

Translation
Approval certificate of the design
of a
"special form radioactive material"
No. D/0097/S-96 (Rev.O)

1. Directions

This approval is issued in accordance with the requirements for „special form radioactive material" of the following regulations for transport by road, rail, sea, inland water and air:

Regulations for the Safe Transport of Radioactive Material, 2012 Edition, Atomic Energy Agency (IAEA), Specific Safety Requirements No. SSR-6, Vienna, 2012

The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) dated September 30, 1957 (BGBl. 1969 II, p. 1489), last amended by the 22nd ADR amending regulation dated June 03, 2013 (BGBl. 2013 II, p. 648)

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) — Annex I to Appendix C of the Convention concerning International Carriage by Rail (COTIF) dated May 09, 1980 (BGBl. 1985 II, p. 130), in the version published on May 16, 2008 (BGBl. 2008 II, p. 475), last amended by the 18th RID amending regulation dated May 25, 2013 (BGBl. 2013 II, p. 562)

International Maritime Dangerous Goods Code (IMDG-Code), Amendment 36-12

Regulations concerning the domestic and cross-border carriage of dangerous goods by road, rail and inland waterways (Gefahrgutverordnung Straße, Eisenbahn und Binnenschifffahrt- GGVSEB) dated January 22, 2013 (BGBl. 2013 I, p. 110)

German air traffic licensing regulations in the version published on July 10, 2008 (BGBl. I, p. 1229), last amended by the regulation dated February 22, 2011 (BGBl. 2011 I, p. 317) in conjunction with the ICAO Dangerous Goods regulations (ICAO Technical Instructions)

2. Applicant and holder of this certificate

RITVERC GmbH
Kurchatova str.10
194223 St. Petersburg
RUSSIA

3. Manufacturer

RITVERC GmbH
Kurchatova str.10
194223 St. Petersburg
RUSSIA

4. Essential documents

/Document 1/ Ritverc GmbH letter (email) from 17.01.2013, which includes the checklist data
/Document 2/ Ritverc GmbH letter (email) from 27.08.2013, which includes the test sample certificates

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- /Document 3/ Ritverc GmbH writing (email) from 18. and 19.12.2013, which includes sets of drawings, certificates for the radiant, operating instructions and test rules, application notes, quality assurance program and certificates ISO 9001-2008
- /Document 4/ Ritverc GmbH writing (email) from 16.01.2014, which includes revised drawings, certificates for the sources with RWL radioactivity data
- /Document 5/ Ritverc GmbH writing (email) from 21.01.2014, which includes operating instructions for bubble test

5. Designation specification, radionuclide, radioactivity,

Design: XCd9,
Nuclide: Cd-109
Radioactivity: max. 1,48 GBq (40 mCi)
Useful radiation: X-ray radiation

Design: XFe5
Nuclide: Fe-55
Radioactivity: max. 9,25 GBq (250 mCi)
Useful radiation: X-ray radiation

Design: GBa3
Nuclide: Ba-133
Radioactivity: max. 1,11 GBq (30 mCi)
Useful radiation: Gamma radiation:

6. Drawings

Ritverc isotope products:

Cd-109 source XCd9.06, RT.10.K7.02 C, Rev.A from 10.01.2014

Fe-55 source XFe5, RT.10.K6.00 C, Rev.D from 10.01.2014

Ba-133 source GBa3.06 (061.4), RT.10.K7.01 C, Rev.A from 10.01.2014

Drawings of components as attached at the BAM

7. Description of the design

Radioactive cadmium is embedded in a graphite matrix, radioactive iron is precipitated on copper base electrolytically, and radioactive barium is fixed in ceramic. Enclosures for these radioactive materials consist of a cylindrical capsule made of Monel metal, which is sealed by laser welding at the top, and a beryllium window at the bottom, which is sealed using silver brazing alloy. Additional spacers made of stainless steel or tungsten alloy fix the active parts of the sources. The height of capsules is 5 mm, diameter varies from 8 up to 15 mm, depending on the radioactivity level. The capsule code is engraved by laser on the source side.

8. Quality assurance

Technology and manufacture quality assurance programs, which meet the requirements of the mentioned in Section 1 instructions, have been presented to the Federal Institute for Materials Research and Testing together with submitted documents.

9. Design assessment

See BAM assessment report No. 3.3/21500 from 29.01.2014.

10. Design approval

On the basis of the results of the design assessment (section 9), the source specified and described in sections 5-7 meets the requirements for "special form radioactive material" in accordance with the regulations specified in section 1.

This approval certificate is valid until 30.01.2019, subject to revocation at any time.

11. Incidental provisions

When transporting the source after use, a leak test producing a positive result must have been performed within the last six months.

Quality assurance documentation must be retained for at least 10 years from the source manufacturing date.

Modifications to the design and to the quality assurance programs require approval by the BAM.

12. Notes

At the expense of the applicant, the BAM reserves the right to check whether the manufactured sources are in accordance with the approved design

This approval does not release the consignor from obligation to adhere to the transportation regulations of the country in question that must be observed when transporting these sources.

If the validity of this approval needs to be extended, a request must be submitted to the BAM at least six weeks prior to its expiry.

13. Legal advice

Any appeal against this decision can be raised within one month following its announcement. The appeal must be made in writing or declared for recording and sent to the President of the Federal Institute for Materials Research and testing (BAM, Unter den Eichen 87, 12205 Berlin, Germany).

FEDERAL INSTITUTE FOR MATERIAL RESEARCH AND TESTING
Berlin, 30.01.2014

Devison 3.3 "Safety of Transport Containers"

On behalf of

On behalf of

Dr.-Ing. B. Droste
Director and Professor
Head of division

Dr.-Ing S. Komann



On behalf of

Dr.-Ing. A. Rolle
Responsible Official

Attachment:

Drawings RT.10.K7.02 CXCd9.06, Rev.A; RT.10.K6.00 C, Rev.D; RT.10.K7.01 C, Rev.A
Overview of revision states

Legally binding is the German original text

*BAM 17.03.2014
3.32 A. Rolle*