RITVERC
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CATALOGUE

Medical Imaging
Reference & Calibration Sources

2025

RITVERC JSC provides quality assurance sources that are compatible with the leading PET OEM manufactures. For the calibration PET, PET/CT, and SPECT systems, Ge-68, Na-22, and Co-57 sources are used in different forms and activities depending on the system model. Customized sources in different forms and activities can be offered upon request too.

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Content

RITVERC develops, manufactures and supplies radionuclide sources for clients across more than 50 countries. We have a wide selection of sources for applications in industry, medicine and scientific research.

RITVERC was established in 1993 by leading companies in the field of radioisotope technologies: BEBIG GmbH, Germany; I.U.T. GmbH, Germany; Scientific Production Association "V. G. Khlopin Radium Institute", St.-Petersburg, Russia and a number of leading experts in the field of radionuclide industry.

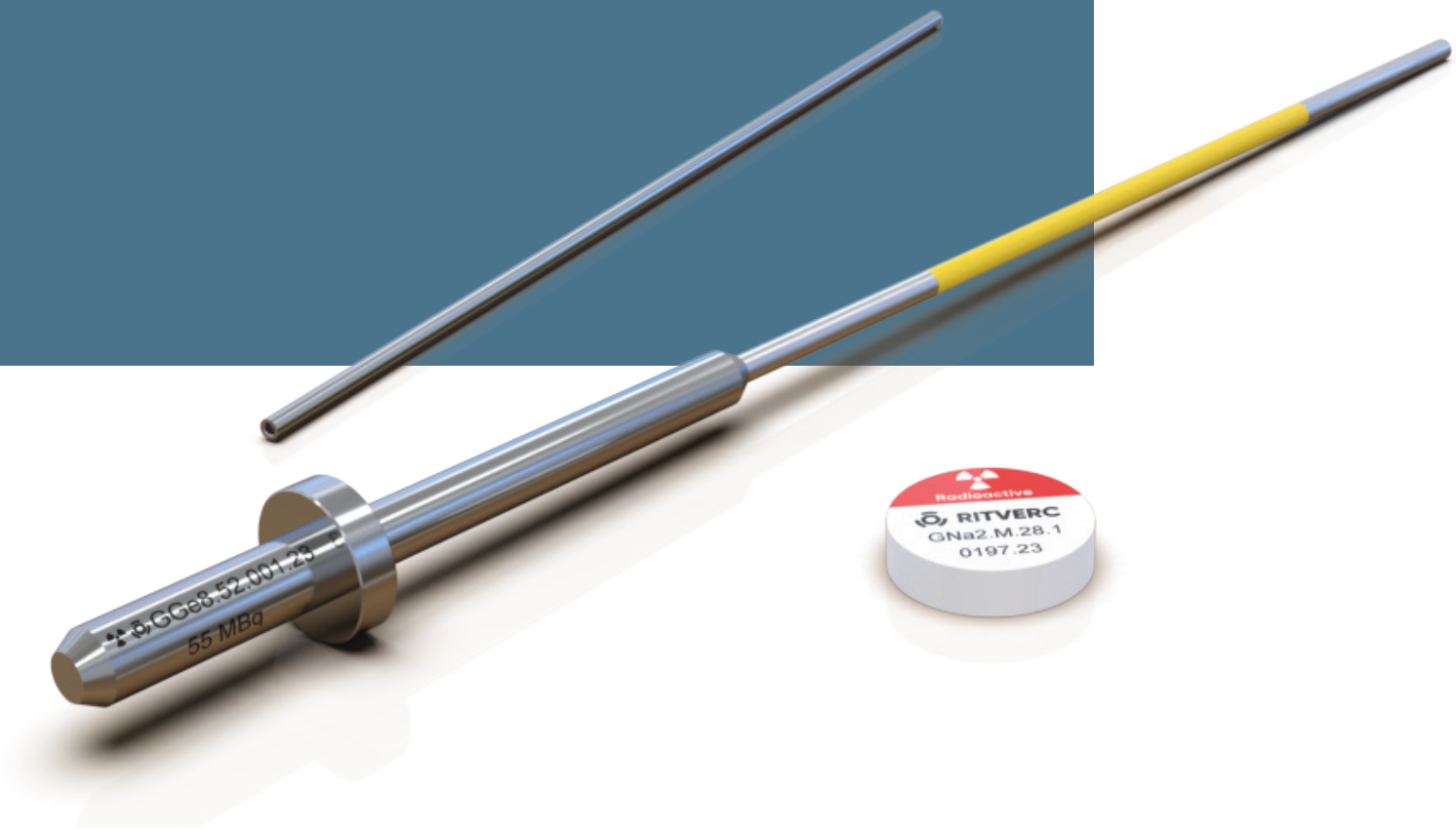
RITVERC provides services in the field of radioactive materials use, including testing in its own accredited testing laboratory.

The quality management system of RITVERC meets the requirements of International Standard ISO 9001:2015.

PET/CT Sources

RITVERC manufactures Ge-68 and Na-22 sources for Positron Emission Tomography (PET) studies. Sources are applicable to the majority of tomographs produced by General Electric HealthCare, Siemens Healthineers, and Philips Medical Systems.

PET/CT sources can be customized and manufactured to meet individual requirements. Please contact RITVERC Customer Service for product availability and additional information.

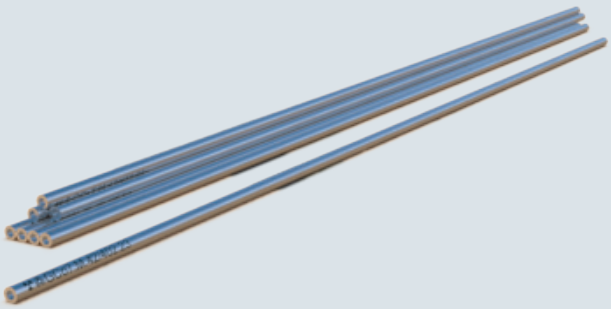


CYLINDIRICAL PHANTOMS

Ge-68 Cylindrical phantoms are used for 2D and 3D normalization and in test images of PET and PET-CT systems. Radioactive element is uniformly filled in the cylindrical cast.

VQC PHANTOM

Each VQC phantom manufactured is scanned by a PET scanner to perform uniformity quality control test.



PIN SOURCE

Ge-68 and Na-22 line sources are tubes made of high quality stainless steel. Each line source is sealed on its ends by the process of precise laser welding.

SPOT MARKER SOURCE

Spot markers help with patient positioning, gamma camera calibration, quality control, and checking gamma probes and NaI detectors.

Application Guide

System Manufacturer	System model	Product type	Product code	Activity		Qty	RRC, mo	RWL, mo
				mCi	MBq			
GE HealthCare	Discovery ST & STE	Pin	GGe8.52.3	1,49	55	1	12	18
	Discovery 690/690 ELITE	Pin	GGe8.52.2	0,5	18,5	1	12	18
		VQC Phantom	GGe8.57	0,095	3,5	1	12	18
	Discovery 600	Pin	GGe8.52.1	0,27	10	1	12	18
		VQC Phantom	GGe8.57	0,095	3,5	1	12	18
	Discovery 710/710 ELITE	Pin	GGe8.52.2	0,5	18,5	1	12	18
		VQC Phantom	GGe8.57	0,095	3,5	1	12	18
	Discovery IQ, MI, MI & DR	Phantom	GGe8.50	1,49	55,5	1	12	18
		VQC Phantom	GGe8.57	0,095	3,5	1	12	18
	Discovery Omni Legend	Phantom	GGe8.50.2	1,49	55,5	1	12	18
		VQC Phantom	GGe8.57	0,095	3,5	1	12	18
Siemens Healthineers	ECAT ACCEL	Pin	GGe8.61	5	185	3	12	18
		Phantom	GGe8.60.1	3,3	122,1	1	12	18
	ECAT EXACT HR+	Pin	GGe8.61	5	185	3	12	18
		Phantom	GGe8.60.1	3,3	122,1	1	12	18
	ECAT EXACT 47	Pin	GGe8.61	3	111	3	12	18
		Phantom	GGe8.60.1	3,3	122,1	1	12	18
	ECAT ART	Pin	GGe8.61	1	37	1	12	18
		Phantom	GGe8.60.1	1,2	44,4	1	12	18
	Biograph Non-Pico	Pin	GGe8.61	1-1,2	37-44,4	2	12	18
		Phantom	GGe8.60.1	1,2	44,4	1	12	18
	Biograph Pico	Pin	GGe8.61	1	37	2	12	18
		Phantom	GGe8.60.1	2	74	1	12	18
	Biograph True V	Pin	GGe8.61	1-1,2	27-44,4	2	12	18
		Phantom	GGe8.60.2	2-2,25	47-92,5	1	12	18
	Biograph mCT	Pin	GGe8.61	1,25	46,25	1	12	18
		Phantom	GGe8.60.2	2,5	92,5	1	12	18
	Biograph 450 Vision	Pin	GGe8.61	1,25	46,25	1	12	18
		Phantom	GGe8.60.2	2,5	92,5	1	12	18
	Biograph 600 Vision	Pin	GGe8.61	1,25	46,25	2	12	18
		Phantom	GGe8.60.3	3	111	1	12	18
Philips Healthcare	Gemini	Pin	GNa2.M.29	0,1	3,7	1	24	24
	TF	Spot Marker	GNa2.M.28	0,01	0,37	6	24	24
	GXL	Spot Marker	GNa2.M.28	0,01	0,37	6	24	24

Qty - Number of sources required by the system
RRC - Recommended Replacement Cycle by System Manufacturer
RWL - Recommended Working Life


RITVERC
Installation date: 12/08/2023
Radionuclide: 122 MBq
Activity: Ge-68
Type: GGe8.60.1
Serial number: Ge8.018.23
Manufacture date: 11/07/2023
CAUTION
RITVERC
Installation date: 17/08/2023
Radionuclide: 3.5 MBq
Activity: Ge-68
Type: GGe8.57
Serial number: Ge8.009.23
Manufacture date: 15/08/2023
CAUTION
RITVERC
Installation date: 19/08/2023
Radionuclide: 55 MBq
Activity: Ge-68
Type: GGe8.50
Serial number: Ge8.021.23
Manufacture date: 07/08/2023
CAUTION

SPECT Sources

RITVERC manufactures a wide range of sources for Single Photon Emission Computed Tomography (SPECT) studies. The nuclides, activities and dimensions are manufactured in accordance to OEM Systems manufacturer specifications. SPECT sources can be customized and manufactured to meet individual requirements.

Please contact RITVERC Customer Service for product availability and additional information.

SIEMENS xSPECT
Quant Calibration Source

Spectrum Dynamics D-SPECT
& GE StarGuide
Calibration Pin Source

Application Guide

System manufacturer	Radionuclide	Product code	Activity		Qty	RRC, mo	RWL, mo
			mCi	MBq			
Siemens Healthineers	Co-57	GCo7.49	3,15	117,3	1	12	18
Spectrum Dynamics Medical D-SPECT	Co-57	GCo7.42	12	420	1	12	18
GE HeatlhCare StarGuide	Co-57	GCo7.70	10	370	1	12	18
Digirad Dilon Technologies Elscint Automation GE Healthcare Mediso Medical Philips Healthcare Siemens Healthineers Sopha Medical Toshiba America	Co-57	GCo7.70	3 - 20	111 - 740	111 - 740	Depending on the type of system	Depending on the type of system

Qty - Number of sources required by the system
RRC - Recommended Replacement Cycle by System Manufacturer
RWL - Recommended Working Life

Wide range
of Flood Sources
GCo7.69

Multimodal Sources

RITVERC offers a range of Multimodal Sources for hybrid PET/CT and SPECT/CT imaging. The nuclides, activities and dimensions are manufactured in accordance to OEM Systems manufacturer specifications. Multimodal sources can be customized and manufactured to meet individual requirements.

Please contact RITVERC Customer Service for product availability and additional information.

The utility of these sources encompasses:

— serving as fiducial markers to optimize image coregistration in sequential multi-modal scanning

— providing anatomical/positional markers visible in hybrid scanners. Their clinical CT targets are designed to simulate cortical bone density at 120 kVp

Model specifications

GNA2.M02.63

Capsule
1″ x 0.25″ (D x H) clear cast acrylic

Active dimensions
1.5 mm x 1.5 mm cylinder

CT target
1/4″ OD bone-equivalent ring
(surrounds active element)

Suggested usage
Multimodal fiducial marker for clinical image coregistration.

GNA2.M03.64

Capsule
1″ x 0.25″ (D x H)
clear cast acrylic with etched crosshairs for laser alignment

Active dimensions
1 mm diameter sphere

CT target
2 mm OD bone-equivalent ring
(surrounds active element)

Suggested usage
Multimodal fiducial marker for clinical image coregistration.

GNA2.M09.62

Capsule
1 x 1 x 1 cm cast acrylic cube

Active dimensions
0.25 mm sphere centered in capsule

Suggested usage
NEMA NU4 resolution testing

Sources for Calibration Measuring Equipment

RITVERC offers a range of Sources for Calibration Measuring Equipment with different activities and radionuclides.

Certification of Sources is done by D.I. Mendeleev Institute of metrology (VNIIM), CIPM MRA participant. Please contact RITVERC Customer Service for product availability and additional information.

Dose calibrator Gamma Standards (DCGS)

The sources are manufactured in 2 standard sizes, corresponding to 10 ml (type 2) and 20 ml (type 1). Radionuclide solution is homogeneously distributed within the volume of epoxy resin.

DCGS can be supplied either as control sources with uncertainty of measured result of ±5% or as reference sources with uncertainty of measuring result ±3% (0.95).

Sources are used to check the daily stability of dose calibrators in accordance with the recommendations of IEC 61303:1994/ COR1:2016.

Type 1

Type 2

Reference Point Gamma Sources (OSGI)

OSGI-P

OSGI-P sources are used for efficiency and energy calibration of gamma-spectrometric equipment, testing of ionizing chambers and scintillation counters. Robust design is suitable for “in field” calibrations and tests.

The source is a transparent acrylic disc with diameter of 25 mm and height of 3 mm. Radionuclide is deposited on an active part made of a light ceramic pellet. Active part is mounted in the center of an acrylic capsule and sealed with epoxy resin. The active part is 2 mm in diameter and 1 mm in height.

OSGI-RT

OSGI-RT sources are designed for verification and calibration of semiconductor, scintillation spectrometers, radiometers, ionizing chambers, etc. by energy and activity.

The source is a flat aluminum ring with a diameter of 25 mm (29 mm on request) and a thickness of 3 mm. The active part of the source is thermally sealed between two polyimide films with a total thickness of 100 ± 10 microns. The diameter of the active part is within 3 mm. Custom multinuclide sources can be produced on request.

Specifications

The catalog indicates the nominal activity of the radionuclide at the date of manufacture. Nominal value of radionuclide activity in the source is set within specified limits by the customer when ordering a source.

Calibration and verification of sources is carried out by D. I. Mendeleev Metrology institute (VNIIM) using the State Primary Standard GET-6-2016.

— DCGS: Tolerance on activity ±15%
Uncertainty of measuring result for a calibrated source: ± 3% (P=0.95)

— OSGI-P: Tolerance on activity -10% + 30%
Uncertainty of measuring result for a calibrated source: ± 3% (P=0.95)

— OSGi-RT: Tolerance on activity ±20%
Uncertainty of measuring result for a calibrated source: ± 3% (P=0.95)Total standard deviation for a OSGI-RT-0 source: ± 1,5%

DCGS

Radionuclide	Source code		Activity	
	type 1	type 2	mCi	MBq
Na-22	RNa2.1	RNa2.2	0,05 - 0,2	1,85 - 7,4
Co-57	RCo7.1	RCo7.2	5 - 10	185 - 370
Co-60	RCo0.1	RCo0.2	0,05 - 0,2	1,85 - 7,4
Ba-133	RBa3.1	RBa3.2	0,05 - 0,25	1,85 - 9,25
Cs-137	RCs7.1	RCs7.2	0,1 - 0,25	3,7 - 9,25
Ge-68	RGe8.1	RGe8.2	0,05 - 0,2	1,85 - 7,4
Eu-152	REu2.1-	REu2.2	0,05 - 0,2	1,85 - 7,4

OSGI-P

Radionuclide	Activity, kBq	Principal line, keV	Transmission coefficient to principal line
Na-22	5 - 1000	1274,54	0,988
Ti-44	5 - 100	67,884	0,963
Mn-54	5 - 1000	834,848	0,985
Co-57	5 - 3700	122,061	0,967
Co-60	5 - 3700	1332,5	0,988
Zn-65	5 - 1000	1115,55	0,987
Y-88	5 - 1000	1836,066	0,991
Cd-109	5 - 1000	88,034	0,965
Sn-113	5 - 100	391,71	0,978
Ba-133	5 - 3700	356,014	0,977
Cs-134	5 - 300	604,7	0,982
Cs-137	5 - 1000	661,66	0,983
Ce-139	5 - 1000	165,86	0,969
Eu-152	5 - 1000	1408,006	0,988
Gd-153	5 - 500	97,431	0,965
Bi-207	5 - 100	569,7	0,982
Th-228	5 - 50	2614	0,998
Am-241	5 - 370	59,537	0,962
Am-243	5 - 50	74,66	0,964

OSGI-RT

Radionuclide	OSGI-RT-1		OSGI-RT-0	
	Activity, kBq	Overall uncertainty, %	Activity, kBq	Overall uncertainty, %
Na-22	1 - 1000	3	-	-
Ti-44	1 - 300	3	-	-
Mn-54	1 - 1000	3	1 - 100	1,5
Fe-55	1 - 1000	3	-	-
Co-57	1 - 1000	3	-	-
Co-60	1 - 500	3	1 - 100	1,5
Zn-65	1 - 1000	3	-	-
Y-88	1 - 1000	3	1 - 100	1,5
Cd-109	1 - 1000	3	-	-
Sn-113	1 - 500	3	-	-
Ba-133	1 - 1000	3	1 - 100	1,5
Cs-134	1 - 300	3	-	-
Cs-137	1 - 1000	3	1 - 100	1,5
Ce-139	1 - 1000	3	-	-
Eu-152	1 - 1000	3	1 - 100	1,5
Gd-153	1 - 100	3	-	-
Bi-207	1 - 100	3	-	-
Th-228	1 - 100	3	1 - 50	2
Am-241	1 - 300	3	1 - 100	2
Am-243	1 - 50	3	-	-

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Research & Development Centre

Today RITVERC is the full-cycle high-tech enterprise: from an idea to a finished product.

We have our own technologies and great capabilities:
— precise CNC processing
— high-temperature induction soldering of x-ray windows
— site for the manufacture of ceramic and epoxy matrices
— leak test area (incl. helium mass spectrometry)
— precision laser welding and marking
— department of spectrometric and metrological studies
— testing and isotope laboratories
— technologies for manufacturing sources based on at least 28 radionuclides

RITVERC R&D Centre has invaluable experience in the design, manufacture and research of custom sources, radiation protection devices, packaging and accessories.

Do you have a need for a custom application?
Contact us: we will take care of everything.

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