

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: LA-1491-S-105-S

DATE: January 4, 2023

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SOURCE TYPE: Mossbauer Gamma Gauge Sources

DISTRIBUTOR: ISOFLEX Radioactive LLC (ISO-RAD)
108 Teal Street
St. Rose, Louisiana 70087

MANUFACTURER: Ritverc JSC
10 Kurchatov Street
Saint Petersburg, 194223
Russia

SUBMANUFACTURER: NDT TEXAS LLC (NDTT)
8701 Knight Road
Houston, Texas 77054

SEALED SOURCE MODEL DESIGNATION:

<u>SOURCE MODEL:</u>	<u>ISOTOPE:</u>	<u>MAXIMUM ACTIVITY:</u>
MCo7 Code 1 Series	Cobalt-57 (⁵⁷Co)	185 MBq (5 millicuries) – 3700 MBq (100 millicuries)
MCo7.111	Cobalt-57 (⁵⁷ Co)	185 MBq (5 millicuries)
MCo7.511	Cobalt-57 (⁵⁷ Co)	185 MBq (5 millicuries)
MCo7.112	Cobalt-57 (⁵⁷ Co)	370 MBq (10 millicuries)
MCo7.512	Cobalt-57 (⁵⁷ Co)	370 MBq (10 millicuries)
MCo7.113	Cobalt-57 (⁵⁷ Co)	925 MBq (25 millicuries)
MCo7.513	Cobalt-57 (⁵⁷ Co)	925 MBq (25 millicuries)
MCo7.114	Cobalt-57 (⁵⁷ Co)	1850 MBq (50 millicuries)
MCo7.514	Cobalt-57 (⁵⁷ Co)	1850 MBq (50 millicuries)
MCo7.115	Cobalt-57 (⁵⁷ Co)	3700 MBq (100 millicuries)
MCo7.515	Cobalt-57 (⁵⁷ Co)	3700 MBq (100 millicuries)
MCo7 Code 2 Series	Cobalt-57 (⁵⁷Co)	185 MBq (5 millicuries) – 3700 MBq (100 millicuries)
MCo7.121	Cobalt-57 (⁵⁷ Co)	185 MBq (5 millicuries)
MCo7.521	Cobalt-57 (⁵⁷ Co)	185 MBq (5 millicuries)
MCo7.122	Cobalt-57 (⁵⁷ Co)	370 MBq (10 millicuries)
MCo7.522	Cobalt-57 (⁵⁷ Co)	370 MBq (10 millicuries)
MCo7.123	Cobalt-57 (⁵⁷ Co)	925 MBq (25 millicuries)
MCo7.523	Cobalt-57 (⁵⁷ Co)	925 MBq (25 millicuries)
MCo7.124	Cobalt-57 (⁵⁷ Co)	1850 MBq (50 millicuries)
MCo7.524	Cobalt-57 (⁵⁷ Co)	1850 MBq (50 millicuries)
MCo7.125	Cobalt-57 (⁵⁷ Co)	3700 MBq (100 millicuries)
MCo7.525	Cobalt-57 (⁵⁷ Co)	3700 MBq (100 millicuries)
MCo7 Code 6 Series	Cobalt-57 (⁵⁷Co)	185 MBq (5 millicuries) – 370 MBq (10 millicuries)
MCo7.161	Cobalt-57 (⁵⁷ Co)	185 MBq (5 millicuries)
MCo7.162	Cobalt-57 (⁵⁷ Co)	370 MBq (10 millicuries)

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SOURCE TYPE: Mossbauer Gamma Gauge Sources

SEALED SOURCE MODEL DESIGNATION (Continued):

<u>SOURCE MODEL:</u>	<u>ISOTOPE:</u>	<u>MAXIMUM ACTIVITY:</u>
MCo7 Code 9 Series	Cobalt-57 (⁵⁷Co)	185 MBq (5 millicuries) – 370 MBq (10 millicuries)
MCo7.191	Cobalt-57 (⁵⁷ Co)	185 MBq (5 millicuries)
MCo7.192	Cobalt-57 (⁵⁷ Co)	370 MBq (10 millicuries)
MCo7 Code 10 Series	Cobalt-57 (⁵⁷Co)	185 MBq (5 millicuries) – 370 MBq (10 millicuries)
MCo7.1101	Cobalt-57 (⁵⁷ Co)	185 MBq (5 millicuries)
MCo7.1102	Cobalt-57 (⁵⁷ Co)	370 MBq (10 millicuries)
MSn9.01 Code 1 Series	Tin-119m (^{119m}Sn)	74 MBq (2 millicuries) - 370 MBq (10 millicuries)
MSn9.211	Tin-119m (^{119m} Sn)	74 MBq (2 millicuries)
MSn9.212	Tin-119m (^{119m} Sn)	185 MBq (5 millicuries)
MSn9.213	Tin-119m (^{119m} Sn)	370 MBq (10 millicuries)
MSn9.01 Code 2 Series	Tin-119m (^{119m}Sn)	74 MBq (2 millicuries) - 555 MBq (15 millicuries)
MSn9.221	Tin-119m (^{119m} Sn)	74 MBq (2 millicuries)
MSn9.222	Tin-119m (^{119m} Sn)	185 MBq (5 millicuries)
MSn9.223	Tin-119m (^{119m} Sn)	370 MBq (10 millicuries)
MSn9.224	Tin-119m (^{119m} Sn)	555 MBq (15 millicuries)
MSn9.01 Code 3 Series	Tin-119m (^{119m}Sn)	370 MBq (10 millicuries) - 740 MBq (20 millicuries)
MSn9.233	Tin-119m (^{119m} Sn)	370 MBq (10 millicuries)
MSn9.234	Tin-119m (^{119m} Sn)	555 MBq (15 millicuries)
MSn9.235	Tin-119m (^{119m} Sn)	740 MBq (20 millicuries)
MSn9.01 Code 6 Series	Tin-119m (^{119m}Sn)	74 MBq (2 millicuries) - 185 MBq (5 millicuries)
MSn9.261	Tin-119m (^{119m} Sn)	74 MBq (2 millicuries)
MSn9.262	Tin-119m (^{119m} Sn)	185 MBq (5 millicuries)

LEAK TEST FREQUENCY: Six (6) Months

PRINCIPAL USE: (D) Gamma Gauges

CUSTOM DEVICE: ___ Yes X No

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SOURCE TYPE: Mossbauer Gamma Gauge Sources

DESCRIPTION:

The sealed source capsules MCo7 Series and MSn9 Series Mossbauer Sources are cylindrical in shape consisting of a capsule body and capsule cap constructed of Titanium, which are either laser beam weld (LBW) sealed for Capsule Codes 1, 2, 3, and 6 or glued for Capsule Codes 9 and 10. A beryllium window on the bottom of the capsule is sealed using silver brazing alloy. The overall dimensions of the assembled source capsules are from 13.0 mm (0.511 inch) to 17.0 mm (0.669 inch) in height, and 4.0 mm (0.157 inch) to 18 mm (0.708 inch) in diameter, with an active window diameter ranging from 1.35 mm (0.053 inch) to 15.1 mm (0.594 inch).

The MCo7 Series sources are low-energy gamma radiation sources for Mossbauer analyzers consisting of Co-57 with a maximum activity of 3700 MBq (100 millicuries). The source is manufactured by thermal diffusion embedding the Co-57 into either rhodium or chromium. For Capsule Codes 1, 2, and 6 capsule bodies, the matrix is deposited on a light ceramic or graphite. For Capsule Codes 9 and 10 the matrix is deposited on a metal foil. The MCo7 Series are MCo7.111, MCo7.511, MCo7.112, MCo7.512, MCo7.113, MCo7.513, MCo7.114, MCo7.514, MCo7.115, MCo7.515, MCo7.121, MCo7.521, MCo7.122, MCo7.522, MCo7.123, MCo7.523, MCo7.124, MCo7.524, MCo7.125, MCo7.525, MCo7.161, MCo7.162, MCo7.191, MCo7.192, MCo7.1101, and MCo7.1102.

The MSn9 Series sources are low-energy gamma radiation sources consisting of Sn-119m with a maximum activity of 740 MBq (20 millicuries). The Sn-119m is incorporated into a boron nitride based mixture pressed into a pellet. The MSn9 Series are MSn9.211, MSn9.212, MSn9.213, MSn9.221, MSn9.222, MSn9.223, MSn9.224, MSn9.233, MSn9.234, MSn9.235, MSn9.261, and MSn9.262.

LABELING:

The MCo7 Series and MSn9 Series capsules are labeled using either laser or mechanical engraving. The minimum character height is 1.5 mm. The label is located on the cylindrical side surface of the capsule. The label contains the trefoil symbol, the Ritverc logo, the radioactive chemical symbol and the atomic mass, the serial number, and year of manufacture.

DIAGRAM:

- Attachment 1: Drawing of MCo7 & MSn9 Series Sources Capsule Codes 1 & 6
- Attachment 2: Drawing of MCo7 & MSn9 Series Sources Capsule Codes 2 & 3
- Attachment 3: Drawing of MCo7 Series Sources Capsule Codes 9 & 10
- Attachment 4: Diagram of Source Labeling

CONDITIONS OF NORMAL USE:

The source capsules are designed to be used as radioactive sources in Mossbauer analysis. The sources have been tested to perform satisfactorily under the following conditions:

Temperature	-60 °C (-76 °F) to +150 C (302 °F)
Humidity	98% at +40 C (104°F)

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CONDITIONS OF NORMAL USE (Continued):

Pressure	25 to 7 MPa
Impact	500 m/s ² (1640.42 ft/s ²) 10 ms
Vibration	5 to 200 m/s ² (16.4 to 656.17 m/s ²), 5 to 1000 Hz

USEFUL LIFE:

The estimated and recommended working life of the sources is 10 years. At the end of the working life, the sources may be returned to the manufacturer for disposal.

PROTOTYPE TESTING:

The prototype sources were subjected to the required tests to demonstrate that the sources will maintain their integrity under stresses of use and accidental conditions that may occur. The required classification for low-energy gamma gauge sources is C33222 and have achieved the classification shown in Table 1.

Table 1				
Ritverc MCo7 Series and MSn9 Series Sources				
Source Models	Source Classification (ANSI N43.6-2015) (ISO 2919:2012)	Isotopes	Capacity in millicuries (MBq)	Capsule Dimensions
MCo7.111	C54243	Co-57	5 (185)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.511	C54243	Co-57	5 (185)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.112	C54243	Co-57	10 (370)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.512	C54243	Co-57	10 (370)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.113	C54243	Co-57	25 (925)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.513	C54243	Co-57	25 (925)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.114	C54243	Co-57	50 (1850)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.514	C54243	Co-57	50 (1850)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.115	C54243	Co-57	100 (3700)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.515	C54243	Co-57	100 (3700)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MCo7.121	C54243	Co-57	5 (185)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MCo7.521	C54243	Co-57	5 (185)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D

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PROTOTYPE TESTING (Cont.):

Table 1				
Ritverc MCo7 Series and MSn9 Series Sources				
Source Models	Source Classification (ANSI N43.6-2015) (ISO 2919:2012)	Isotopes	Capacity in millicuries (MBq)	Capsule Dimensions
MCo7.122	C54243	Co-57	10 (370)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MCo7.522	C54243	Co-57	10 (370)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MCo7.123	C54243	Co-57	25 (925)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MCo7.523	C54243	Co-57	25 (925)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MCo7.124	C54243	Co-57	50 (1850)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MCo7.524	C54243	Co-57	50 (1850)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MCo7.125	C54243	Co-57	100 (3700)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MCo7.525	C54243	Co-57	100 (3700)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MCo7.161	C54243	Co-57	5 (185)	13.0 mm H x 6.0 mm D 0.5118 inch H x 0.236 inch D
MCo7.162	C54243	Co-57	10 (370)	13.0 mm H x 6.0 mm D 0.5118 inch H x 0.236 inch D
MCo7.191	C33243	Co-57	5 (185)	14.0 mm H x 4.0 mm D 0.551 inch H x 0.157 inch D
MCo7.192	C33243	Co-57	10 (370)	14.0 mm H x 4.0 mm D 0.551 inch H x 0.157 inch D
MCo7.1101	C33243	Co-57	5 (185)	17.0 mm H x 6.0 mm D 0.669 inch H x 0.236 inch D
MCo7.1102	C33243	Co-57	10 (370)	17.0 mm H x 6.0 mm D 0.669 inch H x 0.236 inch D
MSn9.211	C54243	Sn-119m	2 (74)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MSn9.212	C54243	Sn-119m	5 (185)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MSn9.213	C54243	Sn-119m	10 (370)	13.0 mm H x 11.2 mm D 0.5118 inch H x 0.4409 inch D
MSn9.221	C54243	Sn-119m	2 (74)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MSn9.222	C54243	Sn-119m	5 (185)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D

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PROTOTYPE TESTING (Cont.):

Table 1 (Continued)		Ritverc MCo7 Series and MSn9 Series Sources		
Source Models	Source Classification (ANSI N43.6-2015) (ISO 2919:2012)	Isotopes	Capacity in millicuries (MBq)	Capsule Dimensions
MSn9.223	C54243	Sn-119m	10 (370)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MSn9.224	C54243	Sn-119m	15 (555)	14.0 mm H x 14.0 mm D 0.551 inch H x 0.551 inch D
MSn9.233	C54243	Sn-119m	10 (370)	14.0 mm H x 18.0 mm D 0.551 inch H x 0.7086 inch D
MSn9.234	C54243	Sn-119m	15 (555)	14.0 mm H x 18.0 mm D 0.551 inch H x 0.7086 inch D
MSn9.235	C54243	Sn-119m	20 (740)	14.0 mm H x 18.0 mm D 0.551 inch H x 0.7086 inch D
MSn9.261	C54243	Sn-119m	2 (74)	13.0 mm H x 6.0 mm D 0.5118 inch H x 0.236 inch D
MSn9.262	C54243	Sn-119m	5 (185)	13.0 mm H x 6.0 mm D 0.5118 inch H x 0.236 inch D

The sources have been tested to the following ISO 2919 conditions:

Temperature: 1.) -40 °C (-40 °F) to +180 °C (356 °F) for 20 minutes. 2.) 600 °C (1,112 °F) for 1 hour, followed by thermal shock.

Pressure: 25 Hz (air vacuum) to 7 MPa (water pressure test) both were for 2 cycles.

Impact: Free fall of a 50 g hammer from a height of 1 m (3.28 foot).

Vibration: a.) range of (25 to 80) Hz, displacement amplitudes is 1.5 mm (0.059 inch); b.) in the range of (80 to 2000) Hz, acceleration is 196 m/s² (643.0 feet/s²) (20g).

Puncture: Free fall of a 10 g hammer with a head from a height of 1 m (3.28 foot).

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EXTERNAL RADIATION LEVELS:

The radiation values were calculated (extrapolated) using the gamma constant values for Co-57 and Sn-119m at 1 meter (3.28 foot) to provide the radiation profile and extrapolated at 5 cm (1.96 inch) and 30 cm (11.8 inch) using the inverse square law. The results are provided below in Table 2:

Table 2		Unshielded Radiation Profile at 5cm, 30cm and 100cm						
Source Model	Activity in mCi		Calculated 5 cm		Calculated 30 cm		Gamma Constant 100 cm	
	Capsule Code	Max Activity	mSv/h	mR/h	mSv/h	mR/h	mSv/h	mR/h
MCo7	01	100	60.4	6040	1.68	167.78	0.151	15.1
MCo7	02	100	60.4	6040	1.68	167.78	0.151	15.1
MCo7	06	10	6.04	604	0.168	16.778	0.015	1.51
MCo7	09	10	6.04	604	0.168	16.778	0.015	1.51
MCo7	10	10	6.04	604	0.168	16.778	0.015	1.51
MSn9	01	10	4.12	412	0.114	11.44	0.0103	1.03
MSn9	02	15	6.20	620	0.172	17.22	0.0155	1.55
MSn9	03	20	8.24	824	0.229	22.89	0.0206	2.06
MSn9	06	20	8.24	824	0.229	22.89	0.0206	2.06

QUALITY ASSURANCE AND CONTROL:

Ritverc manufactures the MCo7 Series and MSn9 Series sources according to its approved Quality Assurance Program (QAP). Ritverc's QAP is approved under ISO 9001:2015, Certificate Number QEC21397. ISOFLEX Radioactive LLC's (ISO-RAD) QAP is approved under ISO 9001:2015, Certificate # 8342. Our USNRC QAP/QMS is on file with the USNRC. ISO-RAD's Quality System is

described in the Quality Management System Manual. This quality system complies with requirements of the US Nuclear Regulatory Commission in 10 CFR 71.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- Only persons specifically licensed by the United States Nuclear Regulatory Commission (USNRC), by an Agreement State, or other international regulatory body are authorized to use this radioactive source assembly.
- Handling, storage, use, transfer, and disposal: To be determined by the licensing authority.
- The source shall be tested for leakage at intervals not to exceed six (6) months using techniques capable of detecting 0.005 microcuries (185 Bq) of removable contamination.
- The sources shall not be subjected to conditions that exceed its ANSI 43.6-1997 or ISO 2919:2012

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LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE (Cont.):

classification shown in Table 1. Capsule codes 9 & 10 have a classification according to ISO 2919 C33243 which have a glued joint. Capsule codes 1, 2, 3, & 6 have a classification according to ISO 2919 C54243 which have a welded joint.

- This registration sheet and the information contained within the references shall not be changed without the written consent of the State of Louisiana, Department of Environmental Quality, Office of Environmental Compliance, Emergency & Radiological Services Division.

SAFETY ANALYSIS SUMMARY:

Based on our review of the ISOFLEX Models sealed sources, its ANSI classification, and the information and test data submitted, we conclude that the source is acceptable for licensing purposes.

Furthermore, we conclude that this source would be expected to maintain its containment integrity for normal conditions of use and accidental conditions which might occur during uses specified in this certificate.

REFERENCES:

- ISO-RAD email dated October 10, 2022, with enclosures thereto.

ISSUING AGENCY:

State of Louisiana, Department of Environmental Quality, Office of Environmental Compliance, Emergency & Radiological Services Division:

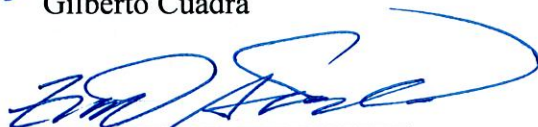
Date: 1/4/2023

Reviewed By: , M.S.
James M. Pate III, M.S.

Date: 1/4/2023

Reviewed By: 
Gilberto Cuadra

Date: 1/4/2023

Concurrence: 
Ziad Fahd, M.S.

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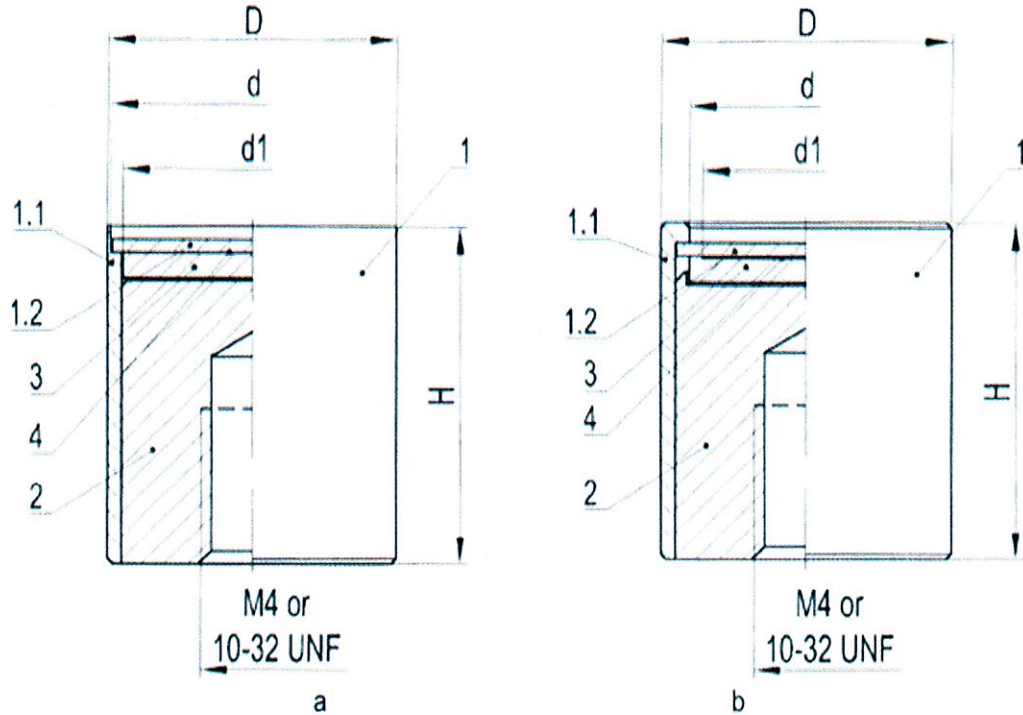
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ATTACHMENT 1 OF 4

Drawing of MCo7 & MSn9 Series Capsule Codes 1 & 6



1 – case; 1.1 – bush, 1.2 – window; 2 – plug; 3 – active part;
4 – active spot (for MCo7 sources).

Figure 1. General view of MCo7, MSn9 sources with capsule codes 1 option 1 (a), 1 option 2 (b), 6 (a).

Source Dimensions			
Source Model	Height (H) mm / inches	Diameter (D) mm / inches	Capsule Code
MCo7.111	13.0 / 0.5118	11.2 / 0.4409	1 Option 1
MCo7.511	13.0 / 0.5118	11.2 / 0.4409	1 Option 2
MCo7.112	13.0 / 0.5118	11.2 / 0.4409	1 Option 1
MCo7.512	13.0 / 0.5118	11.2 / 0.4409	1 Option 2
MCo7.113	13.0 / 0.5118	11.2 / 0.4409	1 Option 1
MCo7.513	13.0 / 0.5118	11.2 / 0.4409	1 Option 2
MCo7.114	13.0 / 0.5118	11.2 / 0.4409	1 Option 1
MCo7.514	13.0 / 0.5118	11.2 / 0.4409	1 Option 2
MCo7.115	13.0 / 0.5118	11.2 / 0.4409	1 Option 1
MCo7.515	13.0 / 0.5118	11.2 / 0.4409	1 Option 2
MCo7.161	13.0 / 0.5118	6.0 / 0.236	6
MCo7.162	13.0 / 0.5118	6.0 / 0.236	6
MSn9.211	13.0 / 0.5118	11.2 / 0.4409	1
MSn9.212	13.0 / 0.5118	11.2 / 0.4409	1
MSn9.213	13.0 / 0.5118	11.2 / 0.4409	1
MSn9.261	13.0 / 0.5118	6.0 / 0.236	6
MSn9.262	13.0 / 0.5118	6.0 / 0.236	6

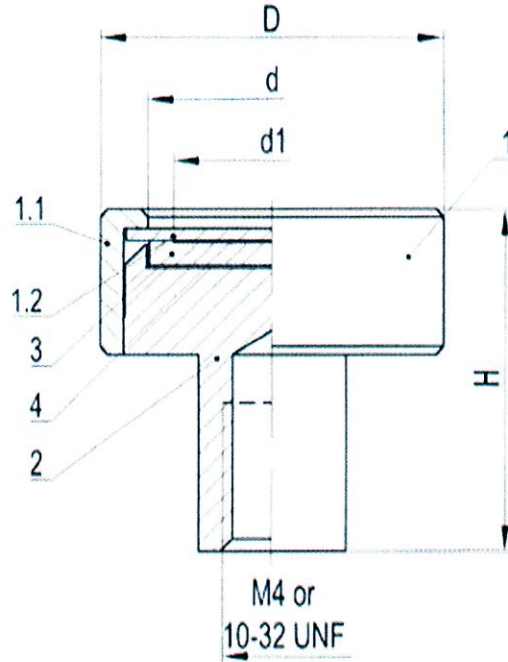
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ATTACHMENT 2 OF 4

Drawing of MCo7 Series and Msn9 Series Sources Capsule Code 2 & 3



1 – case; 1.1 – bush, 1.2 – window; 2 – plug; 3 – active part;
4 – active spot (for MCo7 sources).

Figure 2. General view of MCo7, MSn9 sources with capsule codes 2, 3.

Source Dimensions			
Source Model	Height (H) mm / inches	Diameter (D) mm / inches	Capsule Code
MCo7.121	14.0 / 0.551	14.0 / 0.551	2
MCo7.521	14.0 / 0.551	14.0 / 0.551	2
MCo7.122	14.0 / 0.551	14.0 / 0.551	2
MCo7.522	14.0 / 0.551	14.0 / 0.551	2
MCo7.123	14.0 / 0.551	14.0 / 0.551	2
MCo7.523	14.0 / 0.551	14.0 / 0.551	2
MCo7.124	14.0 / 0.551	14.0 / 0.551	2
MCo7.524	14.0 / 0.551	14.0 / 0.551	2
MCo7.125	14.0 / 0.551	14.0 / 0.551	2
MCo7.525	14.0 / 0.551	14.0 / 0.551	2
MSn9.221	14.0 / 0.551	14.0 / 0.551	2
MSn9.222	14.0 / 0.551	14.0 / 0.551	2
MSn9.223	14.0 / 0.551	14.0 / 0.551	2
MSn9.224	14.0 / 0.551	14.0 / 0.551	2
MSn9.233	14.0 / 0.551	18.0 / 0.708	3
MSn9.234	14.0 / 0.551	18.0 / 0.708	3
MSn9.235	14.0 / 0.551	18.0 / 0.708	3

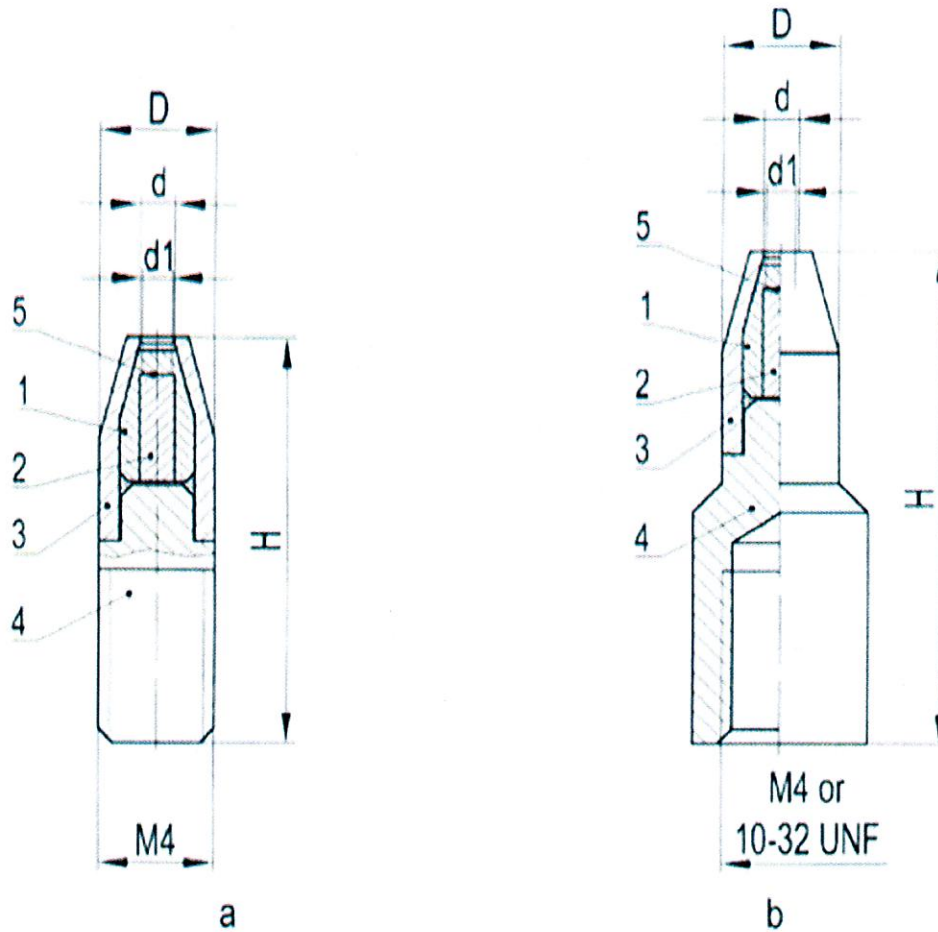
REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: LA-1491-S-105-S

DATE: January 4, 2023

ATTACHMENT 3 OF 4

Drawing of MCo7 Series Sources Capsule Code 9 & 10



1 – case; 2 – plug; 3 – holder case;
4 – holder plug; 5 – active part.

Figure 3. General view of MCo7 sources with capsule codes 9 (a), 10 (b).

Source Dimensions			
Source Model	Height (H) mm / inches	Diameter (D) mm / inches	Capsule Code
MCo7.191	14.0 / 0.551	4.0 / 0.157	9
MCo7.192	14.0 / 0.551	4.0 / 0.157	9
MCo7.1101	17.0 / 0.669	6.0 / 0.236	10
MCo7.1102	17.0 / 0.669	6.0 / 0.236	10

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ATTACHMENT 4 OF 4

Diagram of Source Labeling




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 **RITVERC**

Mössbauer source: Cobalt-57
Nominal activity: 50 mCi
Serial number: MCo7.124/50.22
Date of production: 12.09.2022


CAUTION
Radioactive Material