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1 – PURPOSE

This document establishes the supplementary criteria of the "Rule 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 - manufacturers and or importers of electrical equipment for explosive gases, combustible dusts and flammable vapors, which request to grant a license for use of the SBAC compliance mark.

3 – COMPLEMENTARY DOCUMENTS

ABNT NBR 15456:2007	Storage of flammable liquids and fuels - Construction and testing of supply units
ABNT NBR IEC 60034-5:2009	Rotating electrical machines Part 5: Degrees of protection provided by integral design of rotating electrical machines (IP Code) - Classification
ABNT NBR IEC 60079-0:2008	Explosive atmospheres Part 0: Equipment – General Requirements
ABNT NBR IEC 60079-1:2009	Explosive atmospheres Part 1: Protection of equipment for explosion-proof enclosure "d"
ABNT NBR IEC 60079-2:2009	Explosive atmospheres Part 2: Protection of equipment by pressurized enclosure "p"
ABNT NBR IEC 60079-5:2011	Explosive atmospheres Part 5: Protection of equipment by Powder filling “q”
ABNT NBR IEC 60079-6:2009	Explosive atmospheres Part 6: Protection of equipment by oil immersion "o"
ABNT NBR IEC 60079-7:2008	Explosive atmospheres Part 7: Protection of equipment for increased safety "e"
ABNT NBR IEC 60079-11:2009	Explosive atmospheres Part 11: Protection of equipment by intrinsic safety "i"
ABNT NBR IEC 60079-13:2007	Electrical equipment for explosive atmospheres Part 13: Construction and use of environments or buildings protected by pressurization
IEC 60079-15:2010	Electrical equipment for explosive atmospheres Part 15: Construction, testing and marking of type of protection of equipment protection "n"
ABNT IEC 60079-16:2009	Electrical equipment for explosive atmospheres Part 16: Electrical equipment for explosive atmospheres - artificial ventilation for the protection of analyzer houses
ABNT NBR IEC 60079-18:2007	Electrical equipment for explosive atmospheres Part 18: Construction, testing and marking of type of protection for encapsulated electrical equipment "m"
ABNT NBR IEC 60079-19:2008	Electrical equipment for explosive atmospheres Part 19: Repair, overhaul and recovery of equipment used in explosive atmosphere
ABNT NBR IEC 60079-25:2010	Electrical equipment for explosive atmospheres Part 25: Intrinsically safe electrical system
ABNT NBR IEC 60079-26:2008	Electrical equipment for explosive atmospheres Part 26: Equipment with equipment protection level (EPL) Ga
IEC 60079-27:2008	Explosive gas atmospheres Part 27: Fieldbus Intrinsically Safe Concept (FISCO)
ABNT NBR IEC 60079-28:2010	Explosive Atmospheres Part 28: Protection of equipment and transmission systems using optical radiation
ABNT NBR IEC 60079-29-1:2008	Explosive atmospheres Part 29-1: Gas detectors - Performance requirements
ABNT NBR IEC 60529:2009	Degrees of protection for enclosures of electrical

	equipment (IP Code)
ABNT NBR IEC 61241-4:2009	Electrical equipment for use in the presence of combustible dust Part 4: Protection by enclosures "pD"
ABNT NBR IEC 62013-1:2009	Flashlight for helmets for use in gassy mines Part 1: General requirements for construction and testing
ABNT NBR IEC 62013-2:2009	Flashlight for helmets for use in gassy mines Part 2: Performance and other requirements related to safety
IEC 60079-30-1:2007	Explosive Atmospheres - Electrical Resistance Trace Heating Part 30.1: General and Testing Requirements
IEC 60079-31:2008	Explosive Atmospheres Part 31: Equipment dust ignition protection by enclosure "t"
IEC 61241-11:2006	Electrical apparatus for use in the presence of combustible dust Part 11: Protection by intrinsic safety "iD"
IEC 61241-18:2004	Electrical apparatus for use in the presence of combustible dust Part 18: Protection by encapsulation "mD"
Administrative Rule No. 83 as of April 03, 2016	Principles of Conformity Assessment of Electrical Equipment for potentially explosive atmospheres, In the conditions of flammable gases and vapors
Administrative Rule No. 179 as of June 16, 2009	Rules for Use of Trademarks, Symbols off Symbols, Acknowledgement of Conformity to Principles of Good Laboratory Practice - BPL, and the INMETRO Identification Stamps
Administrative Rule No. 179 as of May 18, 2010	Compliance assessment requirements for electrical and electronic equipment for explosive atmospheres
Administrative Rule No. 90 as of May 28, 2003, Ministry of Development, Industry and Foreign Trade	Approves the Internal Regulation of the Technical Committees to advise INMETRO in developing conformity assessment programs
Administrative Rule No. 598, as of 07/12/2004, NR-10, MTE - Ministry of Labor and Employment	Safety in Electrical Installation and Services
Law 8.078 as of September 11, 1990	Provides for consumer protection and other measures.
Law 9.933 as of December 20, 1999	Provides for the powers of Conmetro and INMETRO establishing the rate of Metrological Services, and other

3.1 In the publication of the revised Norma Técnica Brasileira - Brazilian Technical Standard NBR - (NBR IEC or NBR NM) and corresponding to the IEC Standard listed in this chapter, this will become effective to replace the corresponding IEC Standard mentioned herein.

3.2 The equipment manufactured in compliance to the latest version of IEC Standard shall be certified in compliance with this RAC.

4 – ACRONYMS

ABNT	Brazilian Association of Technical Standards http://www.abnt.org.br
CGCRE	General Coordination for Accreditation (Inmetro)
CNPJ	National Registration of Legal Entity
CRC	Complementary criteria of the Produc Certification Rule
DIPAC	Compliance Assessment Programs Division (Inmetro)
DQUAL	Quality Board (Inmetro)
EA	European Cooperation for Accreditation http://www.european-accreditation.org/default_flash.htm
EPL	Equipment Protection Level
ExCBs	IECEx Certification Bodies
ExTRs	IECEx Test Reports
IAAC	Interamerican Accreditation Cooperation http://www.iaac.org.mx/English/Index.htm
IEC	International Electrotechnical Commission http://www.iec.ch/

IECEx	International Electrotechnical Commission Scheme for Certification to Standards Relating to Equipment for use in Explosive Atmospheres (IECEx Scheme) http://www.iecex.com/
ILAC	International Laboratory Accreditation Cooperation http://www.ilac.org/
Inmetro	Instituto Nacional de Metrologia, Normalização e Qualidade Industrial http://www.inmetro.gov.br/
ISO	International Organization for Standardization http://www.iso.org/
MOU	Memorandum of Understanding
MRA	Mutual Recognition Agreement
NBR	Brazilian Standard
OCP	Product Certification Body
OCS	Management Systems Certification Body
RAC	Regulation on Conformity Assessment
RC	Product Certification Rule
SBAC	Brazilian System of Conformity Assessment
SGQ	Quality Management System

5 - DEFINITIONS

5.1 Certificate of Compliance
Issuance of a statement, based on a decision made after careful analysis, that compliance with specified requirements was demonstrated.

5.2 Type test
Tested in one or more identical units, manufactured to a particular project, to demonstrate that this project meets the conditions specified in the rules defined in Chapter 2 of this Regulation.

5.3 Maintenance Test
Tests aimed at proving that the product object of conformity assessment, after issuance of the certificate of compliance, is maintained in accordance with the normative requirements defined in this Regulation..

5.4 Routine testing
Test to which each manufactured unit is submitted during or after manufacturing, to see if it meets the conditions specified in the rules defined in Chapter 2 of this Regulation.

5.5 Electrical equipment for explosive atmospheres
Electrical equipment built so as not to cause, under specific conditions, the ignition of explosive atmosphere around you.

5.6 Family
Set of products that have the same basic characteristics, in terms of types of protection applied to the equipment.

5.7 Accredited Laboratory
Public entity, private or mixed third party, accredited by INMETRO, according to the criteria established by it, to carry out tests based on the principles and policies adopted under SBAC.

5.8 Batch
Set of equipment or devices with similar characteristics, within the same model number, series or type (the least collective of the three), produced by the same manufacturer at the same factory, at a given time, properly identified.

5.9 Specifications
Document supplied by the applicant containing the description of the constructive characteristics of the electrical equipment for explosive atmospheres, stating the type(s) of protection, including the type and model or series.

5.10 Model or type
Designation given by the applicant that differentiates products from the same family.

5.11 Product Certification Body - OCP
Public entity, private or mixed, of a third-party, accredited by INMETRO, according to the criteria established by it, to carry out services for conformity assessment of products, based on the principles and policies adopted under SBAC.

5.12 Supervisory Body
Entity of public Law, with legal powers to supervise compliance of conformity assessment, according to agreement signed with INMETRO.

5.13 Conformity Assessment Requirement – RAC
Document that contains specific rules and establishes systemic treatment for compliance assessment of products, processes, services, people or quality management systems in order to provide adequate level of confidence in relation to the requirements of the standard or technical regulation.

5.14 Compliance Identification Seal

Graphic representation to be affixed to the equipment and which aims to identify objects with assessed conformity, either compulsory or voluntary, within the SBAC, conform item 13.

5.15 Series

Designation given by the requester that identifies the version of the model.

5.16 Modular process unit – Skid Mounted

Set Unit pré-mounted on chassis and pré-tested, consisting of the main equipment and their peripheral accessories, such as tools, filters and valves, forming a complete set, which Will be interconnected in the Field to its respective systems.

5.17 Applicant

Natural or legal person, public or private, domestic or foreign, legally established in the country that performs one of the following activities: production, assembly, creation, construction, processing, importation, distribution, free or not, or marketing of electrical equipment for explosive atmospheres covered by this requirement.
Note: For applicants located abroad, without being legally established in the country, the responsibilities of chapter 10 of RC002 for marketing purposes in the country belong to the legal representative, the importer or the user himself, who must be duly notified of such liabilities.

6 - MECHANISM OF CONFORMITY ASSESSMENT

6.1 The mechanism of compliance assessment used in electrical equipment for explosive atmospheres, under gas and vapor conditions and combustible dust, included in this CRC is the compulsory certification.

6.2 The certification of electrical equipment is carried out primarily for equipment to be installed in locations classified as Zone 0, Zone 1, Zone 2, Zone 20, Zone 21 and Zone 22.

6.2.1 The certification of electrical equipment is carried out primarily for equipment to be installed in locations classified as Zone 0 or Zone 1.In Zone 2, the following equipment can be installed :
a) Electrical equipment certified for Zone 0 or Zone 1 or
b) Equipment specifically designed and certified for Zone 2 (the second type of nonincendive protection), or
c) Electrical equipment constructed in accordance with the requirements of rule relating to electrical equipment for industrial use and that in normal use, do not produce arcs, sparks or hot surfaces that could ignite the explosive atmosphere.

Note: In addition, this equipment should be mounted in an enclosure that has a degree of protection and strength appropriate to an area not classed with similar environmental conditions, as set by the user. These types of equipment are not marked for hazardous areas, but compliance with the requirements above must be clearly identified in their documentation.

6.3 This CRC establishes three (3) different models of certification to obtain authorization for use of the Compliance Identification Seal. The applicant must choose one of them:

a) Model with Assessment of the Quality Management System of the Product Production Process and Testing on Product
This model consists of the evaluation and approval of the SGQ of the manufacturing process, used in repetitive processes of serial production, with audits by a third party at the manufacturer and testing on prototypes or samples taken from the production line or, preferably, in the dispatch area.

b) Batch Test Sample
In this model, samples taken from a production batch of the product undergo test, which may be derived from an import or not, from there issuing the results of an evaluation of its conformity to a given specification. There is no assessment of maintenance of certification.

c) Special Situations Model for Imported Products

New model that consists of technical assessment of documents, such as type test report, the audit results of products, specifications, drawings, among others, and inspection of TÜV Rheinland, in which the body must ensure that the products conform to the documentation analyzed. In this model there is no assessment of maintenance of certification.

6.4 It is the responsibility of the applicant to formalize with TÜV Rheinland the model to be used for certification of their equipment covered by this CRC.

6.5 The steps involved in conformity assessment, described in chapter 7, shall be conducted by TÜV Rheinland.

7 - STEPS OF THE PROCESS OF CONFORMITY ASSESSMENT

This Chapter establishes the procedure for assessing compliance for granting and maintaining authorization to use the Conformity Identification Seal.

7.1 Model with Assessment of the Quality Management System of Product Production Process and Testing on Product

7.1.1 Initial Assessment

7.1.1.1 Request to Start Process

The applicant must send a formal request to TÜV Rheinland, which must include the name and the feature of the product to be certified.

7.1.1.2 Analysis of Application and Documentation.

7.1.1.2.1 TÜV Rheinland before starting the certification service must consider the validity of the request. If the certification request is deemed unfeasible, TÜV Rheinland must formally inform the requester the reason for the unfeasibility of conformity and return all submitted documentation.

7.1.1.2.2 During the review process, TÜV Rheinland Will examine the technical documentation of the product and the manufacture's SGQ, specifications and user's manual.

Note: The user's manual to be delivered in the certification process must be written in Portuguese and in the version to be available to the user. This manual shall mandatorily accompany the supply.

7.1.1.3 Initial tests

The tests should be performed and recorded, taking into account the following steps.

7.1.1.3.1 Definitions of Tests to Be Performed

7.1.1.3.1.1 The test shall be performed on samples as specified in item 7.1.1.3.3. TÜV Rheinland shall inform the applicant the amount of samples to perform all tests required by the standard, stating the amount subjected to destructive tests. The entire batch must be rejected if there is failure in any condition tested according to the type tests.

7.1.1.3.1.2 Once the collected samples(s) for the type test have been approved, the remainder of the batch shall be subjected to routine tests according to the relevant standard. Every rejected part in the routine test shall be excluded from the lot.

7.1.1.3.1.3 Lots components that make use of certificates in the SBAC, do not require type tests into its components.

7.1.1.3.1.4 The test reports for the product should be accepted, provided the tests meet the requirements of rules on this RAC/CRC.

7.1.1.3.2 Definition of Laboratory

It is for TÜV Rheinland to select the lab to be hired to perform the tests on the product certification process as set forth in Chapter 9 of these Regulations.

7.1.1.3.3 Definition of Sampling

7.1.1.3.3.1 TÜV Rheinland, or even the applicant must go to (s) sample (s) for the type tests. Tests must be conducted on a sample of 6% of the lot, with a minimum of one unit.

7.1.1.4 Initial Audit
After evidence of compliance regarding items 7.1.1.2 and 7.1.1.3 of this RAC/CRC, OCP, in agreement with the requester, must schedule the audit of the SGQ of the manufacturer.

7.1.1.4.1 The presentation of certificate of the quality management system issued under SBAC, complying with the mutual recognition agreements (MRA) recognized by Inmetro and with reference to ABNT NBR ISO 9001:2008 and since this certification is valid for the production plant of the product, under the request, this certification shall be accepted by TÜV Rheinland. In this case, the holder of the certificate must provide to TÜV Rheinalnd all records under this certification. The following conditions shall be observed:
a) Certification of the factory's SGQ must cover the production plant of the product under certification
b) The product certification requester must provide the PCO, for review, copies of reports of audits of its quality system issued by the OCS, including the corrective actions implemented.

7.1.1.4.2 An audit shall be undertaken by TÜV Rheinland, which includes the additional technical requirements provided in Chapter 12 and does not exempt the testing and evaluation of the type of product under this RAC/CRC. TÜV Rheinland may at its discretion, accept the audit reports of other OCP's covering the manufacturing of equipment with the same types of protection.

7.1.1.4.3 If the manufacturer does not have its quality management system certified under the SBAC, Rheinland shall conduct the audit in accordance with the requirements established in Chapter 11 and 12 of this RAC/CRC.

7.1.1.5 Issuance of Certificate of Compliance
This step must be performed upon completion of all requirements in RAC/CRC.

7.1.1.5.1 The certificate should only be granted to the requesting process that takes all your ass-conformities eliminated.

7.1.1.5.2 Once the product compliant, TÜV Rheinland should formalize the grant of permission to use the Seal Identification of Compliance, under Chapter 7, for the product (s) (s) that meets (m) the criteria established in this RAC/CRC.

7.1.1.5.3 TÜV Rheinland presents Commission Certification entire certification process, without exception, upon completion of all requirements in RAC/CRC.

7.1.1.5.4 The decision of the Certification Commission does not exempt TÜV Rheinland from its responsibilities in the certifications granted.

7.1.1.5.5 The certificate shall contain the following information:

a) Corporate name, CNPJ and full address of manufacturer, importer and the applicant's name and assumed name, where applicable;
b) full details of TÜV Rheinland (name, accreditation number and signature);

c) identification of the certification model chosen, model with Assessment of the System of the Production Quality Process and Testing on the Product, Batch Test Model or Special Situations Model for Imported Products;
d) basic description of the product and the types of protection applied;
e) special conditions for safe use, if applicable;
f) issue and expiry date of certification;
g) date of original issue (first issue) and date of review, when applicable;
h) the number of the certificate of compliance of origin, if applicable;
i) n° of assessment report of TÜV Rheinland with the issue date, which must include the identification(s) of laborator(y,ies) and test report(s) with the issue date;
j) a list of certification documents;
k) complete marking in compliance with the relevant standard;
l) observation:
"The products must be installed in compliance with the relevant standards in Electric Installations in Explosive Atmospheres";
m) standardized note, where applicable, as text below:
"The activities of installation, inspection, maintenance, repair, overhaul and recovery of equipment are the responsibility of users and must be implemented in accordance with the requirements of current technical standards and the manufacturer's recommendations."; and
n) other comments on the product application, at the discretion of TÜV Rheinland.

7.1.2 Maintenance Assessment
Maintenance of certification is performed to verify, through regular assessments, that the conditions giving rise to the initial grant authorization for the use of any identifying stamp of compliance are being maintained. It is TÜV Rheinland's sole responsibility to perform the compliance assessment services for maintenance.

7.1.2.1 Maintenance Evaluation Planning
The process of maintenance of certification shall be performed every 18 months in accordance with the requirements provided in Chapter 11 and 12 of this RAC/CRC.

7.1.2.1.1 Provided that there is evidence that the TÜV Rheinland can justify the extraordinary audit and without the need to be announced.

7.1.2.2 Maintenance Testing
These tests must be performed and recorded, taking into account the following steps:

7.1.2.2.1 Definition of Tests to Be Performed

7.1.2.2.1.1 The tests shall be conducted in the product that has been found non-compliant during the audit of maintenance according to item 7.1.2.3 or has been changed to modify the original characteristics or due to formal complaint from the user, by TÜV Rheinland's assessment.

7.1.2.2.1.2 The required tests are defined by TÜV Rheinland on the basis of an assessment, as per 7.1.2.2.1.1.

7.1.2.2.2 Selection of Laboratory
It is TÜV Rheinland's responsibility to select the lab to be hired to perform the tests on the process of maintaining the certification of the product, as provided in Chapter 9 of this RAC/CRC.

7.1.2.2.3 Definition of Sampling Maintenance

7.1.2.2.3.1 TÜV Rheinland shall use in the compliance assessment process a representative and meaningful sample for each type of protection of the product assessed.

7.1.2.2.3.2 The sampling can be performed in the production plant, provided that the product has already been inspected and released by the quality control of the factory or in the dispatch area, in packages ready for commercialization.

7.1.2.2.3.3 TÜV Rheinland must prepare a report detailing the sample collection site and the conditions under which the samples were obtained.

7.1.2.2.3.4 The sample must be sealed, where appropriate, and identified by TÜV Rheinland and sent to laboratory for testing.

7.1.2.3 Certification Maintenance Audit
The applicant's (manufacturer) SGQ annual assessment must be planned and carried out by TÜV Rheinland, in agreement with the applicant and must include the requirements of this regulation.

7.1.2.3.1 TÜV Rheinland must ensure that the applicant (manufacturer) has controlled its production process to avoid deviations that may compromise the conformity of the final product.

7.1.2.3.2 If the manufacturer has his SGQ certificate, TÜV Rheinland should proceed as defined in item 7.1.1.4.1 and 7.1.1.4.2.

7.1.2.3.3 If any non-compliance in the certification maintenance process is found, this can lead to suspension or cancellation of permission to use the Conformity Identification Seal for non-compliant products, at the discretion of TÜV Rheinland.

7.1.2.3.4 TÜV Rheinland submits to the Certification Committee the entire certification process, without exception, upon complying with all requirements in this RAC/CRC.

7.1.2.3.5 The decision of the Certification Committee does not relieve the responsibilities of TÜV Rheinland for the granted certifications.

7.1.2.4 Maintenance of the Certificate of Compliance
This step must be performed upon completion of all requirements in this RAC/CRC.

7.1.2.4.1 The certification must be maintained only to the applicant that has all non compliances cleared from its process within a period set by TÜV Rheinland.

7.1.2.4.2. TÜV Rheinland must maintain certification for permission to use the Compliance Identity Seal, as provided in Chapter 7, for brand(s) and model(s) and famil(y/ies) of product(s) that meet(s) the criteria established in this RAC.

7.1.2.4.3. The decision not to grant the maintenance of certification entails the immediate suspension of the certificate and therefore the disempowerment of use of the Compliance Identification Seal for the rejected product, to which other actions may apply, such as the withdrawal of the product from the market and/or *recall*.

7.2 Model with test batch

7.2.1 Initial Assessment
For this model, the authorization for use of the compliance identification seal is linked only to the assessed manufacture and/or import batch, and no process aimed at maintaining that authorization is allowed.

7.2.1.1 Start Request Process

7.2.1.1.1 The applicant must submit a formal request to TÜV Rheinland including the name and characteristic of the product to be certified, the size and batch identification and the technical documentation of the product attached to it.

7.2.1.1.2 In the case of fractionated batches, sample collection and certification shall only be made upon receipt of all fractions of the subsequent batch.

7.2.1.1.3 TÜV Rheinland must, in case of foreign applicant, confirm in the import documentation the identity of the batch in the request and, for national applicant, review the batch identification procedure for the batch of the request.

7.2.1.1 Analysis of the Request and Documentation
TÜV Rheinland, prior to starting the certification service, must analyze the validity of the request. If the certification request is deemed impracticable, TÜV Rheinland shall formally inform the applicant the reason for the inability of compliance and return all documentation that has been submitted.

7.2.1.2 Initial tests
The tests should be performed and recorded, taking into account the following steps:

7.2.1.2.1 Definitions of Tests to Be Performed

7.2.1.3.1.1 The test shall be performed on samples as specified in item 7.2.1.3.3. TÜV Rheinland shall inform the applicant the amount of samples to perform all tests required by the standard, stating the amount subjected to destructive tests. The entire batch must be rejected if there is failure in any condition tested according to the type tests.

7.2.1.3.1.2 Once the collected samples(s) for the type test have been approved, the remainder of the batch shall be subjected to routine tests according to the relevant standard. Every rejected part in the routine test shall be excluded from the lot.

7.2.1.3.1.3 Lots components that make use of certificates in the SBAC, do not require type tests into its components.

7.2.1.2.2 Definition of Laboratory
It is for TÜV Rheinland to select the lab to be hired to perform the tests on the product certification process as set forth in Chapter 9 of these Regulations.

7.2.1.2.3 Definition of Sampling

7.2.1.3.3.1 TÜV Rheinland, or even the applicant must go to (s) sample (s) for the type tests. Tests must be conducted on a sample of 6% of the lot, with a minimum of one unit.

7.2.1.3.3.2 When appropriate, the batch must be sealed and identified by TÜV Rheinland, and sent to laboratory for testing.

7.2.1.3 Issuance of Certificate of Compliance
This step must be performed upon completion of all requirements in RAC/CRC.

7.2.1.4.1 The certificate should only be granted to the requesting process that takes all your ass-conformities eliminated.

7.2.1.4.2 Once the product compliant, TÜV Rheinland should formalize the grant of permission to use the Seal Identification of Compliance, under Chapter 9, for the product (s) (s) that meets (m) the criteria established in this RAC/CRC.

7.2.1.4.3 TÜV Rheinland presents Commission Certification entire certification process, without exception, upon completion of all requirements in RAC/CRC.

7.2.1.4.4 The decision of the Certification Commission does not exempt TÜV Rheinland from its responsibilities in the certifications granted.

7.2.1.4.5 The certificate shall contain the following information:

a) Corporate name, CNPJ and full address of manufacturer, importer and the applicant's name and assumed name, where applicable;

b) full details of TÜV Rheinland (name, accreditation number and signature);
c) identification of the certification model chosen, model with Assessment of the System of the Production Quality Process and Testing on the Product, Batch Test Model or Special Situations Model for Imported Products;
d) basic description of the product and the types of protection applied;
e) special conditions for safe use, if applicable;
f) list of all certified brands and models and their respective serial numbers;
g) issue and expiry date of certification;
h) date of original issue (first issue) and date of review, when applicable;
i) the number of the certificate of compliance of origin, if applicable;
j) nº of assessment report of TÜV Rheinland with the issue date, which must include the identification(s) of laborator(y,ies) and test report(s) with the issue date;
k) a list of certification documents;
l) complete marking in compliance with the relevant standard;
m) batch identification;
n) observation:
"The products must be installed in compliance with the relevant standards in Electric Installations in Explosive Atmospheres";
o) standardized note, where applicable, as text below:
"The activities of installation, inspection, maintenance, repair, overhaul and recovery of equipment are the responsibility of users and must be implemented in accordance with the requirements of current technical standards and the manufacturer's recommendations."; And
p) other comments on the product application, at the discretion of TÜV Rheinland.

Note: The certificate may be composed of multiple pages and must not contain attachments, such as extracts of test reports containing details relevant to the user, such as restrictions, special considerations in applying the product, etc.

7.3 Special Situations Model for Imported Products

7.3.1 Initial Assessment

7.3.1.1 When applicable, according to assessment and responsibility of TÜV Rheinland, based on the requirements of this regulation, TÜV Rheinland can issue certificates based on this model.

7.3.1.2 The following products are not covered by this type of assessment: installation accessories (e.g. cable glands, flexible conduits, couplings, etc.)., lamps, electronic ballasts for fluorescent lamps, flashlights, projectors, empty cases, electric motors , connection boxes, solenoid valves and components for signaling and control, unless they are part of the modular unit of the process.

7.3.1.3 For imported components, described in 7.3.1.2, it shall be duly attested by the petitioner that its destination is for exclusive use in the maintenance of systems already installed and that the certificate(s) is (are) valid.

7.3.2 Request to Start Process

7.3.2.1 The applicant must forward a formal request to TÜV Rheinland, which must include the name, product feature and its specifications attached, manuals and other documents that TÜV Rheinland sees fit.

7.3.2.2 Analysis of the Request and Documentation
TÜV Rheinland must consider the validity of the request. If the request of the declaration is deemed unfeasible, TÜV Rheinland should formally inform the requester the reason for the inability of compliance and return all documentation submitted.

7.3.2.2.1 - The certificate can be issued only if concurrently the following conditions are met**:**
a) certificate of compliance of products for use in explosive areas or any other equivalent document in the country of origin, issued by third parties, and valid for the complete equipment is submitted.

b) The data in equivalent certificates issued by foreign agencies must include information according to IEC guideline: type of protection, subgroup and temperature class, and reference standards.
c) The plant of production of the products, object of the request, holds a valid certificate of Quality Management System, or is replaced by the monitoring report of foreign body of certification.
d) Entry invoice of imported products is submitted and does not exceed a total of 20 units, except for description of items in the modular unit of process and provided that the conditions provided in this RAC are met.
e) The request must total at least 20 units (included in the same Certificate of Compliance), and the same request may not have been the object of solicitation in any other OCP, within six months. The applicant must formally attest to the care of this requirement.
f) Certificates issued by various foreign entities for the same product will not be accepted for purposes of this evaluation model.
g) TÜV Rheinland must list all the documents in all units object of the request and its related documents, including products used in the modular process units, according to the description provided by the manufacturer unequivocally (e.g., model, serial number).
h) The products should not be installed.

7.3.3 Inspection

7.3.3.1 The TÜV Rheinland before issuing the certificate according to this model shall perform inspection of the products subject of the request, before being delivered to the user, in order to check whether the products are in accordance with item 7.3.2.2.1 .

7.3.3.2 The certificate must contain the place and date of inspection.

7.3.4 Issue of certificate

This step must be performed upon completion of all requirements in this CRC.

7.3.4.1 The certificate should only be granted to the applicant who has in his process all non-onformities eliminated.

7.3.4.2 Once the product is compliant, the TÜV Rheinland shall formalize the grant of authorization to use the Compliance Identification Seal, under Chapter 9, for the product (s) that meet(s) the criteria established in this CRC.

7.3.4.3 The TÜV Rheinland submits to the Certification Committee the entire certification process, without exception, upon complying with all requirements in this CRC.

7.3.4.4 The decision of the Certification Committee does not exempt the TÜV Rheinland from the responsibilities of the certifications granted.

7.3.4.5 The certificate shall contain the following information:

a) Corporate name, CNPJ and full address of manufacturer, importer and the applicant's name and assumed name, if applicable;
b) full details of TÜV Rheinland (name, accreditation number and signature);

c) identification of the certification model chosen, model with Quality Management System Assessment of the Production Process of the Product and Product Testing, Batch Test Model or Special Situations Model for Imported Products;
d) basic description of the product and the types of protection applied;
e) special conditions for safe use, if applicable;
f) list of all certified brands and models and their respective serial numbers;
g) issue and expiration dates of certification;
h) date of original issue (first issue) and date of revision, when applicable;
i) the number of the certificate of compliance of origin, if applicable;

j) n° of the assessment report of TÜV Rheinland with the issue date, which should include the identification of test laborator(y,ies) and the test report(s) with the issue date;
k) list of certification documents;
l) complete marking in compliance with the relevant standard;
m) batch identification;
n) The observation:
"The products must be installed in compliance with the relevant standards in Electrical Installation in Explosive Atmospheres";
o) standardized note, where applicable, as text below:
"The activities of installation, inspection, maintenance, repair, overhaul and recovery of equipment are the responsibility of users and must be implemented in accordance with the requirements of current technical standards and the manufacturer's recommendations." and
p) other comments on the product application at the discretion of TÜV Rheinland.

Note: The certificate may be composed of multiple pages and must not contain attachments, such as extracts of test reports containing details relevant to the user, such as restrictions, special considerations in applying the product, etc.

8 - PENALTIES

Failure to satisfy the requirements included in this CRC will lead to the penalties provided in Article 8 of Law No. 9933 as of December 20, 1999

9 -USE OF TEST LABORATORY

9.1 The TÜV Rheinland, accredited by Inmetro which use laboratory tests, the rule for selection of these laboratories is the use of laboratory accredited by Inmetro for the scope provided in this CRC.

9.1.1 In the case of large electrical machines such as generators, motors and high voltage transformers with power rating equal to or greater than 2,0 MW, the testing may be in laboratories accredited by the first part Inmetro

9.1.2 Tests to be performed in laboratories accredited by the first part Inmetro are those that do not involve the necessity of presence of flammable gases.

9.2 In an exceptional and precarious manner, as long as it is conditioned to an evaluation by Rheinland, a non-accredited laboratory may be used for the specific scope, when one of the assumptions below is true:

a) When there is no laboratory accredited by Inmetro for the scope of the program of assessment of compliance.

b) When there is only one laboratory accredited by Inmetro, and the TÜV Rheinland shows that the price of the test of the non-accredited laboratory is at least below 50% when compared to that of the accredited laboratory;

c) When the laborator(y/ies) accredited by Inmetro does/do not meet the deadline in two months, at the latest for the start of the tests described in this CRC.

Note: The assessment conducted by TÜV Rheinland in non-accredited laboratory shall be done by a professional of TÜV Rheinland who has records of at least three audits in the past three successive years in ABNT NBR ISO/IEC 17025:2005.

9.3 When one of the assumptions aforementioned is true, TÜV Rheinland shall follow the following order of priority in the selection of a laboratory not accredited by Inmetro for the specific scope:

a) Accredited first-party laboratory .

b) Accredited third party laboratory for other test scopes;

d) Non-accredited first-party laboratory .

9.4 The motives for TÜV Rheinland to select the laboratory, considering the possibilities described in sub-items 12.2 and 12.3, must be duly registered by TÜV Rheinland, through supporting documentation.

9.5 For the tests performed by foreign laboratories on products that have already been certified in their country of origin, the equivalences of the established test method and sampling methodology must be observed. Additionally, these laboratories must be accredited by Inmetro or by an accreditation body that is signatory to one of the following mutual recognition agreements, of which Inmetro is part:

a) Interamerican Accreditation Cooperation - IAAC

b) European Cooperation for Accreditation - EA

c) International Laboratory Accreditation Cooperation - ILAC

Notes: 1) The list of accredited laboratories can be obtained from the site of Inmetro www.inmetro.gov.br, of the cooperation and the bodies of the signatories of such agreements;

2) The scope of accreditation of the laboratory shall include the testing method applied under this CRC;

3) The test reports issued by the laboratory must contain clear and unambiguous identification of their status as accredited laboratory.

10 - ISSUE OF COMPLIANCE CERTIFICATES BASED ON ANALYSIS OF TEST REPORTS (ExTR) ISSUED BY LABORATORIES (ExTL) ACCREDITED BY IECEx

10.1 OCP's may issue certificates of compliance based on certifications made by the Certification Body (ExCB) accredited by IECEx, when they meet the requirements below:

a) It has been found in the Test Report (EXTR) that the test methods and sampling methodologies are equivalent to those defined in this CRC;

b) It has been found in the Quality Audit Report (QAR), that the procedure adopted is equivalent to that defined in this CRC

c) The test reports (EXTR) have been issued by an accredited Test Laboratory (ExTL) operating within the IECEx system.

Note: Information about products certified by the international certification system IECEX can be found in the online database of certificates of compliance, available at the following Internet address: http://iecex.iec.ch/ .

11 TECHNICAL REQUIREMENTS FOR ASSESSMENT OF QUALITY SYSTEM

11.1 The assessment of the management system of manufacturing quality, under the responsibility of TÜV Rheinland, using the ABNT NBR ISO 9001:2008, must check the minimum compliance requirements listed below:

4.2.3	Documents Control
4.2.4	Control of Records
7.1	Planning of Product Realization
7.4.3	Verification of Purchased Product
7.5.1	Control of Production and Supply of Services
7.5.3	Identification and Traceability
7.5.5	Preservation of the Product

7.6. Control of Measuring and Monitoring Devices
8.2.1 Customer Satisfaction
8.2.3 Measurement and Monitoring Processes
8.2.4 Monitoring and Measurement of Products
8.3 Control of non-compliant product
8.5.2 Corrective Action
8.5.3 Preventive action

12 - ADDITIONAL TECHNICAL REQUIREMENTS FOR ASSESSMENT OF THE QUALITY SYSTEM

12.1 Documents Control

In addition to item 4.2.3 of ABNT NBR ISO 9001:2008, the following requirements are applied:

a) The documents of the equipment (descriptions and drawings) and the plant must be controlled;

b) Documented procedures must ensure that information from documents of the plant refer to the equipment which is under certification. Related documents shall be in accordance with the drawings approved upon certification (related documents are those used in the manufacturing process);

c) The quality system must ensure that no factors (type, feature, location, etc.) defined in the Test or Assessment Report or Certificate of Compliance and technical documentation (e.g. drawings for certification) are amended;

d) There must be a documented system that references all the drawings related to the relevant drawings of certification.

e) When there are drawings of certification that are common to more than one Test or Evaluation Report or Certificate of Compliance, there must be a documented system that ensures additional simultaneous actions in case of changes in such drawings;

Note: Some manufacturers use common components with the same number of drawings for more than one product. Some of these products may have different people responsible for them. Thus, if a product with a component and number of common design is revised to meet a need and its certificate is revised, it is necessary to have a system to ensure that any certificate that references the same component is also revised in order to ensure that other products are compliant with the documents of the equipment.

f) When a manufacturer has drawings for products not intended for use in explosive atmospheres, there must be a documented system that enables a clear identification of related drawings and the drawings for certification;

Note: The examples that follow can be used:

- Use of visual marks;
- Use of a unique series for the numbering of drawings, e.g. all drawings for the certification having a prefix "Ex" in the numbering.

g) The manufacturer shall indicate in the document which OCP is responsible for the certification;
h) When the documents or the manufacturer of the equipment are transferred to a third party, they must be provided to avoid misinterpretation.

12.2 Control of Records

Applies to item 4.2.4 of ABNT NBR ISO 9001:2008.

Note: It is entirely up to the manufacturer to retain appropriate records of the quality, which demonstrate compliance of the product. Examples of documents requiring control and retention are:

- those who come from regulatory requirements;
- client's request;
- contract review;
- training records;
- test and inspection data;
- calibration data;
- assessment of subcontractors;
- shipment data (customer, date of shipment and quantity, including serial numbers when available).

12.3 Planning of Product Realization

In addition to item 7.1 of ABNT NBR ISO 9001:2008, the following items are applied.

12.3.1Explosion proof enclosures (Ex d)

12.3.1.1 Cast materials

Cast materials must be submitted for inspection to demonstrate compliance. They must be checked, example:
- the thickness of the walls (including those that were not machined);
- the existence of cracks, the inclusion of foreign material, bubbles and porosity (visually or by a test method, depending on the criticality).

Repair of the porosity of cast materials by impregnation methods, e.g. by use of silicone is not recommended. When cast material is repaired by welding, it is subject to the requirements for machined enclosures, e.g. routine overpressure test.

12.3.1.2 Machining

Materials machined shall be subjected to inspection to demonstrate compliance. One must check, e.g.:

- the flatness of the explosion proof flanged joints;
- the superficial roughness of all explosion proof joints that are not threaded;
- the fitting of all explosion proof threaded joints (e.g., cable inputs and threaded access covers);
- the depth of holes and threads to ensure an adequate thickness of the residual wall ;
- the dimensional requirements of all explosion proof joints.

12.3.1.3 Cemented joints and encapsulated assemblies

Documented procedures should indicate the following:

a) the validity and storage time of the cement and encapsulating compound;

b) the proportions of the mixture;

c) the surface preparation (normally degreasing or equivalent is required immediately before the operation to ensure good adhesion);

d) the application, e.g. filling instructions, free of bubbles and temperature conditions;

e) curing, which should include: the curing period, any relevant environmental factors, measures to ensure that the product is not manipulated during the curing period.

12.3.1.4 Routine pressure test

The objective of this test is to check that the enclosure does not suffer damage or permanent deformation and that there are no leaks of the enclosure during the test other than through the interstices of construction, e.g. explosion-proof gaskets.

Leaks through cemented gaskets or encapsulated assemblies are faults.

The test can be performed only once with a complete assembly, or a range of applications in every part of the enclosure. Enclosures that have more than one compartment must have each compartment tested individually. The method used should ensure that the complete assembly or its parts are subjected to representative stress, e.g. that the real system is used for closing the enclosure. Fastening devices that affect the mechanical properties of the type of protection invalidate the test.

Hydraulic methods are recommended due to safety considerations and the difficulties in detecting leaks with pneumatic methods.
The test facility must be adequate to promptly provide the required pressure during the testing period. Leaks through explosion proof joints can be reduced by the use of gaskets or sealing rings.

The manometer shall be calibrated, have appropriate resolution and range, and be located so as not to invalidate the test (e.g. due to pressure drop in the pipes).

The test method must allow any leakage to be monitored during the test period.

The verification of the routine pressure test shall include inspection for product damage or deformation, e.g. that flanged explosion proof joints are still within the specified tolerances and the locks are not deformed.

12.3.1.5 Flanged joints

Flanged joints shall be checked after final assembly to ensure that the interstice specified was not exceeded.

12.3.1.6 Sintered Components

Sintered materials are used in many products such as gas detectors and speakers.

When an OCP issues a certificate of compliance involving such components, the design parameters for the sintered components normally cover three factors:

- maximum size of the pore;
- minimum density;
- diameter and thickness of the sintered material.

The purpose of this item is to provide guidance for manufacturers on how they can show that the sintered components meet the design requirements as detailed in the Test or Assessment Report or Certificate of Compliance.

12.3.1.6.1 Guidance for the verification

There are three options available:
- the manufacturer conducts the verification and tests;
- the manufacturer, through a contract, performs periodic and documented monitoring at the vendor of the sintered component, accepting a declaration of compliance by the supplier of the sintered component;
- the manufacturer accepts the sintered component with a supplier's declaration of compliance which has an implemented and attested quality system containing within its scope the manufacture of sintered materials.

12.3.1.6.2 Tests

The tests for the three verification options must be conducted in accordance with the requirements of the Test or Assessment Report or Certificate of Compliance. Typical test requirements are presented in ISO 4003 and ISO 2738.

The test can be conducted with sampling, provided that sampling is not less than 1% of the size of the batch or on 10 units, whichever is greater.

When tests are conducted by sampling to determine the pore size and density of sintered material, the results shall be calculated to establish the standard deviation (σ) for sampling, i.e.:

σP is the standard deviation for the pore size;
σD is the standard deviation for density;
The maximum size of the pore shall not exceed and the minimum density shall remain equal to or greater than the values set in the Certificate of Compliance when 3σ is considered. For this reason the average sampling value, plus 3 σP (for pore size) and less than 3 σD (for density) shall not invalidate the requirements of Test or Evaluation Report or Certificate of Compliance.

12.3.1.6.3 Examples of tests

The following examples are provided as a guideline:

Example 1 (pore size):

Maximum size allowed for the pore, as specified in a certificate of compliance = 150 mm

Average value	= 140 µm
Standard deviation (σP)	= 2 µm
Thus, maximum value	= 140 + (2 x 3) = 146 µm (approved)
If the standard deviation (σP) is	= 5 µm
Then the maximum value	= 140 + (5 x 3) = 155 µm (failed)

Example 2 (density):

Minimum density allowed as specified in the certificate of compliance	= 5 gcm^{-3}
Average value	= 5.3 gcm-3
Standard deviation (σD)	= 0.05 gcm^{-3}
Thus, minimum value	= 5.3 - (0.05 x 3) = 5.15 gcm^{-3} (approved)
If the standard deviation (σD) is	= 0.12 gcm^{-3}
Then the minimum value	= 5.3 - (0.12 x 3) = 4.94 gcm^{-3} (failed)

Note: In some cases, the sintered component is built directly into a solid enclosure. To establish the value of density, the following formula must be used:

$$\rho = \frac{M_1 \cdot \sigma_W}{M_2 - M_3}$$

Rewritten as follows:

$$\rho = \frac{(m_3 - m_1) \cdot \rho_W}{(m_4 - m_1) - (m_5 - m_2)}$$

Where

σW is the density of water;
m1 is only the enclosure, weighed in air;
m2 is only the enclosure, weighed in water;
m3 is the enclosure and sintered components (assembled), weighed in air;
m4 is the coated assembly , weighed in air;
m5 is the coated assembly , weighed in water.

12.3.1.6.4 Purchasing Information

The manufacturer shall ensure that the purchase documents include the following:
- The specification of the sintered material;
- The dimension requirements;
- The maximum size of the pore;
- The minimum density of sintered material.

12.3.1.6.5 Pre-tested components

When the manufacturer does not conduct its own tests, the supplier must submit in a statement of compliance the following:
- The size of the manufactured batch;
- The sample size to set the maximum size of the pore and the minimum density;
- The number of components supplied;
- The maximum size of the pore and the minimum density calculated (average values and standard deviations must be provided).

12.3.1.6.6 Receipt Control

Upon receipt, the manufacturer shall:
- Check the tests described in the declaration of compliance;
- Check the compatibility of the requirements in the purchase order with the declaration of compliance;
- Conduct the tests (if performed at the plant);
- Conduct the statistical verification related to sintered material.

12.3.2 Intrinsic Safety (Ex i)

12.3.2.1 Components of intrinsically safe products

The following characteristics shall be checked regarding the following components for use in intrinsically safe equipment and associated equipment. This usually involves checking the marking of components or packaging and can be accomplished through statistical techniques, if appropriate:

Resistors:		value, power, type.
Capacitors:		value, tolerance, type.
Piezo-electric devices:		manufacturer, type, capacitance.
Inductive Components:		type, inductance, dc resistance, number of turns, section and wire material and, if appropriate, specification and material of the core and coil.
Transformers:		type, manufacturer, insulation, voltage..
Semi-conductors:	Diodes	Code and, if appropriate, the manufacturer.

	Zener Diodes Transistors Integrated circuits Thyristors	
Batteries:		manufacturer and type or standard designation.
Fuses:		manufacturer, type and value.
Insulating materials:		specification, size and, if appropriate code.
Connectors (e.g.. Plugs, sockets and terminals):		Code and, if appropriate, the manufacturer

12.3.2.2 Printed Circuit Boards (PCBs)

12.3.2.2.1 Unpopulated PCBs

12.3.2.2.1.1 For high-density or complex PCBs, multilayer PCBs, for example, the batch can be accepted with a declaration of compliance. The statement must demonstrate compliance in relation to the purchase documents, e.g. a quality plan that lists the factors which together demonstrate the compliance of the product.

12.3.2.2.1.2 For single or double PCBs, the artwork must be visually checked using a photographic negative (transparency), a certified drawing or a sample of controlled inspection.

12.3.2.2.1.3 The purchasing documents shall specify the thickness of copper, the thickness of the PCB and ICC values.

12.3.2.2.2 Populated PCBs

12.3.2.2.2.1 Varnish and coatings must be controlled for material specification, coatings effectiveness and, if required, application of two independent layers, i.e. the first layer must cure or dry for an appropriate time before applying the second layer.

12.3.2.2.2.2 For PCBs, the manufacturer shall maintain a list of critical components used for safety in production (e.g. resistors and zener diodes), as defined by the OCP that issued the Certificate of Compliance. The components of this list must be scanned at 100%. This can be accomplished by:
- a visual inspection, or
- for SMD components, ensuring the correct loading of the *"pick and place"* machines, and a visual inspection of the correct placement;
- by automatic test equipment provided the equipment individually check each critical component and by visual inspection conducted to verify the code of components in assemblies with diodes or zener diodes.

Note: If the *"pick and place"* machine selects the coil of components based on the measurement of the value of the component, the measurement function must be calibrated.

12.3.2.2.2.3 Documented procedures shall be provided to ensure that the routines for assembling and welding are defined.

12.3.2.2.2.4 The segregation of PCBs to be assembled manually must be checked at 100%.

12.3.2.3 Assemblies

12.3.2.3.1 Documented procedures must ensure that the documentation of production includes all the relevant variations of product design.

12.3.2.3.2 The documentation of the production shall include all the critical components for safety and in the case of encapsulated parts, the manufacturer, type, mix and depth of the encapsulant.

12.3.2.3.3 Documented procedures shall ensure that segregation is maintained between related parts (e.g. terminals) and cabling, and that the specified colors and/or labels are used.

12.3.2.3.4 The seals must be checked for compatibility with the degree of product protection.

12.3.2.4 Testing

Any testing of the Test or Evaluation Report or Certificate of Compliance, e.g. testing of high voltage in complete assemblies or individual components such as transformers, must be controlled by documented procedures and conducted 100% unless permitted by the Applicable Technical Standard .

12.3.2.5 Assemblies of intrinsically safe circuits in enclosures Ex d, Ex p or Ex q

When Ex d, Ex p or Ex q enclosures contain intrinsically safe circuits , precautions should be taken as indicated in the Test or Assessment Report or Certificate of Compliance to ensure that other items listed in the Test or Assessment Report are selected, assembled and installed according to the referenced drawings .

12.3.3 Increased safety (Ex e)

12.3.3.1 Level of Protection

Documented procedures shall ensure that the following are checked:
a) continuity of welding;
b) the fitting of gaskets and seals;
c) the fitting of the lugs and molded grooves (male and female);
d) the application of cement.

12.3.3.2 Internal wiring and integrity of contacts

Documented procedures must ensure that the following are verified:

a) wiring is effectively attached;
b) wiring is properly finished, i.e. the insulation of the connection wires was not excessively removed (typically 1 mm into the metal of the terminal);
c) wiring insulation has appropriate thermal characteristics .

12.3.3.3 Rotating Machinery

Documented procedures shall ensure that:

a) Terminal connections of the rotor and buses are properly segregated and are not subject to undue strain;
b) the air gap is observed (between rotor and stator) or calculated from the tolerances defined;
c) Fan backlash is checked;
d) bearing clearance is checked.

12.3.3.4 Windings

Documented procedures shall ensure that:

a) the impregnations are free of bubbles;
b) Insulation materials are those of the specification;
c) the protection of conductors is checked;
d) when protection devices (e.g. thermal) are specified in the Test or Assessment Report or Certificate of Compliance, they must be of the type and be in the specified location .

12.3.3.5 Testing

All tests must be documented. Typically, the tests must include:

a) Dielectric tests;
b) isolation of bearings for rotating machinery.

12.3.4 Pressurized equipment (Ex p)

12.3.4.1 Level of Protection

Documented procedures shall ensure that the following are checked:

a) continuity of welding;
b) the fitting of gaskets and seals;
c) the fitting of lugs and molded grooves (male and female);
d) the application of cement.

12.3.4.2 Tests

All tests must be documented. Typically, these tests shall include:
a) an overpressure test, at the pressure specified in the Test or Assessment Report or Certificate of Compliance;
b) a loss test, to ensure that the loss rate specified is not exceeded.

12.3.5 Encapsulation (Ex m)

12.3.5.1 Production Documentation

Thermal protection (e.g. thermal fuses) must be of specified type and be positioned in accordance with the certification drawings.
The guidelines given in B.3.1.3 shall apply.

12.3.5.2 Tests

All tests must be documented. Typical tests include:
a) visual inspection;
b) verification of the dielectric characteristics.

12.3.6 Oil immersion (Ex)

All tests must be documented. Typical tests include:
a) reduced pressure test (only sealed enclosures);
b) overpressure test (sealed and unsealed enclosures).

12.3.7 Immersion in sand

12.3.7.1 Material Control

The material must be of defined size and type. There must be evidence such as verification of the flammability of the enclosure materials and the materials shall be those specified in the Test or Evaluation Report or Certificate of Compliance.

12.3.7.2 Filling

The filling must be done without bubbles. It is clearly necessary to ensure that bubbles are not created after filling with an oscillation motion. The filling process must be documented and the documentation must include the criterion of verification.

12.3.7.3 - Ingress protection

Documented procedures should ensure that the following aspects are verified

a) weld continuity;
b) fitting of gaskets and seals;
c) continuity of moulded grooves and tongues;
d) application of cements.

12.3.7.4 Tests

All tests should be documented. Typical tests include:

a) pressure test;
b) dielectrical strength test of filling material

12.4 Verification of Purchased Product

In addition to item 7.4.3 of ABNT NBR ISO 9001:2008, the following requirements are applied:

a) For purchased products that could compromise the type of protection, the manufacturer must determine and implement verifications to demonstrate that the product complies with the standards listed in the test report and Certificate of Compliance, taking into account the nature of the product and the supplier .

b) During the decision on which type of verification is required for a particular purchased product , the manufacturer must consider the nature of the purchased product , the supplier, as for how critical it is for the kind of protection in question.

Note: In considering whether a supplier should conduct the verification, the manufacturer must take into account the results of the assessments conducted in the purchasing process. The decision should reflect the competence of the supplier, including whether it has a quality system that covers the activity, resources, e.g. equipment, and professionals with appropriate qualifications and experience. This last point is particularly significant when a decision is required, such as inspection of explosion proof castings. When the manufacturer delegates to the supplier to conduct testing or inspection relevant to the type of protection, the material must be supplied with a declaration of conformity that confirms its test or inspection.

a) When the supplier has been assessed and documented objective evidence has been obtained showing that the supplier is fully capable of producing and verifying the product or service, additional verification of the product or service is not required, if a declaration of compliance is supplied with each batch or product .

b) When the certificate of compliance specifies tests or routine inspection, they must be performed on each and every product. They may be conducted by the supplier or manufacturer. When conducted by the supplier, they must be specified in the purchase documents, e.g. by a quality plan, and confirmed by the supplier, e.g. by declaration of compliance.

c) If verification of a product cannot be performed after fabrication, e.g. the internal parts of encapsulated intrinsically safe circuits , the product can only be accepted if provided with a declaration of compliance.

This shall specifically indicate compliance with purchase documents, e.g. a quality plan which lists the factors which together demonstrate the compliance of the product.

d) If tests or inspections by sampling are allowed, they must be conducted in order to demonstrate compliance for the whole batch.

e) When the supplier requires training or expertise and specialized qualifications to conduct an investigation, they should be documented and training records must be maintained.

f) When the manufacturer decides not to perform inspections and tests on their premises, inspections and tests shall be conducted on the premises of the supplier under the responsibility of the manufacturer.

g) When a supplier delivers a product with evidence of compliance for use in explosive atmospheres (e.g., a test report or a certificate of compliance), additional checks are not required unless the manufacturer deems necessary.

12.5 Production Control and Supply of Services

Item 7.5.1 of ABNT NBR ISO 9001:2008 applies.

Note: The manufacturer shall submit its procedures, equipment in production, work environments and facilities for inspection and testing, which together ensure the compliance of the product, as described in the certificate of compliance and in accordance with the requirements of certification.

12.6 Identification and Traceability

In addition to item 7.5.3 of ABNT NBR ISO 9001:2008, the following requirements apply:

a) The manufacturer shall establish and maintain procedures for identifying the product during all stages of production, testing, final inspection and marketing.
b) Traceability is required with respect to the final product and its significant parts.

Note: Significant parts are, e.g. a printed circuit board (PCB) of an intrinsically safe circuit, but not every electronic component on a PCB.

12.7 Preservation of Product

Applies to item 7.5.5 of ABNT NBR ISO 9001:2008.

Note: The manufacturer shall provide an operation manual in Portuguese that allow the safe use of the product for their customers. If deemed necessary by the manufacturer, the instructions should contain specific requirements for installation and maintenance of the product. This may be specified in the Certificate. Procedures may be required for components with limited life if they affect the type of protection, such as, e.g. batteries.

12.8 Measurement Device Control and Monitoring

In addition to item 7.6 of ABNT NBR ISO 9001:2008, the following requirements apply:

Note: The compliance with 7.6 (a) of NBR ISO 9001:2008 can be done through the use of accredited calibration laboratory (which can demonstrate that OCP operates in compliance with an internationally recognized standard and is preferably covered by a multilateral agreement) and by obtaining a certificate bearing the logo of the accreditation. When this certificate is obtained, the laboratory does not need to undergo further evaluation.

a) When a calibration certificate not bearing the logo of accreditation by a national authority for accreditation, each calibration certificate shall include at least the following information:
- unambiguous identification of the calibrated item;
- evidence that measurements are traceable to national or international measuring standards;
- the calibration method;
- a declaration of compliance for any representative specification ;
- the calibration results;
- the measurement uncertainty, if necessary;
- environmental conditions, where relevant;
- the calibration date;
- the signature of the person responsible for issuing the certificate;
- the name and address of the issuing organization and the issue date;
- unambiguous identification of the certificate of calibration.

b) When a calibration certificate does bear the logo of the accreditation of a national accreditation authority or does not contain the information listed in B.8.b, the manufacturer must show a valid relationship with patterns of national or international measurement by other means (p. ex. documented assessment of the plant).

12.9 Customer Satisfaction

Item 8.2.1 of ABNT NBR ISO 9001:2008 applies.

Note: For purposes of this RAC, customer satisfaction is related to the compliance of the product with the requirements of standards, test report and certificate.

12.10 Measurement and Monitoring Processes

Applies to item 8.2.3 of NBR ISO 9001:2008.

Note: If a process can affect the integrity of the type of protection, and if the resulting integrity cannot be verified after manufacture (e.g.. the environmental conditions required for curing an encapsulant), this particular process must be measured and monitored and documented evidence must be maintained to show compliance with the required parameters (see also B.3).

12.11 Measurement and Monitoring of Product

Item 8.2.4 of ABNT NBR ISO 9001:2008 applies.

Note: If routine tests are required for the certificate and the documents of the equipment, the tests should be performed as specified. The use of sampling techniques is not allowed. If practicable, the label should not be attached until final inspection and testing have been satisfactorily completed.

12.12 Control of nonconforming product

In addition to item 8.3 of ABNT NBR ISO 9001:2008, the following requirements apply:

Note: One of the purposes of this item is to avoid non-conformities in the products supplied.

a) The manufacturer shall maintain a system so that if a product which has been provided does not conform to the standards listed in the certificate of compliance, the customer can be identified.

b) the manufacturer shall take all actions appropriate to the risk level when nonconforming products have been delivered to the customer.

Note: It is recommended that the manufacturer inform the OCP responsible for issuing the Certificate of Compliance.

a) If an unsafe or non-conforming product has been provided to a client, the manufacturer shall inform the client in writing and OCP is responsible for issuing the certificate.

b) If you cannot trace the unsafe product (e.g. product supplied by a distributor, or due to the high volume of products such as cable glands), an advertisement must be placed in publications recommending the appropriate actions to be taken.

c) For all non-conforming products supplied to customers, the manufacturer must maintain, for a minimum period of 10 years, records of:
- serial numbers or identification of products supplied;
- the customer who received the product;
- the action taken to inform customers and OCP in the case of nonconforming product with compromised safety;
- the action taken to implement corrective and preventive actions.

d) Concessions are not permitted for products that are not in agreement with the design as defined in the test report, the certificate of compliance and the technical documentation listed.

12.13 Corrective Action

Item 8.5.2 of ABNT NBR ISO 9001:2008 applies.

12.14 Preventive action

Item 8.5.3 of ABNT NBR ISO 9001:2008 applies.

12.15 Additional Requirements

If the requirements of ABNT NBR ISO 9001:2008 are used besides those listed in Annex A, additional requirements may be used besides those listed in Annex B specific to explosive area, according to the pertinent standard.

13 - IDENTIFICATION OF CERTIFICATION UNDER SBAC

13.1 The identification of the certified product shall include the information established in the technical standard of general requirements.

13.2 For small components, where there are no conditions for identification as indicated in the graphical representation, it is permitted to indicate the logo of Inmetro and Rheinland without their names. If no conditions for this identification exist, it must bear at least the fields 1(symbols) and 2 (certificate number).

13.3 On individual packages of products you should use the model of complete seal. However, in cases where there is no room for application of complete seal or where the application is given by direct printing on the packaging, it will be allowed to use the seal "compact", respecting the minimum size of the seal, 11mm wide.

13.4 - Identification on Package

Obs.: Minimum Size: 50mm

13.5 - Identification on Product

Legend:

1 - Symbols: Ex protection type in alphabetical order, group of the electrical equipment, temperature class and/or maximum surface temperature and additional identifications required by the specific standard for the respective type of protection;
2- Number of the certificate, including the letters "X" or "U", where applicable.

Note: The layout of the fields is only a suggestion

14 – VALIDITY OF THE CERTIFICATE OF CONFORMITY

For cases in which the expiration date is applicable, the certificate of conformity will remain valid for three years after the effectuation of the same

15 – CHANGES DONE

Date	Review	Responsable
18/08/2003	Review 06: Change the encoding of the document	Gabriela Halphen
31/01/2017	Adequacy of principles and withdrawal of certification commission. Adequacy	Afonso Martins