

Certification Schemes of the BAM Certification Body as well as Scheme of the TPED Inspection Body

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Technical pyrotechnics – module B – for UKCA

Number of certification scheme	BZS-ZP/Pyro-UK-B
Accreditation	Yes
New certifications possible?	Yes
Product name	Pyrotechnics P1-P2 and T1-T2
Application of the products	Safety-related applications in the field of automotive and other pyrotechnic articles and ignition devices (categories P1 & P2); theatrical pyrotechnic articles (categories T1 & T2)
Scope of the scheme	Certification of above pyrotechnic articles for placing on the market in the United Kingdom (UKCA)
In the mandatory area: Directive / Regulation	The Pyrotechnic Articles (Safety) Regulations 2015 (as amended)
Evaluation procedure	
Certification system	Module B (type examination)
Evaluation requirements	<p>According to The Pyrotechnic Articles (Safety) Regulations 2015 (as amended)</p> <ul style="list-style-type: none"> - EN 16256:2012 (parts 1-5) pyrotechnic articles – theatrical pyrotechnic articles (T1 + T2) - EN 16263:2015 (parts 1-5) pyrotechnic articles – other pyrotechnic articles (P1 + P2) - EN ISO 14451:2013 (parts 1-10) pyrotechnic articles – pyrotechnic articles for vehicles (P1 + P2) - EN 16264:2014 pyrotechnic articles – other pyrotechnic articles - Cartridges for powder actuated tools (P1 + P2) - EN 16265:2015 pyrotechnic articles – other pyrotechnic articles – ignition devices (P1 + P2) <p>No physical product tests are performed within the scope of this scheme, refer to “Recognition of test reports”.</p>
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	None
QS audit production facility required for initial certification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sampling, test samples	None, refer to “Evaluation requirements”
Recognition of test reports	<p>Only EU-type examination certificates, including test reports, issued by notified bodies under Directive 2013/29/EU will be recognized, provided a positive case-by-case assessment.</p> <p>Additionally, the following test reports can be recognized by BAM:</p> <ul style="list-style-type: none"> - Test reports of laboratories accredited according to ISO/IEC 17025 for the respective tests

	<ul style="list-style-type: none"> - Test reports and further documentation underlying an EU-type examination issued by a notified body for Directive 2013/29/EU, that is accredited by ISO/IEC 17065 - Test reports from BAM, resulting from activities carried out as a notified body for Directive 2013/29/EU (including tests performed by BAM at the manufacturer's facilities) - Test reports from manufacturers that result from tests observed by BAM <p>Test reports from manufacturers according to Directive 2013/29/EU, Annex II, Module B, No. 3, c) or according to Pyrotechnic Articles (Safety) Regulations 2015 (as amended), Schedule 2A, Nr. 3, c), monitored by BAM according to the modules downstream of type examination or if correctness, plausibility, applicability and metrological traceability can be confirmed by individual assessment</p>
Participating OUs Evaluators (Inspectors and auditors)	Division 2.5 – Conformity Assessment Explosives and Pyrotechnics
Tests outsourced	None
Rules and procedures for granting	
Period of validity	30 years
Certification mark / Label	UKCA-Registration number for module B
Participating OUs Assessors and certification managers	Division 2.5 – Conformity Assessment Explosives and Pyrotechnics
Rules and procedures for maintenance	
Product monitoring foreseen	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sampling, test samples	None
Type and extent of the presentation of results	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input type="checkbox"/> Only test documentation (without provision for the customer) <input checked="" type="checkbox"/> Not applicable
Evaluations (test or audit), which may be omitted in case of recertification	None
If necessary, include special features here	None
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Last update	2024-01-17

Technical pyrotechnics – module D and E – for UKCA

Number of certification scheme	BZS-ZP/Pyro-UK-D-E
Accreditation	Yes
New certifications possible?	Yes
Product name	Pyrotechnics P1-P2 and T1-T2
Application of the products	Safety-related applications in the field of automotive and other pyrotechnic articles and ignition devices (categories P1 & P2); theatrical pyrotechnic articles (categories T1 & T2)
Scope of the scheme	Certification of quality systems (according to modules D and E) of above pyrotechnic articles for placing on the market in the United Kingdom (UKCA), provided a module B certification and a conformity assessment according to Directive 2013/29/EU was carried out by BAM for the identical module and products
In the mandatory area: Directive / Regulation	The Pyrotechnic Articles (Safety) Regulations 2015(as amended)
Evaluation procedure	
Certification system	<p>Modules:</p> <ul style="list-style-type: none"> - D (Conformity to type based on quality assurance of the production process) - E (Conformity to type based on product quality assurance) <p>The manufacturer chooses the respective module according to its requirements.</p>
Evaluation requirements	<p>According to The Pyrotechnic Articles (Safety) Regulations 2015 (as amended)</p> <ul style="list-style-type: none"> - EN 16256:2012 (parts 1-5) pyrotechnic articles – theatrical pyrotechnic articles (T1 + T2) - EN 16263:2015 (parts 1-5) pyrotechnic articles – other pyrotechnic articles (P1 + P2) - EN ISO 14451:2013 (parts 1-10) pyrotechnic articles – pyrotechnic articles for vehicles (P1 + P2) - EN 16264:2014 pyrotechnic articles – other pyrotechnic articles - Cartridges for powder actuated tools (P1 + P2) - EN 16265:2015 pyrotechnic articles – other pyrotechnic articles – ignition devices (P1 + P2) <p>No physical product tests are performed within the scope of this scheme, refer to “Recognition of test reports”.</p>
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	None
QS audit production facility required for initial certification	No: refer to “Recognition of evaluation results”

	Yes: if “Recognition of evaluation results” is not applicable
Sampling, test samples	None
Recognition of evaluation results	Evaluation can be based on the following evaluation results: - Documentations and results from BAM, resulting from activities carried out as a notified body for Directive 2013/29/EU (mainly audit reports)
Participating OUs Evaluators (Inspectors and auditors)	Division 2.5 – Conformity Assessment Explosives and Pyrotechnics
Tests outsourced	None
Rules and procedures for granting	
Period of validity	4 years max Depending on risk-based assessment (Guidance Documents of the Forum of Notified Bodies and case-by-case assessment)
Certification mark / Label	UKCA (provided an existing module B certification)
Participating OUs Assessors and certification managers	Division 2.5 – Conformity Assessment Explosives and Pyrotechnics
Rules and procedures for maintenance	
QS monitoring foreseen	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Type and extent of the presentation of results	Audit report
Evaluations (test or audit), which may be omitted in case of recertification	Surveillance after 2 years as remote audit
If necessary, include special features here	None
Contact	joerg.dengel@bam.de
Last update	2023-12-14

Technical pyrotechnics – Module C2 – for UKCA

Number of certification scheme	BZS-ZP/Pyro-UK-C2
Accreditation	Yes
New certifications possible?	Yes
Product name	Pyrotechnics P1-P2 and T1-T2
Application of the products	Safety-related applications in the field of automotive and other pyrotechnic articles and ignition devices (categories P1 & P2); theatrical pyrotechnic articles (categories T1 & T2)
Scope of the scheme	Certification of above pyrotechnic articles for placing on the market in the United Kingdom (UKCA), provided a module B certification and a conformity assessment according to Directive 2013/29/EU was carried out by BAM for the module C2
In the mandatory area: Directive / Regulation	The Pyrotechnic Articles (Safety) Regulations 2015 (as amended)
Evaluation procedure	
Certification system	Module C2 (Conformity to type based on internal production control plus supervised product checks at random intervals)
Evaluation requirements	<p>According to The Pyrotechnic Articles (Safety) Regulations 2015 (as amended)</p> <ul style="list-style-type: none"> - EN 16256:2012 (parts 1-5) pyrotechnic articles – theatrical pyrotechnic articles (T1 + T2) - EN 16263:2015 (parts 1-5) pyrotechnic articles – other pyrotechnic articles (P1 + P2) - EN ISO 14451:2013 (parts 1-10) pyrotechnic articles – pyrotechnic articles for vehicles (P1 + P2) - EN 16264:2014 pyrotechnic articles – other pyrotechnic articles - Cartridges for powder actuated tools (P1 + P2) - EN 16265:2015 pyrotechnic articles – other pyrotechnic articles – ignition devices (P1 + P2) <p>No physical product tests are performed within the scope of this scheme, refer to “Recognition of test reports”.</p>
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	None
QS audit production facility required for initial certification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No refer to “Recognition of evaluation results”
Sampling, test samples	No: refer to “Recognition of evaluation results” Yes: if “Recognition of evaluation results” is not applicable
Recognition of evaluation results	Evaluation can be based on the following evaluation results:

	- Reports from BAM, resulting from tests according to module C2, carried out as a notified body for Directive 2013/29/EU
Participating OUs Evaluators (Inspectors and auditors)	Division 2.5 – Conformity Assessment Explosives and Pyrotechnics
Tests outsourced	None
Rules and procedures for granting	
Period of validity	4 years max., depending on risk-based assessment (Guidance Documents of the Forum of Notified Bodies and case-by-case assessment)
Certification mark / Label	UKCA
Participating OUs Assessors and certification managers	Division 2.5 – Conformity Assessment Explosives and Pyrotechnics
Rules and procedures for maintenance	
Product monitoring foreseen	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	None, evaluation takes place as part of monitoring according to module C2, carried out by BAM according to Directive 2013/29/EU
Type and extent of the presentation of results	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input type="checkbox"/> Only test documentation (without provision for the customer) <input checked="" type="checkbox"/> Report <input type="checkbox"/> Not applicable
Evaluations (test or audit), which may be omitted in case of recertification	None
If necessary, include special features here	None
Contact	joerg.dengel@bam.de
Last update	2023-12-14

Low-sparking materials for equipment and tools

Number of certification scheme	BZS-ZP/2.8
Accreditation	no
New certifications possible?	Yes (until December 31, 2028 at the latest)
Product name	Materials for the manufacturing of low-sparking equipment and tools for use in potentially explosive atmospheres
Application of the products	Materials for low-sparking tools for mechanical work in hazardous areas with hand-guided tools, the proper use of which can produce no ignition-effective sparks
Scope of the scheme	Low-sparking materials for use in explosive atmospheres
In the mandatory area: Directive / Regulation	Not applicable
Evaluation procedure	
Certification system (see annexes to the certification schemes)	System I
Evaluation requirements	BAM-StAA-NEG-004 (latest version) BAM-StAA-NEG-005 (latest version)
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	None
QS audit production facility required for initial certification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sampling, test samples	Material samples (number and dimensions see Annex), except screed-concrete impact plates, shall be submitted by the manufacturer screed-concrete impact plates: Division 7.4 Technology of Construction
Participating OUs Evaluators (Inspectors and auditors)	Division 1.6 (Material analysis of the metallic test samples), Division 2.1 (Testing according to SOPs (see above)),
Tests outsourced	Not applicable
Rules and procedures for granting	
Period of validity	Generally, 5 years (December 31, 2028 at the latest)
Participating OU (Assessor and certification officer)	Division 2.1: Safety of Energy Carriers Section S.1: Quality in Testing
Rules and procedures for maintenance	
Product monitoring foreseen	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sampling, test samples	Not applicable
Type and extent of the presentation of results	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input type="checkbox"/> Only test documentation (without provision for the customer) <input checked="" type="checkbox"/> Not applicable
Evaluations (testing or audit) that may not be required for recertification	For the first recertification an experimental test is not necessary, the submitted documents are reviewed (current material certificates).

	However, the prerequisite is that the initial test was carried out in accordance with the provisions of the currently valid certification scheme. During the second recertification a complete experimental re-test is performed.
If necessary, include special features here	Not applicable
Contact	Bzs@bam.de
Last update	September 2023

Annex to BZS Certification Scheme BZS-ZP/2.8

The certification of the materials used for the manufacture of the tools is based on the precisely defined intended use for utilization in potentially explosive atmosphere, both for the certified materials and for the impact partner.

The certificate is valid for 5 years. After expiration of the validity - within the scope of the so-called re-certification - a document review by BAM is required. This is to ensure that the material properties have remained constant or have not been changed in comparison with the original certification of the design type.

The certification shall be based on the following requirements:

- Tools intended for use in zone 0 or zone 20:
The use of these tools is intended for areas in which a potentially explosive atmosphere - caused by air/gas mixtures, vapors, mist or air/dust mixtures - is present continuously, for long periods or frequently (Zone 0 or 20). The regulations for industrial safety in Germany stipulate that in potentially explosive areas of zone 0 or 20 only tools may be used, the use of which cannot cause any sparks, i.e. not even single ones.
Since, in our opinion, a sufficiently statistically secured proof cannot be provided in an economically reasonable manner, no certification is offered for these tools.
- Tools intended for use in zone 1 or zone 21:
These tools are intended for use in areas in which a potentially explosive atmosphere - caused by air/gas mixtures, vapors, mists or air/dust mixtures - is likely to occur occasionally during normal operation (zone 1 or zone 21). The use of these tools in potentially explosive atmospheres of zone 1/21 stipulates that no ignition-effective sparks may occur.
- Tools intended for use in zone 2 or zone 22:
These tools are intended for use in areas in which a potentially explosive atmosphere - caused by air/gas mixtures, vapors, mists, or air/dust mixtures - is unlikely to occur during normal operation, and, if it does occur, it likely does so only rarely and for a short period only (zone 2 or zone 22).

This results in the necessary tests described below.

1. Tests for possible formation of incandive sparks

Based on the above-described requirements, the number of necessary impact or grinding processes with a material combination, a flammable gas/air-mixture and a machine specification was set at 100 processes and documented in the test schedule.

1.1 Impact spark tests

Tests can be offered and carried out with a kinetic impact energy of

- 31 Nm, 61 Nm, 72 Nm, 80 Nm, 125 Nm, 190 Nm, 220 Nm, 280 Nm (standard values)
- and with the flammable fuel gas/air mixtures
- Methane/air atmosphere (Explosion group I)
 - Propane/air atmosphere (Explosion group IIA)
 - Ethylene/air atmosphere (Explosion group IIB)

- Acetylene/or hydrogen/air atmosphere (Explosion group IIC).

The explosion groups are defined according to reference fuel gases as described in DIN EN ISO/IEC 80079-20-1:2020-09.

Many possible combinations of materials can be tested, provided that they can be fixed in the impact spark machine. The material of the impact partner can be metallic or nonmetallic, such as concrete. The choice of the impact partner depends on the definition of the intended use of the tools.

Impact spark tests with non-ferrous metals against concrete or floor/screed concrete are often performed with a kinetic impact energy of 60 Nm or 72 Nm, those with non-ferrous metals against carbon steel with a kinetic impact energy of 125 Nm or 190 Nm.

Test samples for the impact spark test

With the impact spark machine all possible kinds of hard materials can be tested. No finished hand tools are required for testing, but special test samples (impact pins) made from the original material of the hand tools. The impact partner (impact plate) for hand tools is usually carbon steel or screed concrete as typical floor material of a chemical plant.

For every 100 impacts between metals

- 30 impact pins with a diameter of 10 k6 (+1 micrometer + 10 micrometer) x 26 mm with R10 round point and
- 10 test plates of 214 mm x 100 mm x 15 mm.

are needed.

(After award of contract, the technical drawings with the exact dimensions of the test samples will be sent.)

For every 100 impacts between metals and screed concrete

- 30 impact pins with a diameter of 10 k6 (+1 micrometer + 10 micrometer) x 26 mm with R10 round point and
- 30 test plates of 214 mm x 100 mm x 15 mm.

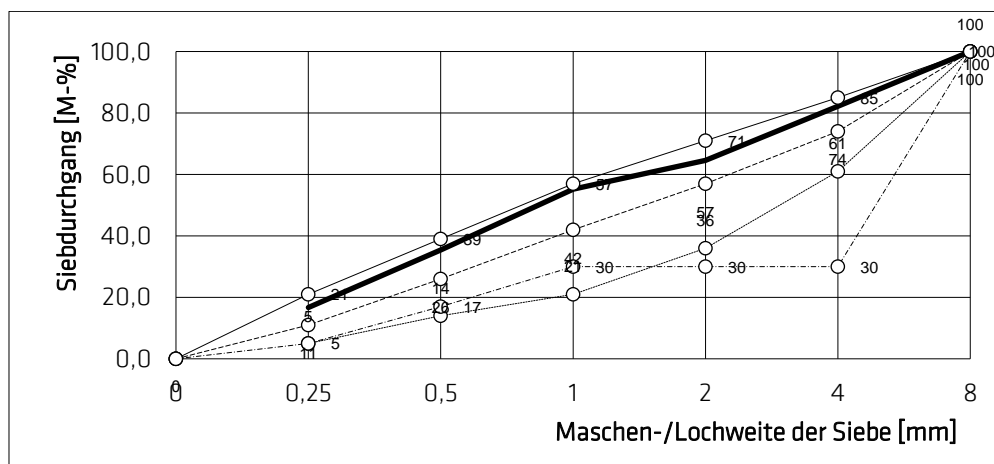
are needed.

(After award of contract, the technical drawings with the exact dimensions of the test samples will be sent.)

The screed-concrete impact plates are subcontracted to BAM Division 7.4 "Technology of Construction Materials" at a charge. The typical low-wear screed concrete impact plates for chemical plants is used here. The screed-concrete impact plates are produced by this accredited BAM test laboratory under reproducible and constant conditions; the complete formulation becomes an annex to the test report.

Table 1: Floor screed composition

Material	Amount kg/m ³	Mass density/raw kg/dm ³	Room of material dm ³		Note
CEM I 42,5 R	290	3,10	93,5		"Rüdersdorf"
Water (total)	159,5	1,00	159,5		
Air content	---	---	30,0		
Concrete additive	5,8	1,14	5,1		BASF FM 1021
Total	455,3	---	288,1		
Aggregate (total)	1907	---	711,91	Vol.-%	
0,1 / 0,5 mm	655	2,63	249,17	35,0	Sand
0,5 / 1,0 mm	393	2,63	149,50	21,0	Sand
1,0 / 2,0 mm	94	2,63	35,60	5,0	Sand
2,0 / 4,0	300	2,63	113,90	16,0	Gravel
2,0 / 8,0	337	2,63	128,14	18,0	Gravel
EKF 10	128	3,60	35,60	5,0	Corundum
Freshly	2362	---	1000		

Diagram 1: Grain size

1.2 Grinding tests

Tests can be performed with our grinding spark machine at a relative speed (peripheral speed of the test disk) of approximately

- ≤ 20 m/s

and a contact force of

- 5 N to
- 45 N (in 5 N steps).

The times for grinding processes or those in which no grinding processes take place (cooling times) have a great influence on the test results (explosion of the test gas mixture). These times should be determined by the client, if necessary, with our support.

This test can be carried out under the above-mentioned fuel-gas/air-atmospheres. The testing of many material combinations is possible, provided that they can be fixed in our grinding machine. The choice of the grinding partner depends on the specified intended use of the tool.

Test samples for the grinding tests

For 100 grinding operations 10 cylindrical test pieces with the following dimensions are required:

- Ø15 mm x 20 mm with a turned spigot M8 x 15 mm (overall length 35 mm)

and for each test disc material 2 test discs with the dimensions:

- Ø130 mm x 20 mm with a centered drilling of Ø20 mm.

(After award of contract, the technical drawings with the exact dimensions of the test pieces will be sent.)

2 Materials analysis

The material analysis is carried out by means of a "spark emission analysis".

Please contact Dr. Sebastian Recknagel (Sebastian.Recknagel@bam.de, phone: +49 30 8104-1111) for coordination/specifications.

Film systems for industrial radiography

Number of certification scheme	BZS-ZP/2.5.1
Accreditation	No
New certifications possible?	No (only monitoring of existing certificates until December 31, 2027 at the latest)
Product name	Industrial X-ray film systems, consisting of metal screens, the X-ray film and the developing chemistry, including the development conditions
Application of the products	Industrial radiography, radiographic inspection
Scope of the scheme	<p>Types of industrial X-ray films are certified under specified development conditions (i.e., film systems), so that the X-ray film manufacturer receives a classification of this X-ray film system according to ISO 11699 from an independent body accredited according to ISO/IEC 17025 (BAM 8.3) and ISO/IEC 17065 (BZS).</p> <p>BAM is NOT involved in design and development of films or developing chemicals, it checks the image quality achieved by means of image quality indicators and image parameters according to international standards and plays a leading role for the development of these standards at DIN, ISO, CEN and ASTM.</p>
In the mandatory area: Directive / Regulation	n/a
Evaluation procedure	
Certification system (see annexes to the certification schemes)	<p>I: BAM design-type test, single initial on-site audit of production facilities for manufacturers of developing chemicals, Design-type certifications are possible, if X-ray films are already certified by BAM using different developing chemicals of other manufacturers (i.e., different mixed film system as certified) and different developing conditions. This could result in a different film system classification. Product monitoring can be abandoned here, since all film emulsions are already monitored in the context of the certification of the film manufacturer and the developing chemicals used are monitored by the user himself according to ISO 11699-2 with certified control strips.</p> <p>or</p> <p>II: BAM design-type test and initial on-site audit at the production facilities for film manufacturers, quarterly monitoring of production data of all film emulsions and annual reference sample measurement at BAM and at the film manufacturers</p>
Evaluation requirements	This certification is only granted if BAM receives complete data sets of all certified emulsions according to ISO 11699-1 as well as production data according to ISO 7004 and if the manufacturer's measuring laboratory participates in annual inter-laboratory tests

	<p>organized by BAM. This is the only way to ensure that the film manufacturer and BAM receive the same film classification according to ISO 11699.</p> <p>Measurement of the film system class and film system parameters according to:</p> <p>ASTM E 1815-18- Standard Test Method for Classification of Film Systems for Industrial Radiography</p> <p>DIN EN ISO 11699-1:2012-01 + ISO 11699-1:2008-09 - Non-destructive testing - Industrial films for radiographic inspection - Part 1: Classification of film systems for industrial radiographic inspection</p> <p>DIN EN ISO 11699-2:2012-01 + ISO 11699-2:2018-08 - Non-destructive testing - Industrial films for radiographic inspection - Part 2: Control of film processing using reference values.</p>
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	n/a
QS audit production facility required for initial certification	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>For initial certification, a production facility on-site audit is only possible under the following conditions:</p> <ol style="list-style-type: none"> 1. Successful design-type test by BAM under the specified development conditions: Provision of samples (at least 20 films 10x24 cm²) for the measurement of a full data set according to ISO 11699-1. All results must be within the film system class specified by the manufacturer. 2. In an interlaboratory test, the manufacturer must prove that its parameters according to ISO 11699-1 for the film system to be certified differ from the parameters measured at BAM by less than $\pm 5\%$ and are within the named film system class. <p>Note: ISO 9001 certification is not required but reduces the extent of the audit.</p>
Sampling, test samples	For the design-type test of each film system to be certified, at least 10 films 10x24 cm ² plus 40 l of developer plus 40 l of fixer of the desired film system must be provided by the film manufacturer.
Participating Organizational Units	Division 8.0 "Non-Destructive Testing" and 8.5 „X-ray Imaging“
Tests outsourced	n/a
Rules and procedures for granting	
Period of validity	<p>- Design-type certificate 4 years</p> <p>- Certification with monitoring until December 31, 2027 at the latest</p>

Certification mark / Label (see annexes to the certification schemes)	“BAM Certified and under surveillance“ (Certification system II) or “BAM Design-type tested“ (Certification system I)
Participating Organizational Units	Division 8.0 "Non-Destructive Testing" and 8.5 „X-ray Imaging“ Section S.1 Quality in Testing
Rules and procedures for maintenance	
Product monitoring foreseen	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	For the annual monitoring tests at least 20 unexposed films of the size 10x24 cm ² are procured by BAM from the market and the film system parameters obtained are compared with the measurements of the film manufacturer on retain samples of the same film emulsion. The annual interlaboratory comparison test should include at least 3 different film systems.
QA monitoring measures	Quarterly BAM monitoring of all production data according to ISO 7004 for all film rolls of the manufacturer produced with the specified emulsion and analysis of one full data set according to ISO 11699-1 for each emulsion produced by the manufacturer. Within the term of the certificate, no surveillance audits are necessary, as annual interlaboratory tests are additionally carried out between the manufacturer's laboratory and BAM.
Documentation of QA monitoring	Documentation of the monitoring of the quarterly production data electronically in the form of Excel files. The annual effort for BAM results from the number of film systems in the annual interlaboratory comparison test. This number has already been reduced from each certified film system (some manufacturers now have up to 10 film systems certified by BAM) to at least 3 film systems. If these 3 film systems are distributed from coarse-grained to fine-grained, it can still be guaranteed in this way that the necessary agreement of the measurement results is achieved between the manufacturer's laboratory and BAM. Repeat these tests if deviation is too large (see annex to the certification agreement).
Type and extent of the presentation of results	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input checked="" type="checkbox"/> Only test documentation (without provision for the customer) <input type="checkbox"/> Not applicable
Evaluations (test or audit), which may be omitted in case of recertification	Not applicable
If necessary, include special features here	n/a
Contact	bzs@bam.de
Last update	January 2024

Industrial computed radiography with storage phosphor imaging plates

Number of certification scheme	BZS-ZP / 2.5.5
Accreditation	No
New certifications possible?	No (only monitoring of existing certificates until December 31, 2027 at the latest)
Product name	Systems of industrial computed radiography with storage phosphor imaging plates, consisting of an imaging plate type, the scanner, and the scan settings. The raw data of the scanner are evaluated. Additionally, modules of the evaluation software can be certified, which realize standard-compliant implementations of image-based measurements, e.g., the wall thickness measurement on pipes.
Application of the products	Industrial computed radiography for non-destructive testing
Scope of the scheme	<p>Systems for computed radiography with storage phosphor imaging plates are developed primarily for use in medicine, as the market is orders of magnitude larger than that for industrial applications. In order to be able to use these systems successfully in industry, adaptations are necessary to meet the standards mentioned below. The BAM certification confirms the compliance with these industrial standards and classifies these systems independently of the manufacturer.</p> <p>BAM is NOT involved in the development of the systems or storage imaging plates but is in charge of the development of the industrial standards at DIN, CEN, ISO and ASTM.</p>
In the mandatory area: Directive / Regulation	n/a
Evaluation procedure	
Certification system (see annexes to the certification schemes)	I: BAM design-type test with manufacturer's declaration of conformity and initial audit of the manufacturer for quality assurance of the CR system
Evaluation requirements	<p>DIN EN 14784-1:2005-11 - Non-destructive testing- Industrial computed radiography with storage phosphor imaging plates - Part 1: Classification of systems</p> <p>ASTM E 1742/E 1742M-18 - Standard Practice for Radiographic Examination</p> <p>ASTM E 2002-15 - Standard Practice for Determining Total Image Unsharpness and Basic Spatial Resolution in Radiography and Radioscopy</p> <p>ASTM E 2445/E 2445M-14 - Standard Practice for Performance Evaluation and Long-Term Stability of Computed Radiography Systems</p> <p>ASTM E 2446-16 - Standard Practice for Manufacturing Characterization of Computed Radiography Systems</p>

	<p>ISO 16371-1:2011-10 - Non-destructive testing - Industrial computed radiography with storage phosphor imaging plates - Part 1: Classification of systems</p> <p>EN 16407-1:2014 - Non-destructive testing - Radiographic inspection of corrosion and deposits in pipes by X- and gamma rays - Part 1: Tangential radiographic inspection</p> <p>EN 16407-2:2014 - Non-destructive testing - Radiographic inspection of corrosion and deposits in pipes by X- and gamma rays - Part 2: Double Wall radiographic inspection</p> <p>ISO 20769-1:2018 - Non-destructive testing - Radiographic inspection of corrosion and deposits in pipes by X- and gamma rays - Part 1: Tangential radiographic inspection</p> <p>ISO 20769-2:2018 - Non-destructive testing - Radiographic inspection of corrosion and deposits in pipes by X- and gamma rays - Part 2: Double wall radiographic inspection</p>
Possible exclusion of standards and/or specifications in case of partial certification that - if appropriate - shall be applied for according to limited requirements?	n/a
QS audit production facility required for initial certification	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>An initial audit of the production facility to verify quality assurance and implementation of the above standards by the manufacturer is necessary. ISO 9001 certification is not required, but it does influence the extent of the audit.</p>
Sampling, test samples	A design-type of the scanner from the certified CR-System is made available to the BAM laboratory for the certificate's period of validity. For each certification, 6 imaging plates 10x24 cm ² and one 35x43 cm ² plate of a current batch are required as design-types, which remain with BAM as retained samples.
Participating Organizational Units Evaluators (Inspectors and auditors)	Division 8.0 "Non-Destructive Testing" and 8.5 „X-ray Imaging“
Tests outsourced	n/a
Rules and procedures for granting	
Period of validity	Design-type certificate 4 years, until December 31, 2027 at the latest
Certification mark / Label (see annexes to the certification schemes)	"BAM Design-type tested"
Participating Organizational Units	Division 8.0 "Non-Destructive Testing" and 8.5 „X-ray Imaging“ Section S.1 Quality in Testing
Rules and procedures for maintenance	
Product monitoring foreseen	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sampling, test samples	Not applicable

Type and extent of result presentation	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input type="checkbox"/> only test documentation (without provision for the customer) <input checked="" type="checkbox"/> Not applicable
Evaluations (test or audit), which may be omitted in case of recertification	Not applicable
If necessary, include special features here	Not applicable
Contact	bzs@bam.de
Last update	January 2024

Digital matrix detectors for industrial radiology

Number of Certification Scheme	BZS-ZP/2.5.6
Accreditation	No
New certifications possible?	No (only monitoring of existing certificates until December 31, 2027 at the latest)
Product name	Systems of digital matrix detector arrays for industrial radiology, consisting of detector and image capturing software, including detector correction
Application of products	Industrial radiology
Scope of the scheme	<p>Digital matrix detector arrays are in industrial use for a variety of computer-based non-destructive testing applications based on X-ray penetration or other types of radiation (e.g., radio-isotopes or neutron radiation). In addition to applications in fully automated non-destructive testing (manipulator-based or computer tomography) and, more recently, in metrology, which is not covered in this certification program because other requirements apply. Likewise, the certification of automatic, computer-based software for image analysis and image evaluation is not included. Basis of this certification is the detector characterization according to ASTM E 2957.</p> <p>BAM is NOT involved in the development of the systems but is in charge of the development of the industrial standards at DIN, CEN, ISO and ASTM.</p>
In the mandatory area: Directive / Regulation	n/a
Evaluation procedure	
Certification system (see annexes to the certification schemes)	I: BAM Design-type test with manufacturer's declaration of conformity
Evaluation requirements	<p>DIN EN ISO 17636-2:2013-5 - Non-destructive testing of welds - Radiographic testing - Part 2: X- and gamma-ray techniques with digital detectors</p> <p>DIN EN 12681-2:2017 - Founding - Radiographic testing - Part 2: Techniques with digital detectors</p> <p>ASTM E 2597 / E 2597M-14 - Standard Practice for Manufacturing Characterization of Digital Detector Arrays</p>
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	n/a
QS audit production facility required for initial certification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sample, test samples	Sampling does not take place; the manufacturer provides one design-type unit for the period of validity of the certificate, the test report of which forms the basis for the certificate.

Participating Organizational Units Evaluators (Inspectors and auditors)	Division 8.0 "Non-Destructive Testing" and 8.5 „X-ray Imaging“
Tests outsourced	n/a
Rules and procedures for granting	
Period of validity	Design-type certificate with a period of validity of 4 years, until December 31, 2027 at the latest
Certification mark / Label (see annexes to the certification schemes)	"BAM Design-type tested"
Participating Organizational Unit Evaluators and certification officers	Division 8.0 "Non-Destructive Testing" and 8.5 „X-ray Imaging“ Section S.1 Quality in Testing
Rules and procedures for maintenance	
Product monitoring foreseen	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sampling, test samples	Not applicable
Type and extent of the presentation of results	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input type="checkbox"/> only test documentation (without provision for the customer) <input checked="" type="checkbox"/> not applicable
Evaluations (test or audit), which may be omitted in case of recertification	Not applicable
If necessary, include special features here	
Contact	bzs@bam.de
Last update	January 2024

X-ray film digitizing systems for industrial radiography

Number of certification scheme	BZS-ZP / 2.5.7
Accreditation	No
New certifications possible?	No (only monitoring of the existing certificates until August 24, 2025)
Product name	X-ray film digitizing systems for digital industrial radiography
Application of the products	Industrial radiography and applications for the integration of analogue inspection results in Industry 4.0
Scope of the scheme	Classical on-site inspection is still largely film-based worldwide. In order to integrate this data into a fully digital inspection and documentation workflow (Industry 4.0), it is necessary to digitize the industrial X-ray films made on site. In order to avoid a possible loss of quality in this step, there have been industry standards since 2005 that describe the requirements for industrial film digitization systems used and define quality parameters.
In the mandatory area: Directive / Regulation	
Evaluation procedure	
Certification system (see annexes to the certification schemes)	System I
Evaluation requirements	ASTM E 1936, ISO 14096-1:2005, ISO 14096-2:2005, DIN EN ISO 14096-1:2019, DIN EN ISO 14096-2:2019 StAA 8.3/ 11 „Anweisung für das Digitalisieren von radiographischen Filmen und deren Bewertung“ [Instruction for the digitization of radiographic films and their evaluation] (current status)
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	n/a
QS audit production facility required for initial certification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sampling, test samples	A prototype of the system including current driver software should be made available to the BAM test laboratory by the applicant for at least 6 months.
Participating Organizational Unit Evaluators (Inspectors and auditors)	Division 8.0 "Non-Destructive Testing" and 8.5 „X-ray Imaging“
Tests outsourced/subcontracted	None
Rules and procedures for granting	
Period of validity	4 years
EU conformity mark/ certification label (see annexes to the certification)	“BAM Design-type tested”

schemes) (see annexes to the certification schemes)	
Participating Organizational Unit	Division 8.0 "Non-Destructive Testing" and 8.5 „X-ray Imaging“ Section S.1 Quality in Testing
Rules and procedures for maintenance	
Product monitoring foreseen	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sampling, test samples	Not applicable
Type and extent of the presentation of results	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input type="checkbox"/> Only test documentation (without provision to the customer) <input checked="" type="checkbox"/> Not applicable
Evaluations (test or audit), which may be omitted in case of recertification	Not applicable
If necessary, include special features here	n/a
Contact partner	Bzs@bam.de
Last update	January 2024

Press fitting systems for acetylene and/or oxygen pipelines

Number of certification scheme	BZS-ZP/2.1.1
Accreditation	No
New certifications possible?	No (only monitoring of the existing certificates until December 31, 2024)
Product name	Press fitting systems
Application of products	Welding, cutting and allied processes
Scope of the scheme	Manufacturers of press fitting systems for welding, cutting and allied processes
In the mandatory area: Directive / Regulation	No
Evaluation procedure	
Certification system (see annexes to the certification schemes)	II (Design-type test with single initial audit at the manufacturing site and product monitoring, previously: IIa)
Evaluation requirements	<p>TRAC 204:1990-10 Acetylene pipelines; section 5.3: "Testing of high-pressure piping"</p> <p>IGV leaflet "Press fitting systems for pipe installations in the industrial gas sector", status: July 2008 in compliance with the requirements of:</p> <ul style="list-style-type: none"> - BAM-StAA-SE-16 Test for resistance to solvents for non-metallic materials (latest version) <p>(The resistance of non-metallic materials to solvents is tested for safety reasons in extension of the standard using the BAM in-house procedure.)</p> <ul style="list-style-type: none"> - BAM-StAA-SE-18 Test for resistance to ageing in oxygen for non-metallic materials (latest version) <p>If applicable, ISO 21010:2017-12 "Cryogenic vessels - Gas/material compatibility"</p> <p>BGRCI data sheet M 034 "Oxygen" in the version valid at the time of certification</p>
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	Not applicable
QS audit production facility required for initial certification	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Test samples can be taken by the manufacturer. Number and type of test samples as specified by BAM, taking into account the above-mentioned test principles.
Participating Organizational Units Evaluators (Inspectors and auditors)	Division 2.1 „Safety of Energy Carriers“ Division 7.5 „Technical Properties of Polymeric Materials“ (only BAM-StAA-SE-16 and -18)
Tests outsourced	None
Rules and procedures for granting	
Period of validity	Only existing certificates, until December 31, 2024
EU conformity mark / Certification mark (Label)	“BAM Certified and under surveillance“

(see annexes to the certification schemes)	
Participating Organizational Unit (Inspector and certification officer)	Division 2.1 „ Safety of Energy Carriers“ Division 3.5 “Safety of Gas Storage Systems”
Rules and procedures for maintenance	
Product monitoring foreseen	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Sampling and number and type of test samples in accordance with the contract
Type and extent of the presentation of results	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input checked="" type="checkbox"/> only test documentation (without provision for the customer) <input type="checkbox"/> not applicable
Evaluations (testing or audit) that may not be required for recertification	Not applicable
If necessary, include special features here	Not applicable
Contact	bzs@bam.de
Last update	January 2023

Decomposition blockers

Number of certification scheme	BZS-ZP/2.1.3
Accreditation	No
New certifications possible?	No (only monitoring of the existing certificates until December 31, 2024)
Product name	Decomposition blockers
Application of the products	Welding, cutting and allied processes
Scope of the scheme	Manufacturers of flame arrestors for welding, cutting and allied processes
In the mandatory area: Directive / Regulation	No
Evaluation procedure	
Certification system (see annexes to the certification schemes)	II (Design-type test with initial audit at the manufacturing site and product monitoring, previously IIa)
Evaluation requirements	<p>DIN EN ISO 14114:2018-04 „Gas welding equipment – Acetylene manifold systems for welding, cutting and allied processes – General requirements“ (only clauses 4.2, 5.1 and 5.3)</p> <p>DIN EN ISO 5175-1:2018-03 Gas welding equipment - Safety devices - Part 1: Devices incorporating a flame (flashback) arrestor (only clauses 5.2, 5.3, 5.6, 6.8, 8 and 9)</p> <p>in compliance with the requirements of: BAM-StAA-SE-16 Test for resistance to solvents for non-metallic materials (latest version)</p> <p>(For safety relevant reasons, testing of resistance of the non-metallic materials to solvents is carried out as an extension of the standard according to a BAM in-house procedure.)</p>
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	Not applicable
QS audit production facility required for initial certification	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Test samples can be taken by manufacturers Number and type of test samples as specified by BAM, taking into account the above-mentioned test principles
Participating Organizational Units Evaluators (Inspectors and auditors)	Division 2.1 „Safety of Energy Carriers“ Division 7.5 „Technical Properties of Polymeric Materials“ (only BAM-StAA-SE-16)
Tests outsourced	None Note: The tests according to BAM-StAA-SE-16 can also be carried out by an adequate accredited external testing laboratory.
Rules and procedures for granting	
Period of validity	Only existing certificates, until December 31, 2024
EU conformity mark / Certification mark (Label)	“BAM Certified and under surveillance“

(see annexes to the certification schemes)	
Participating Organizational Unit (Assessor and certification officer)	Division 3.5 "Safety of Gas Storage Systems"
Rules and procedures for maintenance	
Product monitoring foreseen	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Sampling and number and type of test samples in pursuant to the contract
Type and extent of the presentation of results	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input checked="" type="checkbox"/> only test documentation (without provision for the customer) <input type="checkbox"/> Not applicable
Evaluations (testing or audit) that may not be required for recertification	Not applicable
If necessary, include special features here	Not applicable
Contact partner	bzs@bam.de
Last update	January 2023

Acetylene high-pressure devices

Number of certification scheme	BZS-ZP/2.1.4 (previously BZS-ZP/2.1.4a)
Accreditation	No
New certifications possible?	No (only monitoring of the existing certificates until December 31, 2024)
Product name	Acetylene high-pressure devices
Application of the products	Welding, cutting and allied processes
Scope of the scheme	Manufacturers of high-pressure acetylene devices for welding, cutting and allied processes
In the mandatory area: Directive / Regulation	No
Evaluation procedure	
Certification system (see annexes to the certification schemes)	II (Design-type test with initial audit at the manufacturing site and product monitoring, previously IIa)
Evaluation requirements	DIN EN ISO 15615:2013-08 „Gas Welding Equipment - Acetylene Manifold Systems for Welding, Cutting and Allied Processes – Safety Requirements in High-Pressure Devices “ in compliance with the requirements of: BAM-StAA-SE-16 Test for resistance to solvents for non-metallic materials (latest version) (For safety relevant reasons, testing of resistance of the non-metallic materials to solvents is carried out as an extension of the standard according to a BAM in-house procedure.)
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	Not applicable
QS audit production facility required for initial certification	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Test samples can be taken by the manufacturer Number and type of test samples as specified by BAM, taking into account the above-mentioned test principles
Participating Organizational Units Evaluators (Inspectors and auditors)	Division 2.1 „Safety of Energy Carriers“ Division 7.5 „Technical Properties of Polymeric Materials“ (only BAM-StAA-SE-16)
Tests outsourced	None. Note: The tests according to BAM-StAA-SE-16 can also be carried out by an adequate accredited external testing laboratory.
Rules and procedures for granting	
Period of validity	Only existing certificates until December 31, 2024
EU conformity mark / Certification mark (Label) (see annexes to the certification schemes)	“BAM Certified and under surveillance“
Participating Organizational Unit (Assessor and certification officer)	Division 3.5 „Safety of Gas Storage Systems“

Rules and procedures for maintenance	
Product monitoring foreseen	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Sampling as well as number and type of test samples pursuant to the contract
Type and extent of the presentation of results	<input checked="" type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input type="checkbox"/> Only test documentation (without provision for the customer) <input type="checkbox"/> Not applicable
Evaluations (testing or audit) that may not be required for recertification	Not applicable
If necessary, include special features here	Not applicable
Contact	bzs@bam.de
Last update	January 2023

Quick-action couplings

Number certification scheme	BZS-ZP/2.1.5
Accreditation	No
New certifications possible?	No (only monitoring of the existing certificates until December 31, 2024)
Product name	Quick-action couplings
Application of the products	Welding, cutting and allied processes
Scope of the scheme	Manufacturers of quick-action couplings with shut-off valves for welding, cutting and allied processes
In the mandatory area: Directive / Regulation	No
Evaluation procedure	
Certification system (see annexes to certification schemes)	II (Design type test with initial audit at the manufacturing site and product monitoring, previously IIa)
Evaluation requirements	<p>DIN EN 561:2002-09 Gas welding equipment – Quick-action couplings with shut-off valves for welding, cutting and allied processes</p> <p>in compliance with the requirements of the BAM Standard Operating Procedures:</p> <p>BAM-StAA-SE-16 Test for resistance to solvents for non-metallic materials (latest version)</p> <p>(For safety relevant reasons, testing of resistance of non-metallic materials to solvents is carried out as an extension of the standard according to a BAM in-house procedure.)</p> <p>BAM-StAA-SE-18 Test for resistance to ageing in oxygen for non-metallic materials (latest version)</p>
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	Not applicable
QS audit production facility required for initial certification	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Test samples can be taken by the manufacturer Number and type of test samples as specified by BAM, taking into account the above-mentioned test principles
Participating Organizational Units Evaluators (Inspectors and auditors)	<p>Division 3.5 „Safety of Gas Storage Systems“</p> <p>Division 7.5 „Technical Properties of Polymeric Materials“ (only BAM-StAA-SE-16)</p> <p>Division 5.2 „Experimental and Model Based Mechanical Behaviour of Materials“ (Hardness test only)</p>
Tests outsourced	<p>None.</p> <p>Note: The tests according to BAM-StAA-SE-16 can also be carried out by an adequate accredited external testing laboratory.</p>
Rules and procedures for granting	
Period of validity	Only existing certificates, until December 31, 2024

EU conformity mark / Certification mark (Label) (see annexes to the certification schemes)	“BAM Certified and under surveillance“
Participating Organizational Unit (Assessor and certification officer)	Division 2.1 “Safety of Energy Carriers“
Rules and procedures for maintenance	
Product monitoring foreseen	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Sampling as well as number and type of test samples pursuant to the contract
Type and extent of the presentation of results	<input checked="" type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input type="checkbox"/> Only test documentation (without provision for the customer) <input type="checkbox"/> Not applicable
Evaluations (testing or audit) that may not be required for recertification	Not applicable
If necessary, include special features here	Not applicable
Contact	bzs@bam.de
Last update	January 2023

Safety devices with and without an incorporated flame arrestor (optional multi-function)

Number of certification scheme	BZS-ZP/2.1.7 (previously BZS-ZP/2.1.4b integrated)
Accreditation	No
New certifications possible?	No (only monitoring of the existing certificates until December 31, 2024)
Product name	Safety device with and without an incorporated flame arrestor (optional multi-function)
Application of the product	Welding, cutting and allied processes
Scope of the scheme	Manufacturers of safety devices for welding, cutting and allied processes
In the mandatory area: Directive / Regulation	No
Evaluation procedure	
Certification system (see annexes to the certification schemes)	II (Design-type test with initial audit at the manufacturing site and product monitoring, previously IIa)
Evaluation requirements	<p>DIN EN ISO 5175-1:2018-03 Gas welding equipment - Safety devices - Part 1: Devices incorporating a flame (flashback) arrestor</p> <p>DIN EN ISO 5175-2:2019-05 Gas welding equipment - Safety devices - Part 2: Devices not incorporating a flame (flashback) arrestor</p> <p>in compliance with the requirements of the BAM Standard Operating Procedures:</p> <ul style="list-style-type: none"> - BAM-StAA-SE-16 Test for resistance to solvents for non-metallic materials (latest version) <p>(For safety relevant reasons, testing of resistance of non-metallic materials to solvents is carried out as an extension of the standard according to a BAM in-house procedure.)</p> <ul style="list-style-type: none"> - BAM-StAA-SE-18 test for resistance to ageing in oxygen for non-metallic materials (latest version) - BAM-STAA-SE-19 Test for of safety devices according to ISO 5175-1 for quick opening of the pressure-sensitive cut-off valve (latest version)
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	Not applicable
QS audit production facility required for initial certification	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Test samples can be taken by the manufacturer Number and type of test samples as specified by BAM, taking into account the above-mentioned test principles
Participating Organizational Units Evaluators (Inspectors and auditors)	Division 3.5 „Safety of Gas Storage Systems“ Division 7.5 „Technical Properties of Polymeric Materials“ (only BAM-StAA-SE-16 and BAM-StAA-SE-18)

Tests outsourced	None. Note: The tests according to BAM-StAA-SE-16 can also be carried out by an adequate accredited external testing laboratory.
Rules and procedures for granting	
Period of validity	Only existing certificates (until December 31, 2024)
EU conformity mark / Certification mark (Label) (see annexes to the certification schemes)	"BAM Certified and under surveillance"
Participating Organizational Unit (Assessor and certification officer)	Division 2.1 „Safety of Energy Carriers“
Rules and procedures for maintenance	
Product monitoring foreseen	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Sampling as well as number and type of test samples in accordance with the contract
Type and extent of the presentation of results	<input checked="" type="checkbox"/> Test report <input type="checkbox"/> Condensed test report <input type="checkbox"/> only test documentation (without provision for the customer) <input type="checkbox"/> Not applicable
Evaluations (testing or audit) that may not be required for recertification	Not applicable
If necessary, include special features here	Not applicable
Contact	bzs@bam.de
Last update	January 2023

Fittings and plant components for use with oxygen

Number of the certification scheme	BZS-ZP/2.3.3
Accreditation	No
New certifications possible?	No (only monitoring of the existing certificates until December 31, 2024)
Product name	Oxygen fittings
Application of the products	Systems for liquid and gaseous oxygen
Scope of the scheme	Manufacturer of fittings and plant components for liquid and gaseous oxygen plants
In the mandatory area: Directive / Regulation	No
Evaluation procedure	
Certification system (see annexes to the certification schemes)	II (Design-type test with initial audit at the manufacturing site and product monitoring, previously IIa)
Evaluation requirements	BGRCI data sheet M 034 "Oxygen" in the version valid at the time of certification DIN EN ISO 11114-1-2020-08 „Gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 1: Metallic materials“ - If applicable, ISO 21010:2017-12 "Cryogenic vessels - Gas/material compatibility"
Possible exclusion of standards and/or specifications in case of partial certification that – if appropriate – shall be applied for according to limited requirements?	Not applicable
QS audit production facility required for initial certification	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Test samples can be taken by the manufacturer Number and type of test samples as specified by BAM, taking into account the above-mentioned test principles
Participating Organizational Units Evaluators (Inspectors and auditors)	Division 2.1 „Safety of Energy Carriers“
Tests outsourced	None
Rules and procedures for granting	
Period of validity	Only existing certificates, until December 31, 2024
EU conformity mark / Certification mark (Label) (see annexes to the certification schemes)	“BAM Certified and under surveillance”
Participating Organizational Unit (Assessors and certification officer)	Division 2.1 „Safety of Energy Carriers“
Rules and procedures for maintenance	
Product monitoring foreseen	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sampling, test samples	Sampling as well as number and type of test samples pursuant to the contract
Type and extent of the presentation of results	<input type="checkbox"/> Test report <input type="checkbox"/> Condensed test report

	<input checked="" type="checkbox"/> only test documentation (without provision for the customer) <input type="checkbox"/> Not applicable
Evaluations (testing or audit) that may not be required for recertification	Not applicable
If necessary, include special features here	Not applicable
Contact	bzs@bam.de
Last update	January 2023

Certification systems in the legally non-regulated certification areas

The BZS's own certification systems describe the procedures to be applied for the BAM certification areas not regulated by law.

	Certification system	I	II	II+Auditing	Explanatory note
Scope of evaluation	Design-type test	X ¹	X	X	BAM tests and certifies the design-type provided by the manufacturer. The manufacturer contractually undertakes to manufacture his products in conformity with the design-type and issues a declaration of conformity.
	Production facility initial audit	(X) ²	X	X	After a positive design-type test, the audit is carried out once.
	Product monitoring	-	X	X	Monitoring measures by BAM may include: <ul style="list-style-type: none"> - random verification of the conformity of the products with the tested design-type and/or - Production data monitoring In addition to that: Monitoring of QA documents of the manufacturer possible (e.g., process descriptions, audit reports, management reviews) ²
	Production facility monitoring	-	-	X	Monitoring of the assurance of production in conformity with the design-type by monitoring the product tests or further QA measures of the manufacturer
Issue	Term (maximum)	5 years	10 years	10 years	In the event of changes to certification-relevant properties of the product or certification-relevant manufacturing processes or in the event of relocation of the manufacturing facility (only if initial audits have been performed) during the term of the certificate, its validity shall expire. A new application must be submitted.
	Certification mark	„BAM Design-type tested“	„BAM Certified and under surveillance“	See II	

¹ X: Evaluation measure is required

² (X): Evaluation measure is optional → to be defined per certification scheme

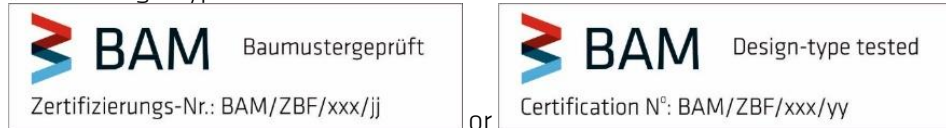
Certification marks for the legally non-regulated certification areas

With the issuance of the certificate, the applicant/client is contractually entitled to mark his products with the certification mark of the BAM Certification Body within the scope of application and the validity period of the certificate.

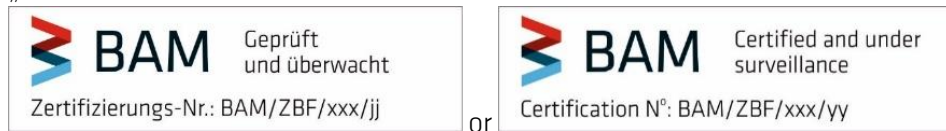
The right to use the certification mark expires automatically upon expiry of the certificate's validity or upon suspension or withdrawal. The products placed on the market until then are excluded from this.

The following certification marks exist in the BZS:

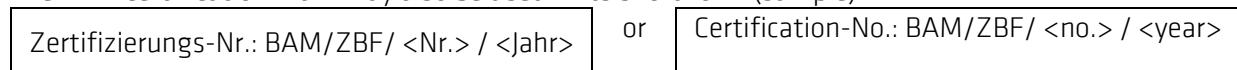
„BAM Design-type tested“:



„BAM Certified and under surveillance“:



The BAM certification mark may also be used in its short form (sample):



TPED accessories (gas cylinder valves and safety valves)

The following scheme is not a certification scheme within the scope of the BZS but a conformity assessment programme of the TPED Inspection Body.

If you have any questions, please contact the contact persons listed below.

Number	No BZS certification scheme
Accreditation	Yes (EN ISO 17020)
New certifications possible?	Yes
Product name	Gas cylinder valves and safety valves
Application of the products	Valves and safety valves for transportable pressure receptacles (gas cylinders, pressure drums, tubes, bundles of cylinders) as well as tanks, battery vehicles and MEGCs
Scope of the scheme	Manufacturers of valves and safety valves for transportable pressure receptacles and tanks
In the mandatory area: Directive / Regulation	2010/35/EU on transportable pressure equipment (TPED) in conjunction with RID/ADR (latest version)
Evaluation procedure	
Test specifications	Standards for equipment listed in 6.2.4.1 and 6.2.8.6.1 of RID/ADR, as listed in the applicable version of that ADR: EN ISO 10297 „Gas cylinders - Cylinder valves - Specification and type testing“ EN ISO 17871 „Gas cylinders - Quick-release cylinder valves - Specification and type testing“ EN ISO 17879 „Gas cylinders - Self-closing cylinder valves - Specification and type testing“ EN ISO 23826 "Gas cylinders – Ball valves - Specification and testing EN ISO 15995 „Gas cylinders - Specifications and testing of LPG cylinder valves - Manually operated“ EN ISO 14245 „Gas cylinders - Specifications and testing of LPG cylinder valves - Self-closing“ EN 13953 „LPG pressure equipment and accessories - Pressure relief valves for transportable refillable cylinders for liquefied petroleum gas (LPG)“
Sampling, test samples	Test samples for type approvals can be taken by the manufacturers Number and type of test samples as specified by BAM, taking into account the above-mentioned test specifications
Participating OUs Evaluators (Inspectors and auditors)	Division 3.5 “Safety of Gas Storage Systems” Division 2.1 „Safety of Energy Carriers“ (O2-test, Acetylene decomposition tests) Department 9 „Component Safety“ (Vibration tests)
Tests outsourced	Not applicable
Rules and procedures for granting	
Period of validity	10 years (for type approvals) or 3 years (for approval of in-house testing services)
Participating OU (Assessors and certification officer)	Division 3.5 „Safety of Gas Storage Systems“
Contact	tped@bam.de
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