Certified by: Hungarian Atomic Energy Authority
Hungarian Atomic Energy Authority
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File No.: OAH-2023-09496-0004/2024
Case administrator: Dr. Tünde Katona

PERMIT DOCUMENT
on the classification of a special-form radioactive material sample
H/106/S (Rev.3)

The Hungarian Atomic Energy Authority, as the competent authority designated in accordance with Section 17 (2) 14) of Act CXVI of 1996 on Nuclear Energy in matters relating to the packing and transit of radioactive materials, certifies that the following construction complies with the national and international regulations on samples of special-form radioactive material.

Basic characteristics of the special-form radioactive material:

Sample owner: IZOTÓP INTÉZET Kft.
H-1121 Budapest, Konkoly-Thege Miklós út 29–33.
Type: IrS-84HH
Geometry: cylindrically symmetric
Overall outer dimensions: diameter: 5 mm
height: 8 mm
Assembly drawing: 2 pieces, attached hereto

Technical description:

The structure of the radiation source is shown on the attached assembly drawings. - The casing is made of X6CrNiTi 1810 (DIN 1.4541) stainless steel; the radiation source is enclosed in a double capsule, consisting of an inner casing (Ø4 x 5.8 mm) and an outer casing (Ø5 x 8 mm). The capsules are sealed hermetically by TIG welding of the cover and the mantel of the capsule. The capsule sealed by welding contains the radioactive content and the surrounding matrix. If

the active material does not fill the dedicated volume of the capsule, an aluminium spacer is used to fill the empty volume, holding the active material in a fixed position.

Qualification tests:

- Impact test according to Section 705 of [19]
- Percussion test according to Section 706 of [19]
- Heat test according to Section 708 of [19]
- Percussion test for welds

As a final element of the tests, the leakage test was carried out using the air-bubble leakage test according to the test method described in Item 6.2.1 of the Hungarian Standard MSZ ISO 9978:2023.

Structural elements providing encapsulation of the radioactive material:

- the radioactive content of ^{192}Ir is embedded in a matrix, consisting of iridium serving as target object during the irradiation as well as osmium and platinum resulting from the decomposition of the radioactive content (dimensions: Ø2 x 0.125 mm or Ø3 x 0.125 mm);
- the enclosure of the radioactive source is a capsule made of X6CrNiTi 1810 (DIN 1.4541) stainless steel, sealed hermetically by TIG welding and openable only by destruction.

Maximum radioactive content:

Physical / chemical state Solid metal

Isotope / Nuclide ^{192}Ir

Maximum activity 8.14 TBq (220 Ci)

Management system:

The relevant regulations [1] – [18] and the requirements of the continuously monitored management system maintained by Izotóp Intézet Kft, laid down and described in the detailed program for the management system, attached to this permit application, certified by SGS, documented in the Integrated Management System Manual of Izotóp Intézet Kft., operated according to the standards ISO 9001:2015 (Certificate No.: HU98/12577) and ISO 14001:2015 (Certificate No.: HU12/6718), and enabling the permitting authority to carry out appropriate verifications ensure together that the management system program of the IrS-84HH type special-form radioactive material conforms to the requirements set out in Item 306 of [19] with regard to design, manufacturing, testing, documentation, use, maintenance and control.

This permit document is valid until: ***17 January 2027***

The qualification is based on the following regulations:

[1] Government Decree No. 508/2020 (18 November) on the promulgation of the Protocol amending the European Agreement on the International Carriage of Dangerous Goods by Road (ADR) of 30 September 1957 compiled in a uniform text

[2] Act No LXXXIX of 2015 on the promulgation of Annexes A and B to the European Agreement on the International Carriage of Dangerous Goods by Road (ADR) and on certain issues of their application in Hungary

[3] Government Decree No. 284/2023 (30 June) on the promulgation of Annexes A and B to the European Agreement on the International Carriage of Dangerous Goods by Road (ADR) and on certain issues of their application in Hungary

[4] Legislative Decree No 2 of 1986 on the promulgation of the Convention Concerning International Carriage by Rail (COTIF) issued in Bern, on 9 May 1980

[5] Decree No 4/1987 (13 May) of the Ministry of Traffic (KM) on the promulgation of the Annexes to the Uniform Rules Concerning the Contract of International Carriage of Goods by Rail (CIM)

[6] Act No LXXVII of 2006 on the promulgation of the Protocol adopted in Vilnius, on 3 June 1999, on the Amendment of the Convention Concerning International Carriage by Rail (COTIF) issued in Bern, on 9 May 1980

[7] Act No LXXX of 2011 on the promulgation of Annex C to the Protocol adopted in Vilnius, on 3 June 1999, on the Amendment of the Convention Concerning International Carriage by Rail (COTIF) issued in Bern on 9 May 1980 compiled in a uniform text together with the amendments and additions of 2011

[8] Government Decree No 283/2023 (30 June) on the promulgation of the Appendix of Annex C to the Protocol adopted in Vilnius, on 3 June 1999, on the Amendment of the Convention Concerning International Carriage by Rail (COTIF) and on certain issues of their application in Hungary

[9] Act No III of 2009 on the promulgation of the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) issued in Geneva, on 26 May 2000

[10] Act No VI of 2010 on the promulgation of the Protocol on the Amendment of the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) issued in Geneva, on 26 May 2000, on the promulgation of the Regulations annexed to ADN and on their application in Hungary

[11] Act No LXXXIV of 2015 on the promulgation of the Regulations annexed to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) issued in Geneva, on 26 May 2000 and on their application in Hungary

[12] Government Decree No. 282/2023 (30 June) on the promulgation of the Regulations annexed to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) and on certain issues of their application in Hungary

[13] Act No XI of 2001 on the promulgation of the International Convention for the Safety of Life at Sea issued in London, on 1 November 1974 and on the promulgation of the Protocol of 1978 (SOLAS 1974/1978) annexed thereto

[14] Decree No 35/2001 (12 October) of the Ministry of Transport and Water (KöViM) on the promulgation of the Annex of the International Convention for the Safety of Life at Sea and the Protocol of 1978 (SOLAS 1974/1978) annexed thereto promulgated by Act XI of 2001

[15] Legislative Decree No 25/1971 on the promulgation of the Convention on International Civil Aviation executed in Chicago on 7 December 1944 and the Protocols containing amendments thereto

[16] Legislative Decree No 15/1980 on the promulgation of the Convention on International Civil Aviation executed in Chicago on 7 December 1944 and the Protocols containing amendments thereto

[17] Act No XLVI of 2007 on the promulgation of the Annexes to the Convention on International Civil Aviation executed in Chicago on 7 December 1944

[18] Act No LXXXVIII of 2009 on the promulgation of the Amendment of the Annexes to the Convention on International Civil Aviation executed in Chicago on 7 December 1944

[19] International Atomic Energy Agency (IAEA) Safety Standard Series No. SSR-6 (Rev.1), Regulations for the Safe Transport of Radioactive Material, (2018 Edition), IAEA, Vienna (2018)

This permit document does not exempt the Consignor from any obligation resulting from the governmental regulations of the countries through which or to which the special-form radioactive material is transported.

Budapest, 24 January 2024

Best regards:

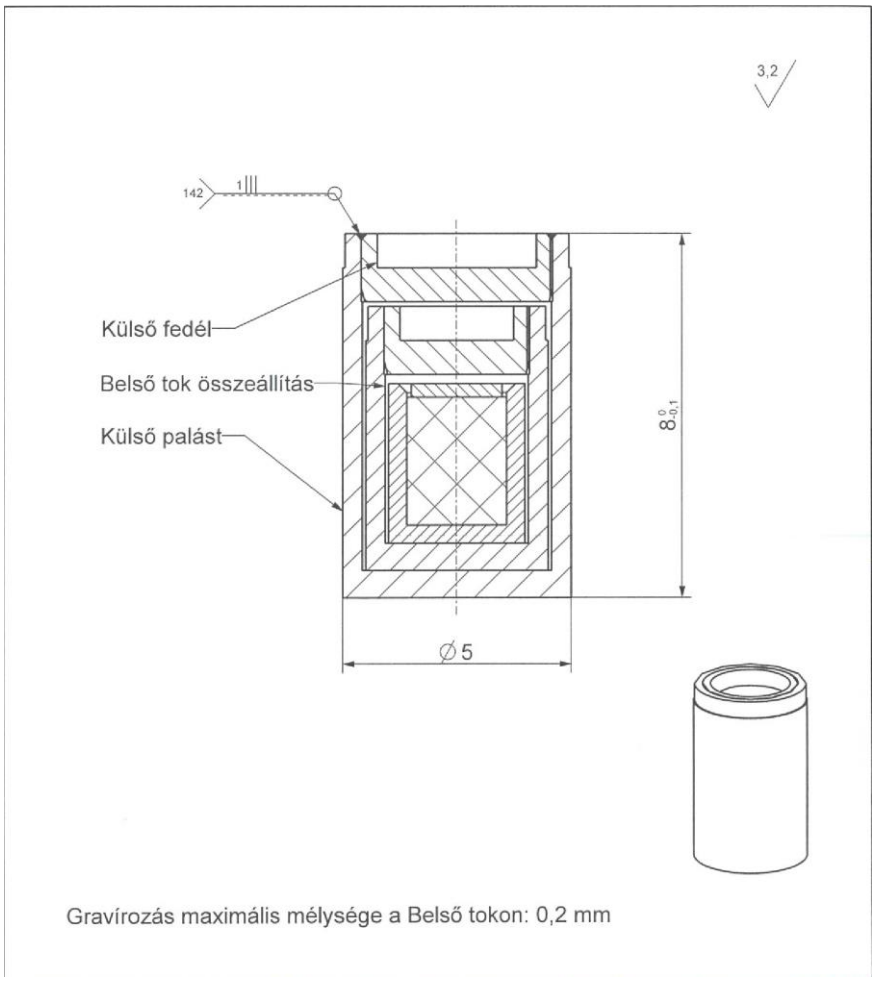
Andrea Beatrix Kádár

President

Recipients:

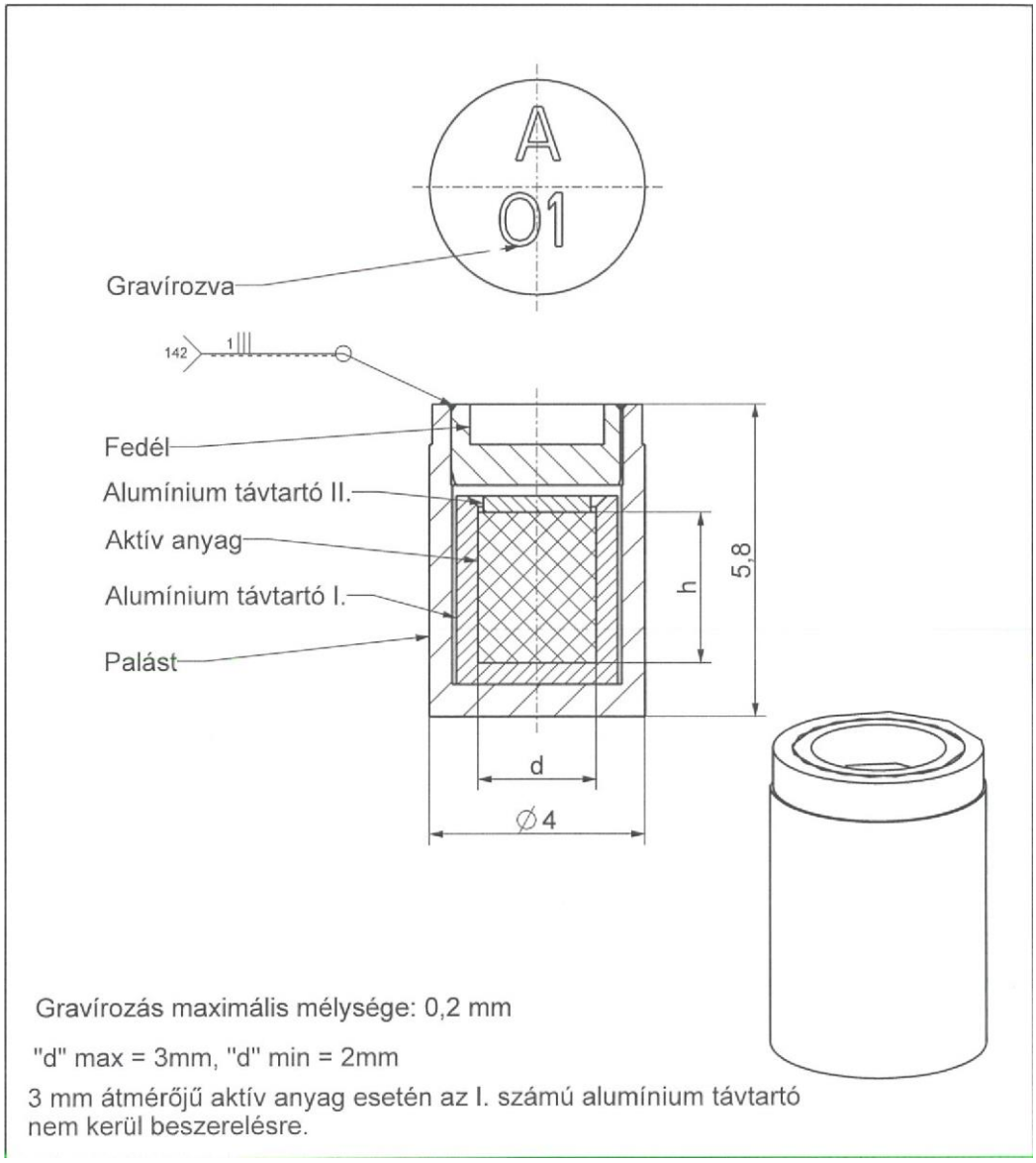
1. Izotóp Intézet Kft.

2. Archives



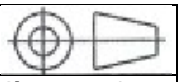
	Outer lid
	Internal casing assembly
	Outer casing
	Maximum depth of engraving on internal casing: 0.2 mm

Material grade:	-	Class:	-	Mass (kg):	*0.011*
Material standard:	-	Testing:	-	Remark:	-
Standard:	-	Surface finish:	-	Origin:	*Izotop*
Customer: *Izotóp Intézet Kft.*		Description: *lrS-84 HH - assembly*		Size: *D5x8*	Projection
Izotóp Intézet Kft. 1535 Budapest Pf. 851				Copy No: *0*	Sheet size: *A4*
		Product type: *lrS-84 HH*		Sheet/total: *1/1*	Scale: *M 10:1*
				Drawing No: *42-201-084-000*	
		Job code: 42-201	Date: 29-Nov-23 09:52:57 AM		Version: A
Designed by: István Huszár, illegible signature		Revised by: Richárd Kardos, illegible signature		Drawn by: Ádám Meleg, illegible signature	



	Engraved
	Lid
	Aluminium spacer II
	active substance
	Aluminium spacer I
	Curved surface
	Maximum depth of engraving: 0.2 mm
	"d" max = 3mm, "d" min = 2mm
	for an active substance of dia. 3 mm, aluminium spacer I is not installed

Material grade:	-	Class:	-	Mass (kg):	*0.004*	
Material standard:	-	Testing:	-	Remark:	-	
Standard:	-	Surface finish:	-	Origin:	*Izotop*	
Customer: *Izotóp Intézet Kft.*		Description:		Size: *D4x5.8*		Projection

	IrS-84 HH inner casing assembly drawing		
Izotóp Intézet Kft. 1535 Budapest Pf. 851		Copy No: *0*	Sheet size: *A4*
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	Product type: *IrS-84 HH*	Drawing No: *42-201-084-010*	
	Job code: 42-201	Date: 28-Nov-23 10:14:49 AM	Version: A
Designed by: István Huszár, illegible signature	Revised by: Richárd Kardos, illegible signature	Drawn by: István Benedekffy, illegible signature	

TECHNICAL TRANSLATION

Prepared by the Hungarian Office for Translation and Attestation Ltd.

A HITELES FORDÍTÁS KULCSA

This translation shall in no way replace attested translation.