Approval of sealed radioactive sources as

"special from radioactive material"

"

№ D/0097/S-96 (rev.1)

Bundesanstalt fur
Materialforschung
und –Prufung

12200 Berlin
T: +49 30 8104-0
F: +49 30 8104-7 2222

1. Regulatory documents

This Approval Certificate is granted in compliance with the requirements to "special form radioactive material" of the following regulatory documents for the road, rail, sea, inland water and air transport:

Safety regulations for transportation of radioactive materials, ed. 2012, International Atomic Energy Agency (IAEA), Special safety requirements No. SSR-6, Vienna, 2012,

European Agreement on Dangerous Goods by Road (ADR) dated September 30, 1957. (Federal Law Gazette 1969 II, p. 1489), Appendices A and D, Revision dated November 29, 2017 (Federal Law Gazette 2017 II, p. 1520)

International Agreement on Dangerous Goods by Rail, Appendix to Appendix to Agreement on International Goods Transport by Rail dated May 9, 1980 (Federal Law Gazette 1985 II p. 130) as published on May 16, 2008 (Federal Law Gazette 2008 II p. 475) with latest amendments in Decree No. 20 on amendments to International Agreement on Dangerous Goods by Rail dated November 11, 2016 (Federal Law Gazette 2016 II p. 1258).

International Maritime Dangerous Goods Code (IMDGC Code), revision of 2016. Amendment 38-16 published on November 10, 2016, der Fassung der Bekanntmachung vom 10. November 2016 (Official Bulletin of the Federal Ministry of Transport and Digital Infrastructure, 2016, p. 718);

Ordinance on domestic and international transportation of dangerous goods by road, rail and inland waterways (Regulations on transportation of dangerous goods by road, rail and inland waterways of the Federal Republic of Germany - GGVSEB) as revised and published on March 30, 2017 (Federal Law Gazette 2017 I p. 711) with latest revisions added by Clause 2a of Ordinance dated December 7, 2017 (Federal Law Gazette 2017 I p. 3859)

Rules of Admission to Air Transportation dated June 19, 1964 (Federal Law Gazette I I p. 370). The latest amendment was added by Clause 1 of Ordinance dated March 30, 2017 (Federal Law Gazette I p. 693) in combination with Dangerous Goods Regulations of ICAO (International Civil Aviation Organisation) (ICAO Technical Instructions on Dangerous Goods by Air, ed. 2017/2018).

2. Applicant and owner of this Approval

Ritverc GmbH
ul. Kurchatova 10
194223 Saint Petersburg
Russia

3. Manufacturer

Ritverc GmbH
ul. Kurchatova 10
194223 Saint Petersburg
Russia

This Approval comprises 3 text pages, 2 drawings and 1 revision sheet and may be copied and distributed in full only. Extracts from this Approval, references to tests for advertising purpose and processing of the information provided herein require revocable written consent from the Federal Institute for Materials Research and Testing in each individual case.

4. Applicant's basic documents

/ Doc. No. 1 / Ritverc GmbH)letter (e-mail) dated 17.01.2013 with the standard checklist data
/ Doc. No. 2 / Ritverc GmbH letter (e-mail) dated 27.08.2013 with certificates for test specimens
/ Doc. No. 3 / Ritverc GmbH letter (e-mail) dated 18 and 19.12.2013 with sets of drawings, certificates for radioactive sources, process instructions and test program, application notes, quality assurance program and certificates ISO 9001-2008.
/ Doc. No. 4 / Ritverc GmbH (e-mail) dated 10.01.2014 with revised drawings, certificates for radioactive sources RWL and information on activity
/ Doc. No. 5 / Ritverc GmbH letter (e-mail) dated 21.01.2014 with process instructions on bubble method
/ Doc. No. 6 / Ritverc GmbH letter (e-mail) dated 04.09.2018 with updated documents

5. Designation of radioactive source type, radionuclide, activity

Type: XCd9.06
Radionuclide: Cd-109
Activity: 1.48 GBq (40 mci) max.
Useful radiation: X-ray radiation:

Type: XFe5.21, XFe5.22, XFe5.23
Radionuclide: Fe-55
Activity: 9.25 GBq (250 mci) max.
Useful radiation: X-ray radiation:

Type: GBa3.06, XBa3.06
Radionuclide: Ba-133
Activity: 1.11 GBq (30 mci) max.
Useful radiation: Gamma radiation

6. Drawings

Radionuclide products of RITVERC:

Sealed radioactive photon sources with codes XBa3.06, GBa3.06 (061.4), XCd9.06,

RT.10.K7.000 C, rev. B dated 29.08.2018

Sealed radioactive photon sources with codes XFe5.21, XFe5.22, XFe5.23

RT.10.K6.000 C, rev. E dated 29.08.2018

Detailed drawings submitted to the Federal Institute for Materials Research and Testing

7. Description of radioactive sources

Radioactive cadmium has been implanted in the graphite matrix, radioactive iron has been precipitated by electrolysis on a copper substrate, and radioactive barium has been implanted in ceramic.
A shielding enclosure of these radioactive substances consists of a cylindrical capsule made of Monel metal, which is hermetically sealed from the cover end by laser welding, and a beryllium port on the bottom, which is sealed with silver brazing alloy. Additional inserts made of stainless steel or tungsten alloy hold the radioactive content. The capsule height is 5 mm, the diameter varies from 8 to 15 mm depending on the encapsulated activity. Marking is applied on sources by laser engraving on the side surface of the capsule.

8. Quality assurance

Along with the documentation submitted to the Federal Institute for Materials Research and Testing, manufacturing and operation quality assurance programs in compliance with the requirements of the regulatory documents referred to in Section 1 were presented.

9. Testing of source types

See Test Certificate of the Federal Institute for Materials Research and Testing No. 18038536 dated 15.01.2019.

10. Approval of source types

According to type test results (Section 9), structure types of the sources specified in described in Sections 5 through 7 meet the requirements for the "special form radioactive materials" as per the regulatory documents mentioned in Section 1.

This Approval is valid through 16.01.2024 and may be withdrawn any time.

11. Additional provisions

Transport of the source after its use is allowed, if the latest successful leak test was performed not later than 6 months earlier.

The quality assurance documentation shall be stored for at least 10 years from the date of source manufacture.

Any change in types and quality assurance program requires approval of the Federal Institute for Materials Research and Testing.

12. Notes

The Federal Institute for Materials Research and Testing reserves a right to verify compliance of the manufactured source to the approved type at the applicant's expense.

This Approval does not relieve the consignor from the obligation to follow the requirements of a country the above source is shipped to.

If the validity period of this Approval needs prolongation, the relevant application shall be submitted to the Federal Institute for Materials Research and Testing at least 6 weeks before the validity period expires.

13. Explanation of the appeal procedure

Objections against this Approval may be raised within a month from the date of notification. An objection shall be addressed to the President of the Federal Institute for Materials Research and Testing (BAM), 12205, Berlin, Unter den Eichen 87, in written or orally, and placed in the record.

FEDERAL INSTITUTE FOR MATERIALS RESEARCH AND TESTING
(BAM) Berlin, 16.01.2019

Department 3.3 "Safety of shipping containers"

On the instructions of:

F. Wille, D.Sc. in engineering
Doctor and Professor
Head of the Department

On the instructions of:

S. Komann, D.Sc. in engineering
Government adviser
Executive in charge of the Department

On the instructions of:
A. Rolle, D.Sc. in engineering
Chief government adviser
Executive in charge

Enclosures: Drawings RT.10.K6.000 C, rev. E, RT.10.K7.000 C, rev. B, list of document revisions

**English translation is for the informative purpose only. German translation alone is legally valid.**