

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 (until 03/2026)
New certifications possible?	No
Product name	Pyrotechnics P1-P2
Application of the products	Safety-related applications in the field of other pyrotechnic articles for automotive devices (categories P1 & P2)
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	According to The Pyrotechnic Articles (Safety) Regulations 2015 (as amended) EN ISO 14451:2013 (parts 1-10) pyrotechnic articles – pyrotechnic articles for vehicles (P1 + P2)
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	☐ Yes ☒ No
Sampling, test samples	None, refer to “Evaluation requirements”
Recognition of test reports	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. Additionally, the following test reports can be recognized by BAM: - Test reports of laboratories accredited according to ISO/IEC 17025 for the respective tests - 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 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
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	☐ Yes ☒ No
Sampling, test samples	None
Type and extent of the presentation of results	☐ Test report ☐ Condensed test report ☐ Only test documentation (without provision for the customer) ☒ 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	October 2025

Technical pyrotechnics – Module C2 – for UKCA

Number of certification scheme	BZS-ZP/Pyro-UK-C2
Accreditation	Yes (until 03/2026)
New certifications possible?	No
Product name	Pyrotechnics P1-P2
Application of the products	Safety-related applications in the field of other pyrotechnic articles for automotive devices (categories P1 & P2)
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	According to The Pyrotechnic Articles (Safety) Regulations 2015 (as amended) EN ISO 14451:2013 (parts 1-10) pyrotechnic articles – pyrotechnic articles for vehicles (P1 + P2)
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	☐ Yes ☒ 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	☐ Yes ☒ 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	☐ Test report ☐ Condensed test report ☐ Only test documentation (without provision for the customer) ☐ Report ☒ 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	October 2025

Technical pyrotechnics – module D – for UKCA

Number of certification scheme	BZS-ZP/Pyro-UK-D
Accreditation	Yes (until 03/2026)
New certifications possible?	No
Product name	Pyrotechnics P1-P2
Application of the products	Safety-related applications in the field of other pyrotechnic articles for automotive devices (categories P1 & P2)
Scope of the scheme	Certification of quality systems (according to module D) 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	Module D (Conformity to type based on quality assurance of the production process)
Evaluation requirements	According to The Pyrotechnic Articles (Safety) Regulations 2015 (as amended) EN ISO 14451:2013 (parts 1-10) pyrotechnic articles – pyrotechnic articles for vehicles (P1 + P2)
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	☒ Yes ☐ 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 half of the period of validity (if possible, as remote audit)
If necessary, include special features here	None
Contact	joerg.dengel@bam.de
Last update	October 2025

Low-sparking materials for equipment and tools

Number of certification scheme	BZS-ZP/2.8
Accreditation	no
New certifications possible?	No, only maintenance of valid certificates (until December 31st, 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	Mechanical work in potentially explosive atmospheres with hand-held tools whose intended use does not result in ignition by mechanical impact
Scope of the scheme	Low-sparking materials for use in potentially 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-GAS-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	☐ Yes ☒ No
Sampling, test samples	In general, material samples (details see Annex) shall be submitted by the manufacturer. In case of the impact partner “concrete”: screed-concrete impact plates are produced by BAM Division 7.4 Technology of Construction Optional: Material analysis of the metallic test samples by spark emission analysis by BAM Division 1.6
Participating OUs Evaluators (Inspectors and auditors)	BAM Division 1.6 (material analysis), BAM Division 2.1 (testing according to SOPs (see above)), BAM Division 7.4 (production of concrete-impact plates)
Tests outsourced	Not applicable
Rules and procedures for granting	
Period of validity	Generally, 5 years (December 31st, 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	☐ Yes ☒ No
Sampling, test samples	Not applicable

Type and extent of the presentation of results	☐ Test report ☐ Condensed test report ☐ Only test documentation (without provision for the customer) ☒ 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	April 2024

Annex to BZS Certification Scheme BZS-ZP/2.8

Basics

The certification of materials for the production of tools is based on the precisely defined intended use for application in potentially explosive atmospheres, including the certified materials as well as the impact partner and the fuel gases.

Table 1: Categorization of zones in potentially explosive atmospheres

Application according to EU Directive 1999/92/EC, annex I:	Potentially explosive atmosphere (due to fuel-gas-, vapor-, mist- or dust-air mixtures) is ...	Remarks	Certification possible
Zone 0 resp. 20	Present continuously, for long periods or frequently	The regulations for industrial safety according to DIN EN 1127-1:2019 (section. 6.4.4) require that in potentially explosive areas of zone 0 or 20 only tools that cannot produce sparks, i.e. not even individual sparks, may be used	no
Zone 1 resp. 21	Present occasionally during normal operation	The use of tools in potentially explosive atmospheres of zone 1/21 requires that no ignition-effective sparks may occur.	yes (see table 3)
Zone 2 resp. 22	Unlikely to occur during normal operation, and, if it does occur, it likely does so only rarely and for a short period only	-	included in a certificate for zone 1/21

Impact Spark Test

In the impact spark test, no finished tools are tested, but rather special test samples (impact pins) made from the original material of the hand tools. The impact process is carried out against an impact plate as the impact partner with a defined kinetic energy and in an explosive flammable gas/air- atmosphere.

Table 2: Reference fuel gases defined for the certification program

	Explosion group according to DIN EN ISO/IEC 80079-20-1:2020			
	I	IIA	IIB	IIC
Reference fuel/air-atmospheres	Methane/air-atmosphere	Propane/ air-atmosphere	Ethylene/ air-atmosphere	Acetylene/- and Hydrogen/ air-atmosphere

In the annex of the certificates, the material pairing including the material compositions or formulations and all other conditions for the intended use are attested.

The material of the impact plate can be either metallic or non-metallic, such as concrete, which is a typical ground material in a chemical, petrochemical plant, or a gas plant. The choice of impact partner depends on the intended use of the tool.

The proofs of material composition can be provided by the client or determined by BAM.

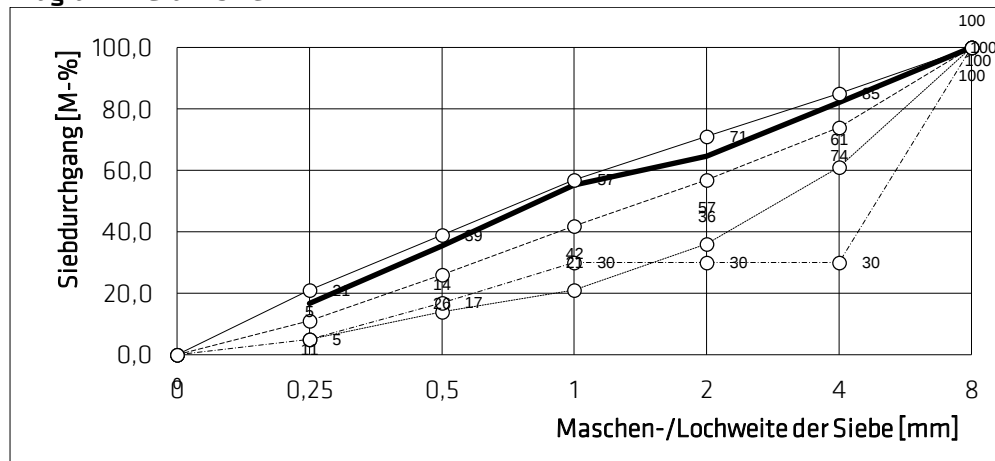
Technical drawings with the exact dimensions of the impact pins and, if applicable, impact plates will be sent upon placing the order.

Table 3: Variations and general conditions of the certification program

Parameter	Description	
Impact pin (material of the intended tool)	30 impact pins according to technical drawing (provided by the customer)	
Possible „levels“ of kinetic impact energy	31 Nm, 61 Nm, 72 Nm, 80 Nm, 125 Nm, 190 Nm, 220 Nm, 280 Nm	
Number of impacts	100	
Requirement for the test result	No ignition of the test mixture in 100 impacts at the tested impact energy	
Impact partner (impact plate)	10 impact plates according to technical drawing (provided by the customer), except for impact partner concrete: 20 impact plates (manufactured by BAM, see table 4)	
Impact partner (impact plate)	Concrete	Carbon steel
Test gas mixtures for certification for explosion groups I, IIA, IIB, and acetylene	Stoichiometric acetylene/air mixture (8,0 vol.% C ₂ H ₂ in 92,0 vol.% air)	Stoichiometric acetylene/air mixture (8,0 vol.% C ₂ H ₂ in 92,0 vol.% air)
Test gas mixtures for certification for explosion groups I, IIA, IIB and IIC	Stoichiometric acetylene/air mixture (8,0 vol.% C ₂ H ₂ in 92,0 vol.% air) <u>and</u> Substoichiometric hydrogen/air mixture (10,0 vol.% H ₂ in 90,0 vol.% air)	
Remarks	With these material combinations, the probability of ignition for hydrogen/air mixtures can be higher than for acetylene/air mixtures. [3][4][5]	With these material combinations, the probability of ignition for acetylene/air-mixtures is higher than for hydrogen/air mixtures. [1][2]

Table 4: Composition of low-wear screed concrete floor for chemical plants (according to DIN EN 13813:2003-01 in conjunction with DIN 18560:2021-02 defining a cement screed concrete)

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	Superplasticizer MasterRheobuild 1021
Total	455.3	---	288.1	
Aggregate (total)	1907	---	711.91 (100 vol.%)	See diagram 1
0.1 / 0.5 mm	655	2.63	249.17 (35.0 vol.%)	Sand
0.5 / 1.0 mm	393	2.63	149.50 (21.0 vol.%)	Sand
1.0 / 2.0 mm	94	2.63	35.60 (5.0 vol.%)	Sand
2.0 / 4.0 mm	300	2.63	113.90 (16.0 vol.%)	Gravel
4.0 / 8.0 mm	337	2.63	128.14 (18.0 vol.%)	Gravel
EKF 10	128	3.60	35.60 (5.0 vol.%)	Corundum
Fresh concrete	2362	---	1000	

Diagram 1: Grain size

Sources:

[1] Grunewald & Grätz: „Ermittlung der Zündwahrscheinlichkeit mechanisch erzeugter Schlagfunken in explosionsfähigen Brenngas/Luft-Gemischen“, BAM Forschungsbericht 279, 2007

[2] Grunewald, Finke & Grätz: „Untersuchungen zur Zündwahrscheinlichkeit und Datenanalyse zur Erfassung der Einflussgrößen mechanisch erzeugter Stahl-Schlagfunken in explosionsfähigen Brenngas/Luft-Gemischen“, BAM Forschungsbericht 292, 2010

[3] Holländer, L., Grunewald, T., Grätz, R., „Entwicklung normativer Anforderungen an explosionsgeschützte nichtelektrische Geräte resultierend aus der Zündfähigkeit mechanisch erzeugter Schlagfunken (NAMES)“, BAM Forschungsbericht, Vh2104, BMBF Förderkennzeichen 01FS12042, 2015

[4] Askar, E., Grunewald, T., „Entzündung von wasserstoffhaltigen Atmosphären durch mechanisch erzeugte Funken („HySpark“)“, BAM Forschungsbericht Vh2121

[5] Grunewald, T., Grätz, R., Kühne, H.C., „Werkzeuge zur Verwendung in explosionsgefährdeten Bereichen – Erkenntnisse zur Zündwahrscheinlichkeit von Edelstahl und NE-Metallen gegen Baustahl und Estrichbeton in Wasserstoff und Acetylen“, Technische Sicherheit, ISSN 2191-007, 11. Jahrgang 2021, VDI Fachmedien GmbH & Co. KG, Düsseldorf

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	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). 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.
In the mandatory area: Directive / Regulation	n/a
Evaluation procedure	
Certification system (see annexes to the certification schemes)	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. or 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
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

	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. Measurement of the film system class and film system parameters according to: ASTM E 1815-18- Standard Test Method for Classification of Film Systems for Industrial Radiography 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 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.
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	☒ Yes ☐ No For initial certification, a production facility on-site audit is only possible under the following conditions: 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. Note: ISO 9001 certification is not required but reduces the extent of the audit.
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	- Design-type certificate 4 years - Certification with monitoring until December 31, 2027 at the latest

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	☒ Yes ☐ 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	☐ Test report ☐ Condensed test report ☒ Only test documentation (without provision for the customer) ☐ 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	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. 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.
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	DIN EN 14784-1:2005-11 - Non-destructive testing- Industrial computed radiography with storage phosphor imaging plates - Part 1: Classification of systems ASTM E 1742/E 1742M-18 - Standard Practice for Radiographic Examination ASTM E 2002-15 - Standard Practice for Determining Total Image Unsharpness and Basic Spatial Resolution in Radiography and Radioscopy ASTM E 2445/E 2445M-14 - Standard Practice for Performance Evaluation and Long-Term Stability of Computed Radiography Systems ASTM E 2446-16 - Standard Practice for Manufacturing Characterization of Computed Radiography Systems

	ISO 16371-1:2011-10 - Non-destructive testing - Industrial computed radiography with storage phosphor imaging plates - Part 1: Classification of systems 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 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 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 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
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	☒ Yes ☐ No 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.
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	☐ Yes ☒ No
Sampling, test samples	Not applicable

Type and extent of result presentation	☐ Test report ☐ Condensed test report ☐ only test documentation (without provision for the customer) ☒ 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	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. 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.
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	DIN EN ISO 17636-2:2013-5 - Non-destructive testing of welds - Radiographic testing - Part 2: X- and gamma-ray techniques with digital detectors DIN EN 12681-2:2017 - Founding - Radiographic testing - Part 2: Techniques with digital detectors ASTM E 2597 / E 2597M-14 - Standard Practice for Manufacturing Characterization of Digital Detector Arrays
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	☐ Yes ☒ 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	☐ Yes ☒ No
Sampling, test samples	Not applicable
Type and extent of the presentation of results	☐ Test report ☐ Condensed test report ☐ only test documentation (without provision for the customer) ☒ 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

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	Explanatory note
Scope of evaluation	Design-type test	X ¹	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	After a positive design-type test, the audit is carried out once.
	Product monitoring	-	X	Monitoring measures by BAM may include: - 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) Fehler! Textmarke nicht definiert.
Issue	Term (maximum)	5 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“	

¹ X: Evaluation measure is required

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“:



or



„BAM Certified and under surveillance“:



or



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

Zertifizierungs-Nr.: BAM/ZBF/ <Nr.> / <Jahr>

or

Certification-No.: BAM/ZBF/ <no.> / <year>

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 program of the TPED Inspection Body.

If you have any questions, please contact the contact 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, 6.2.8.6.1 and 6.8.3.6 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) 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
Last update	January 2025