



# **NUCLEAR MEDICINE REFERENCE & CALIBRATION SOURCES**

# ABOUT US

Epsilon Electronics was established in 1993 to provide sales, marketing and technical service activities in the healthcare sector. The company has initiated its product research and development activities in 2008 and started to produce high quality Ge-68 reference and calibration sources for Siemens PET and PET-CT systems. As a result of increasing demand and local growth, in 2012, Epsilon Electronic's production facility has been moved to a new location with high production capacity in order to serve both local and international markets.

In 2013, ERS (Epsilon Radioactive Sources) brand name was established and Epsilon Electronics started producing nuclear medicine reference and calibration sources under ERS brand name.

The company has enriched its product range by adding Ge-68 reference and calibration sources for General Electric PET and PET-CT systems in 2013, and Na-22 reference and calibration sources for Philips PET and PET-CT systems, Co-57 flood sources, dose calibrator reference sources, spot markers, rod sources in 2014 respectively.

ERS serves high quality radioactive source products including PET and PET-CT sources, dose calibrator sources, flood sources, spot markers and rod sources for the nuclear medicine market in Europe, Middle East, South Africa and Far East countries through its specialized distributor network.

Epsilon Electronics continues to invest in research and development activities of ERS in order to develop new and customized sources and sustain international growth.



**PET & PET-CT SOURCES**

ERS manufactures high quality PET and PET-CT sources that are compatible with the leading imaging system manufacturers including Siemens Healthcare, General Electric Healthcare and Philips Healthcare to provide high level customer satisfaction. For the calibration of PET and PET-CT systems, Ge-68 and Na-22 sources are used in different forms and activities depending on the system model. Customized PET and PET-CT sources in different forms and activities can be offered upon request by ERS. Please contact your local distributor or ERS headquarters for product availability and additional information.



# SIEMENS PET & PET CT

## SOURCES

### LINE SOURCES

Ge-68 line sources are double layered tubes and made of high quality stainless steel. Each line source is sealed on its ends by the process of precise argon welding. Thanks to the argon welding process, the possibility of activity leakage is eliminated, ensuring safe use of line sources.

Source related information including product code, isotope type, activity, serial number and production date is permanently marked with laser for traceability.

#### Uniformity

Each line source is tested with 5 mm steps of scannings throughout its length for uniformity.

The uniformity of the line sources is within +/- 5% limits.



### GE-68 CYLINDRICAL PHANTOM

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. Each cylindrical phantom manufactured is checked with a PET-CT scanner to ensure high quality.

The results of quality control image files are available upon request.



SIEMENS HEALTHCARE SYSTEM MODEL	PRODUCT CODE	PRODUCT TYPE	ISOTOPE	ACTIVITY		QUANTITY	REPLACEMENT PERIOD*
				SI	NON SI		
<b>ECAT EXACT 47</b>							
Initial Set-up	FNT1010	Phantom	Ge-68	44 MBq	1.19 mCi	1	1 Year
	FNT1011	Phantom	Ge-68	120 MBq	3.24 mCi	1	1 Year
	CBK1020	Line Source	Ge-68	37 MBq	1 mCi	1	1 Year
	CBK1021	Line Source	Ge-68	111 MBq	3 mCi	3	1 Year
	TST1030	Test Tube	Ge-68	5.5 kBq	0.15 uCi	1	1 Year
	TST1031	Test Tube	Ge-68	15 kBq	0.41 uCi	1	1 Year
<b>ECAT EXACT 47</b>							
Annual Replacement	FNT1011	Phantom	Ge-68	120 MBq	3.24 mCi	1	1 Year
	CBK1021	Line Source	Ge-68	111 MBq	3 mCi	3	1 Year
	TST1031	Test Tube	Ge-68	15 kBq	0.41 uCi	1	1 Year
<b>ECAT EXACT ART</b>							
Annual Replacement	FNT1010	Phantom	Ge-68	44 MBq	1.19 mCi	1	1 Year
	CBK1020	Line Source	Ge-68	37 MBq	1 mCi	1	1 Year
	TST1030	Test Tube	Ge-68	5.5kBq	0.15 uCi	1	1 Year
<b>ECAT EXACT HR+</b>							
Initial Set-up	FNT1010	Phantom	Ge-68	44 MBq	1.19 mCi	1	1 Year
	FNT1011	Phantom	Ge-68	120 MBq	3.24 mCi	1	1 Year
	CBK1020	Line Source	Ge-68	37 MBq	1 mCi	1	1 Year
	CBK1022	Line Source	Ge-68	148 MBq	4 mCi	3	1 Year
	TST1030	Test Tube	Ge-68	5.5kBq	0.15 uCi	1	1 Year
	TST1031	Test Tube	Ge-68	15 kBq	0.41 uCi	1	1 Year
<b>ECAT EXACT HR+</b>							
Annual Replacement	FNT1011	Phantom	Ge-68	120 MBq	3.24 mCi	1	1 Year
	CBK1022	Line Source	Ge-68	148 MBq	4 mCi	3	1 Year
	TST1031	Test Tube	Ge-68	15 kBq	0.41 uCi	1	1 Year
<b>ECAT ACCEL &amp; ECAT HR</b>							
Initial Set-up	FNT1010	Phantom	Ge-68	44 MBq	1.19 mCi	1	1 Year
	FNT1011	Phantom	Ge-68	120 MBq	3.24 mCi	1	1 Year
	CBK1020	Line Source	Ge-68	37 MBq	1 mCi	1	1 Year
	CBK1023	Line Source	Ge-68	185 MBq	5 mCi	3	1 Year
	TST1030	Test Tube	Ge-68	5.5kBq	0.15 uCi	1	1 Year
	TST1031	Test Tube	Ge-68	15 kBq	0.41 uCi	1	1 Year
<b>ECAT ACCEL &amp; ECAT HR</b>							
Annual Replacement	FNT1011	Phantom	Ge-68	120 MBq	3.24 mCi	1	1 Year
	CBK1023	Line Source	Ge-68	185 MBq	5 mCi	3	1 Year
	TST1031	Test Tube	Ge-68	15 kBq	0.41 uCi	1	1 Year
<b>ECAT BIOGRAPH</b>							
Initial Set-up & Annual Replacement	FNT1010	Phantom	Ge-68	44 MBq	1.19 mCi	1	1 Year
	CBK1020	Line Source	Ge-68	37 MBq	1 mCi	2	1 Year
	TST1030	Test Tube	Ge-68	5.5 kBq	0.15 uCi	1	1 Year
<b>ECAT BIOGRAPH PICO</b>							
Initial Set-up & Annual Replacement	FNT1014	Phantom	Ge-68	74 MBq	2 mCi	1	1 Year
	CBK1020	Line Source	Ge-68	37 MBq	1 mCi	2	1 Year
	TST1031	Test Tube	Ge-68	15 kBq	0.41 uCi	1	1 Year
<b>ECAT BIOGRAPH TRUE V &amp; BIOGRAPH MCT</b>							
Initial Set-up & Annual Replacement	FNT1012	Long Phantom	Ge-68	74 MBq	2 mCi	1	1 Year
	CBK1020	Line Source	Ge-68	37 MBq	1 mCi	2	1 Year
	TST1031	Test Tube	Ge-68	15 kBq	0.41 uCi	1	1 Year
<b>ECAT BIOGRAPH TRUE V &amp; BIOGRAPH MCT</b>							
Initial Set-up & Annual Replacement	FNT1013	Long Phantom	Ge-68	92.5 MBq	2.50 mCi	1	1 Year
	CBK1020	Line Source	Ge-68	44.4 MBq	1.2 mCi	2	1 Year
	TST1031	Test Tube	Ge-68	15 kBq	0.41 uCi	1	1 Year

\* Recommended

# GENERAL

## INFORMATION

### SOURCE DISPOSAL

ERS will accept return of depleted radioactive sources after the end of their useful life on the condition that equivalent replacement source is purchased directly from ERS or ERS distribution channels.

The customer will be responsible for all shipping costs incurred including import fees and duties for the return of the source. The shipment must be sent with the term Delivery Duty Paid (DDP) in case of an overseas shipment. ERS must be informed about the return before product shipment to be able to make proper shipping arrangements.

ERS can provide all necessary shipping documents for return of depleted sources. Customers will be charged for any unauthorized returns.

### CERTIFICATES

ERS is certified with ISO 13485:2003 and ISO 9001:2008

### DOCUMENTATION

All manufactured sources are accompanied by Calibration Certificate and Quality Certificate.

The sources can only be delivered to certified companies which are allowed to import radioactive sources with the terms of European Atomic Energy Community Regulations or related Local Atomic Energy Agencies.

### PRODUCT AVAILABILITY

Customized sources in different forms and activities can be supplied upon request by ERS. Please contact your local distributor or ERS headquarters for product availability and additional information.

### PRODUCT SHIPMENT

The regulations of the US Department of Transportation (DOT) per 49 CFR and the International Air Transportation Association (IATA) apply to packaging and delivery of radioactive materials of ERS product range.

Excepted Packaging and Type A packaging are used for ERS product shipments.

Excepted Packaging "Limited Quantity" is used when the activity limits do not exceed defined in IATA regulations and the radiation level at any point on the package does not exceed allowed limits.

Type A packaging is used to carry normal form radioactive material as defined by 49 CFR and IATA.

ANSI N43.6 : 2007 and ISO 2919 : 2012 sealed radioactive sources radiological protection tests are performed on Type A and Excepted packages.

ISO 9978 : 1992 sealed radioactive sources leakage tests are applied on ERS sealed sources.





Epsilon Radioactive Sources

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