



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration

East Building, PHH-23
1200 New Jersey Ave, SE
Washington, D.C. 20590

**COMPETENT AUTHORITY CERTIFICATION FOR A
TYPE FISSILE**

**RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/0412/AF-96, REVISION 19**

**REVALIDATION OF GERMAN COMPETENT AUTHORITY
CERTIFICATE D/4305/AF-96**

The Competent Authority of the United States certifies that the radioactive material package design described in this certificate satisfies the regulatory requirements for a Type AF package as prescribed in the regulations of the International Atomic Energy Agency¹ and the United States of America². The package design is approved for use within the United States for import and export shipments made in accordance with applicable international and domestic transport regulations.

1. Package Identification - BU-D.
2. Package Description and Authorized Radioactive Contents - as described in German Certificate of Competent Authority D/4305/AF-96, Revision 11 (attached).
3. Criticality - The minimum criticality safety index is 0.71. The maximum number of packages per conveyance is determined in accordance with Table 11 of the IAEA regulations cited in this certificate.
4. General Conditions -
 - a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.
 - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Engineering and Research, (PHH-23), Pipeline and Hazardous

¹ "Regulations for the Safe Transport of Radioactive Material, 2012 Edition, No. SSR-6" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

² Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

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Materials Safety Administration, U.S. Department of
Transportation, Washington D.C. 20590-0001.

- c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.
 - d. Records of Management System activities required by Paragraph 306 of the IAEA regulations¹ shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.
5. Marking and Labeling - The package shall bear the marking USA/0412/AF-96 in addition to other required markings and labeling.
6. Expiration Date - This certificate expires on January 31, 2029. Previous editions which have not reached their expiration date may continue to be used.

This certificate is issued in accordance with paragraph(s) 816 of the IAEA Regulations and Section 173.472 and 173.473 of Title 49 of the Code of Federal Regulations, in response to the July 16, 2024 petition by Orano NCS GmbH, Hanau, Hesse, GERMANY, and in consideration of other information on file in this Office.

Certified By:



William Schoonover
Associate Administrator for Hazardous
Materials Safety

August 08, 2024
(DATE)

Revision 19 - Issued to revalidate German Certificate of Approval No.
D/4305/AF-96, Revision 11.

Federal Office for the Safety of Nuclear Waste Management



Certificate of Approval

D/4305/AF-96 (Rev. 11)

for a package design of Type A for fissile radioactive materials

Pursuant to the application filed by company DAHER Nuclear Technologies GmbH, Hanau, on August 17, 2023 (Ref.: 0007-SVK-2023-004) the container with the manufacturer designation "BU-D" is approved as Type A package design for fissile radioactive materials, according to the following regulations for transport by road, rail, sea and air:

Regulations for the Safe Transport of Radioactive Material, 2018 Edition, International Atomic Energy Agency (IAEA), No. SSR-6, § 820,

European Agreement from September 30, 1957, concerning the International Carriage of Dangerous Goods by Road (ADR) (BGBl. 1969 II p. 1489), Attachments A and B in the version of the publication dated November 16, 2021 (BGBl. 2021 II p. 1184), last modified by the 29th ADR Modification Decree of November 22, 2022 (BGBl. 2022 II p. 601),

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) - Enclosure C of the Agreement concerning International Railway Traffic (COTIF Agreement) of May 9, 1980 (BGBl. 1985 II p. 296), in the version of the publication dated April 22, 2022 (BGBl. 2022 II p. 279), last modified by the 23rd RID Modification Decree of November 3, 2022 (BGBl. 2022 II p. 555),

International Maritime Dangerous Goods Code (IMDG-Code), Amendment 40-20, in the official German translation published on November 16, 2020 (VkB. 2020 p. 781),

International Civil Aviation Organization – Technical Instructions for the Safe Transport of Dangerous Goods by Air, Edition 2023-2024,

Regulations for the Domestic and International Transport of Dangerous Goods by Road, Rail and Inland Waterways (Dangerous Goods Regulations Road, Rail and Inland Navigation- GGVSEB) in the version of the publication dated August 18, 2023 (BGBl. 2023 I Nr. 227),

Regulations for Maritime Transports of Dangerous Goods (Dangerous Goods Regulations Sea - GGVSee) in the version of the publication dated October 21, 2019 (BGBl. 2019 I p. 1475), last modified by article 16 of the decree dated December 12, 2019 (BGBl. 2019 I p. 2510),

Air Traffic – Approval – Order from June 19, 1964, in the version of the publication dated July 10, 2008 (BGBl. 2008 I p. 1229), last modified through article 4 of the decree of December 7, 2021 (BGBl. 2021 I p. 5190) in combination with the ICAO Dangerous Goods Regulations (ICAO Technical Instructions)

Impurities may be contained in addition to the uranium, such as fluff, dust, sand, iron hydroxide.

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The uranium compounds can additionally contain Gadolinium as a neutron absorber.

Not allowed however are impurities

- with additional dangerous properties,
- with a mean hydrogen density greater than water,
- with beryllium or deuterium with a mass greater than 1% of the fissile material mass. Excepted from this is deuterium in natural concentration in water.

If uranyl nitrate is part of the content no additional easy or normal oxidizing materials may be present in the content.

The H/U ratio within the package is unlimited; nevertheless, the material must be in solid form.

The mass of the content is limited to maximum 90 kg.

The total activity must not exceed 1 A₂.

Package design:

The package with the designation BU-D fulfills, as far as mechanical and thermal characteristics are concerned, and according to the above mentioned expert comments and letters of BAM, and as far as criticality safety and radiation shielding are concerned, according to evaluations performed by BASE, the requirements towards a Type A package for fissile radioactive materials (IAEA Regulations §§ 635 and 673).

The leakage of water into all voids was assumed for the criticality analysis.

Package description:

The package consists of an outer container made of steel sheet (213 l drum), which is closed with a clamping ring and sealed with an O-Ring gasket and an inner container closed by a flanged lid and a flat gasket. The inner container may contain up to 3 stainless steel pails containing the nuclear fuel. The nuclear fuel pails have a maximum inner diameter of 285 mm. Between the pails and the inner container a protection device is placed which is suitable for the pail diameter (distance frame or protection tube). The space between the outer and the inner container is filled with light concrete acting as thermal insulation; after loading, a disc of light concrete sheathed in steel sheet is set between the lids of the inner and the outer container.

The containment system consists of the inner container with its lid, gasket and screwed closing.

The confinement system consists of the inner container with its lid, gasket and screwed closing.

A schematic drawing of the package (Data Sheet No. 001-068-00, Index e) is found in Enclosure 1.

The outer dimensions are: Diameter 608 mm, Height 890 mm

The masses of the package are: Tare weight approx. 160 kg, Gross weight max. 260 kg

With the present certificate correspond at the present time the packagings designated in Enclosure 2 by the respective parts list revisions (see also auxiliary directive No. 7).

Auxiliary directives and remarks:

1. All quality assurance measures for planning, accompanying controls and operation must be in agreement with the Dangerous Goods Guidelines of BAM "Quality Assurance Measures of Packagings for Competent Authority Approved Package Designs for the Transport of Radioactive Material" (BAM-GGR 011, in their valid revisions, respectively).
2. The new manufacture of packagings is only allowed according to the design documents with the highest revision index in enclosure 2 including the modifications according to remark No. 7 and by observing specification SB-02-02, Rev. 2 by DAHER-NCS GmbH. According to the transitional arrangements, no new manufacturing is permitted after 31.12.2028.

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3. This approval only is valid together with the acceptance certificates for the package design series, which must be sent to BAM and BASE uncalled. Deviations tolerated by BAM in accordance with BAM-GGR 011 as well as modifications in accordance with auxiliary directive No. 7 have to be documented in this acceptance certificate. For package design series which are already manufactured the deviations and modifications in accordance with auxiliary directive No. 7 tolerated by BAM have to be documented in the Documentation Book for the package design series.
 4. It must be made sure that each user of the packaging has received and takes into account the Documentation Book, which especially contains the Approval Certificate, the Handling and Maintenance Instructions and the Instructions for Periodic Inspections, and that he observes this book. In this respect, the following documents must be mentioned in particular:
 - Handling Instructions HA-97-09, Rev. 4 "Handling of the BU-D Package", from DAHER Nuclear Technologies GmbH, dated 17.08.2018,
 - Testing instruction PA-03-05, Rev. 0 "Contamination Control and Dose Rate Measurement of the BU-D Packages", from NCS GmbH, dated 11.04.2003,
 - Testing instruction PA-00-01, Rev. 5 "Periodic Inspection of the BU-D Package", from Orano NCS GmbH, dated 05.11.2023,
 - Inspection instruction PA-03-04, Rev. 1 "Inspections of the BU-D Package within the Scope of Maintenance, of Regular and Periodic Inspections", from DAHER-NCS GmbH, dated 14.10.2013,

The use of documents with a higher revision index is only allowed in connection with this certificate after release by BAM and approval by BASE. These documents then become part of the certificate.

5. Each package according to this series design must be submitted to periodic inspections in due time. For design series that will exclusively be used outside the Federal Republic of Germany, the periodic inspections may be performed and certified by personnel authorized by the authorities of the concerned countries. Certifications proving that the periodic inspections were carried out must be sent to BAM and BASE uncalled.
6. Each package according to this series design must be durably marked with the above-mentioned identification and with the date (month, year) of the next periodic inspection.
7. Any modifications of drawings, parts lists and material specifications, on which the license is based, must be released by BAM and approved by BASE as a change notice or extended type list (see Enclosure 2) before production may start. These changes or the extended type list then become part of the certificate at hand.
8. This approval does not relieve the user from the duty to respect the regulations of the countries towards or through whose territory this package is transported.

Costs:

1. Based on § 12, Articles 1 and 2 of the Law on the Transport of Dangerous Goods (Gefahrgutbeförderungsgesetz - GGBefG) from August 6, 1975, last modified by article 26 of the law dated March 2, 2023 (BGBl. 2023 I Nr. 56), combined with § 1 para. 2 of the Decree Concerning Fees for Measures during the Transport of Dangerous Goods (Gefahrgutkostenverordnung - GGGKostV) of March 11, 2019 (BGBl. 2019 I p. 308), last modified by article 4 of the decree dated June 28, 2023 (BGBl. 2023 I p. 174), costs - fees and expenditures - will be charged for this notification. The costs arise from § 2 in connection with attachment 2 of the GGGKostV.
- 2 According to § 12 Article 1 of the GGBefG, related to § 13 Article 1 No. 1 of the Law on Administrative Expenses (VwKostG) of June 23, 1970 (BGBl. I p. 821), in the version valid until August 14, 2013 dated December 5, 2012 (BGBl. I p. 2415) these costs shall be carried by company Orano NCS GmbH.
3. The assessment of costs will be notified separately.

Statement of rights of appeal:

Objections against this authorization may be filed within one month after its issuing with the Federal Agency for the Safety of Nuclear Waste Management in Berlin.

Salzgitter, January 26, 2024

In representation

(Stamp)

Thiele

Enclosures

Attachment

Enclosure 1: Data Sheet No. 001-068-00 (Index e)

Enclosure 2: Type list

**Typenliste
für Behälter BU-D**

Behälter vom Typ BU-D, die nach den nachstehend genannten Stücklisten gefertigt wurden bzw. werden, entsprechen der in diesem Zulassungsschein genannten Bauart (siehe auch die Nebenbestimmungen 2, 3 und 7).

Stücklisten-Revision	Freigabe der BAM
001-068, Index c	Schreiben der BAM vom 19.7.2007 (AZ: III.32/Jo)

Salzgitter, den 26. Januar 2024

Im Auftrag

Thiele

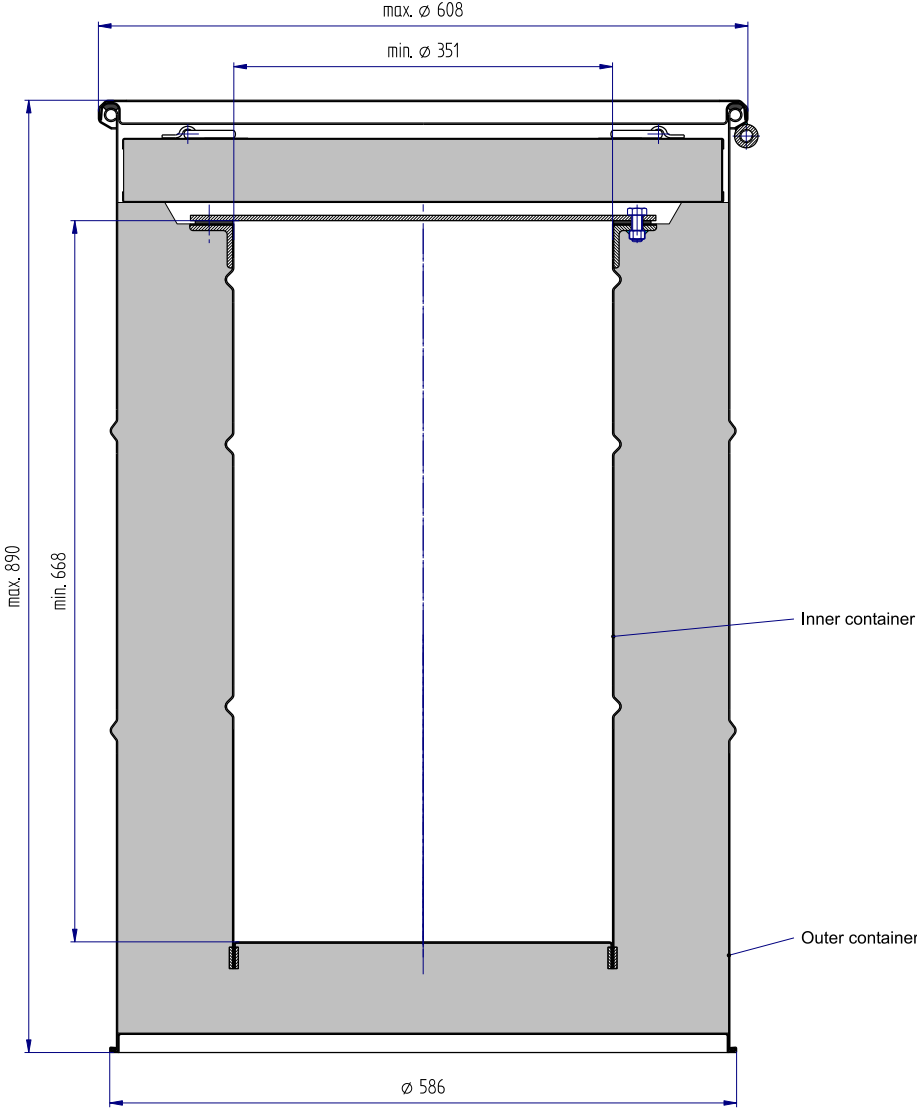


- Attachment to Certificate of Approval D/4305/AF-96 (Rev. 11) -

Rev. No.	Date of publication	Valid until	Reason for the revision
0 ^{*)}	30.01.1992	31.01.1995	First issue
1 ^{*)}	23.08.1995	31.08.1998	Complete new version, among others with the modification of the allowable contents and the transport index.
2 ^{*)}	14.08.1998	31.08.2001	Modification of the sections concerning Traffic Regulations, Holder of Approval, Documents, Validity, Auxiliary Directives and Remarks.
3 ^{*)}	08.08.2001	31.12.2001	Modification of the sections concerning Traffic Regulations, Holder of Approval, Documents, Validity, Auxiliary Directives and Remarks.
4	26.02.2002	28.02.2005	Conversion to the regulations based on the IAEA Regulations TS-R-1 including change of the package identification extension of the content; modification of the sections concerning Traffic Regulations, Documents, Marking, Validity, Allowable Content, Auxiliary Directives and Remarks.
5	23.06.2004	30.6.2006	Modification of the allowable content, Increase of the maximum allowable inner diameter of the pails, Inclusion of the carrier air, Revision of the handling, maintenance and test reports, Modification of the sections Traffic Regulations, Documents, Validity, Allowable Content, Auxiliary Directives and Remarks.
6	21.12.2005	31.12.2006	Modification of the Allowable Content: Modification of the sections Transport Regulations, Documents, Validity, Allowable Content, Auxiliary Directives and Remarks.
7	15.09.2006	31.07.2009	Deleting of the uranium mass limitation, new safety report; modification of the sections Transport Regulations, Documents, Validity, Allowable Content, Auxiliary Directives and Remarks.
8	05.02.2009	31.01.2014	Content restriction if uranyl nitrate is present; Modification of the sections Transport Regulations, Documents, Validity, Allowable Content, Package Design, Package Description, Auxiliary Directives and Remarks, Enclosures.
9	11.11.2013	30.11.2018	Modification of the sections Transport Regulations, Documents, Validity, Package Description, Auxiliary Directives and Remarks Remark: Certificate of Approval D/4305/AF-96 (Rev. 8) remains valid until 31.01.2014.
10	30.01.2019	31.01.2024	Modification of the Holder of Approval and the Allowable Content; Modification of the sections Transport Regulations, Documents, Validity, Auxiliary Directives and Remarks
11	26.01.2024	31.01.2029	Modification of the Holder of Approval; Modification of the sections Transport Regulations, Documents (Aging Management Plan), Validity, Auxiliary Directives and Remarks

^{*)} Revisions of the certificate of approval D/4305/AF-85

- Enclosure 1 to Certificate of Approval D/4305/AF-96 (Rev. 11) -

		DATA SHEET		No. 001-068-00		
 max. ø 608 min. ø 351 max. 890 min. 668 ø 586 Inner container Outer container Masses: Tare approx. 160 kg Gross approx. 260 kg						
Designation Container BU-D						
				Für diese Unterlage behalten wir uns alle Rechte vor. (Urheberschutz DIN 34)		
e	Nr. 060302 – Masse Tara von 100 kg auf 160 kg geändert	13.03.2006	Korn	1987	Tag	Name
d	Übernahme auf CAD	10.07.2002	Korn	Bearb.	04.11.	Adelmann
Index	Änderung	Tag	Name	Gepr.	04.11.	Knichelmann

- Enclosure 2 to Certificate of Approval D/4305/AF-96 (Rev. 11) -

**Type List
for Container BU-D**

Container of Type BU-D which were respectively will be manufactured according to the parts lists mentioned in the following are in agreement with the package design mentioned in this certificate of approval (see also auxiliary directives 2, 3 and 7).

Parts List Revision	Release by BAM
001-068, Index c	Letter of BAM dated 19.7.2007 (Ref.: III.32/Jo)

Salzgitter, January 26, 2024

In representation

Thiele

Rechtsbehelfsbelehrung:

Gegen diesen Bescheid kann innerhalb eines Monats nach Bekanntgabe Widerspruch bei dem Bundesamt für die Sicherheit der nuklearen Entsorgung in Berlin erhoben werden.

Salzgitter, den 26. Januar 2024

Im Auftrag



Thiele



Anlagen

Anhang

Anlage 1: Datenblatt Nr. 001-068-00 (Index e)

Anlage 2: Typenliste



U.S. Department of
Transportation

Pipeline and
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Safety Administration

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CERTIFICATE NUMBER: USA/0412/AF-96

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