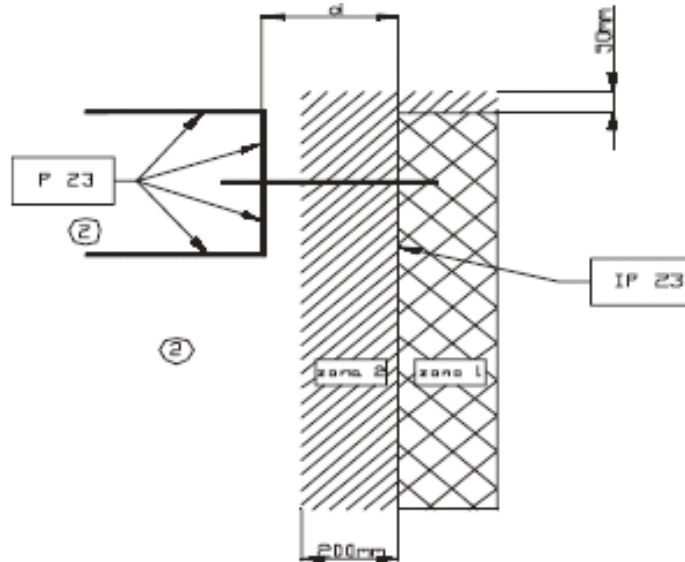


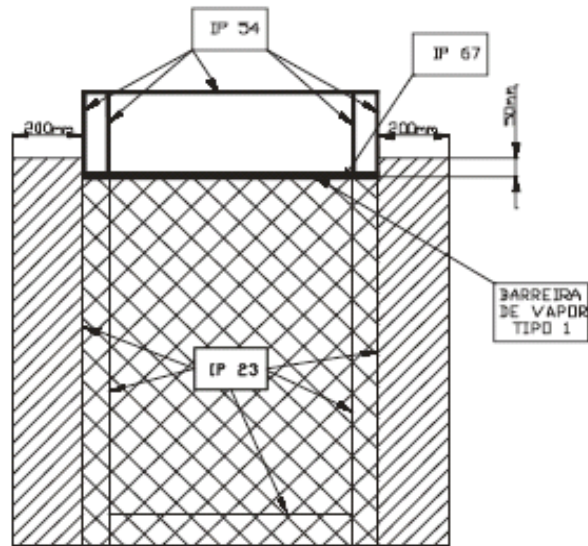
Figure 7: Vertical vapor barrier - Type 2

5.5. Typical Figures of Classification of Areas

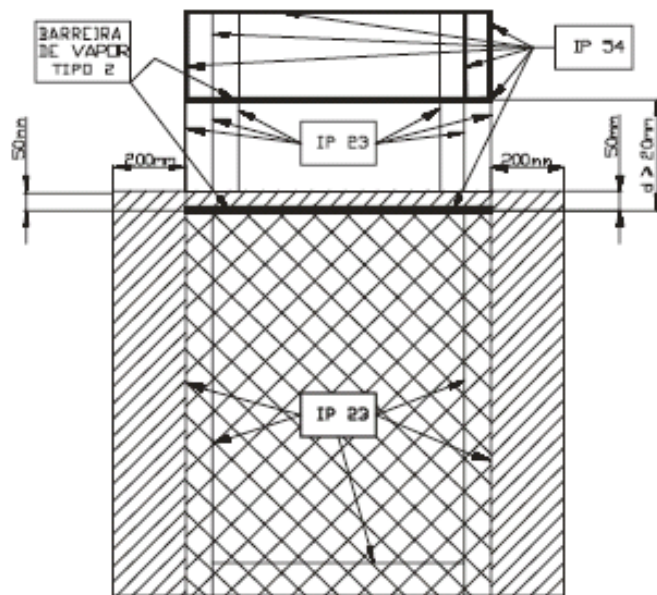


BOMBA ELECTRONICA
TIPO DE COLUMNAS

5.5. Typical Figures of Classification of Areas

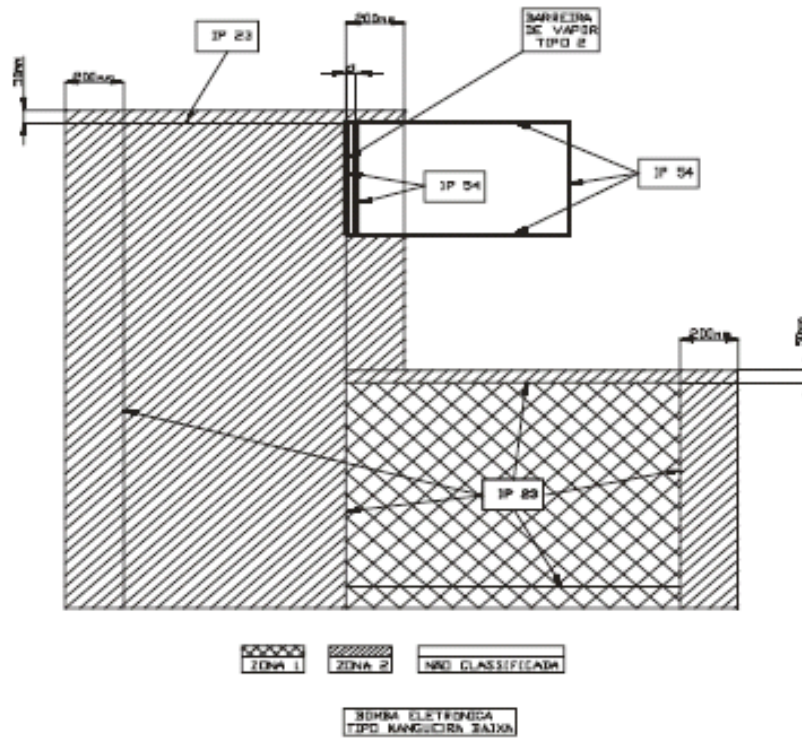


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TIPO DE GABINETE



BOMBA ELETRÓNICA
TIPO DE COLUNAS

5.5. Typical Figures of Classification of Areas



Note: The figures presented are simply for information purposes. The Classification of Areas must be done according to the requirements of this Annex.

6 – TECHNICAL REQUIREMENTS FOR QUALITY SYSTEM ASSESSMENT

6.1 – During the assessment of manufacturer's quality management system, it has to be checked the compliance with, at least, the following items of NBR ISO 9001:2000:

Item	Subject
4.2.3	Documents Control
4.2.4	Record Control
7.1	Planning of Product Construction
7.6.3	Verification of Acquired Product
7.7.1	Production Control and Service Provisioning
7.7.3	Identification and Traceability
7.7.5	Product Preservation
7.6.	Control of Measuring and Monitoring Devices
8.2.3	Process Measuring and Monitoring
8.2.4	Product Measuring and Monitoring
8.3	Non-conforming Product Control

7 – IDENTIFICATION OF CERTIFICATION WITHIN SBAC's SCOPE

7.1 – In the identification of the certified product, it shall be included the information established in the technical standard of general requirements.

7.2 – For small components, when it is not possible to use the identification as indicated in the Figure, it is allowed to indicate INMETRO and TÜV or UCIEE without their respective names. If it is not possible to use this identification, it must exhibit, at least, the fields 1 (Symbols) and 2 (Certificate Number).



1

2



1

2

Legend:

1. Symbols: BR-Ex, type of protection, electric equipment group, temperature class and/or maximum surface temperature and additional identifications required by the specific standard for the respective protection type;
2. Certificate number, including the letters " X " or " U ", when applicable.

Note: Arrangement shown is suggestion only.

The identification above will be accepted up to December 31, 2008, when the new Certification identification within SBAC's scope will enter in force, as per the Law nº. 073, as of March 29, 2006.

7.3 – IDENTIFICATION ON THE PACKAGE



Pantone 1235

100%
80%

CMYK

C0 M27 Y76 K2
C0 M20 Y75 K2



Tamanho mínimo
50 mm



7.4 – IDENTIFICATION ON THE PRODUCT



1
2



1
2

SOON UC: to be used only for customers who still use it in its products and packings.

Legend:

1. Symbols: BR-Ex, type of protection, electrical apparatus group, temperature class and/or maximum surface temperature and additional identifications required by the specific standard for the respective type of protection;
2. Certificate number, including the letters "X" or "U", when applicable.

Note: Arrangement shown is suggestion only.

8 – VALIDITY OF THE CERTIFICATE OF COMPLIANCE

For the cases which the validity date is applicable, the certificate of compliance will remain valid for 2 years after its effectuation.

9 – REVISION STATUS

Revision 01: Item 7 – Identification of Certification within SBAC's scope;

Revision 02: Item 8 – Inclusion of the item "Validity of the certificate of compliance" (Item 8);
Updates on the item "Complementary documents" (item 3).