

# INSTRUMENT CHECK SOURCES

This section shows single or mixed radionuclide sources which have been developed to check the correct functioning of radiation

measurement equipment such as surface contamination monitors, survey dosimeters and personal dosimeters. Stainless steel encapsulated sources are also available for instrument checking and oil well logging devices. For calibration standards, see sections 1 and 3. If a modified source of this type is required, please send us your specification using the form at the end of this section.



Alpha-, beta-, gamma-check sources	39
Low energy check sources	42
Neutron source	43
Oil well logging source	44
Stainless steel encapsulated sources	45
Form to request custom source	49

### 2.1 General information



#### Certification

Each source is supplied with a certificate which states the nominal activity and leakage test results.

#### Quality assurance

The sources are manufactured in a facility that operates a quality management system that has been independently audited and approved to ISO9001:1994.

#### Applications

All radiation detection instruments should be checked daily to ensure that they are working correctly. These daily checks are sometimes obligatory under national regulations.

The sources in this section offer a cost-effective and convenient method to perform functionality checks on the following types of instrument:

- Portable contamination monitors: pages 39 to 42
- Survey dosimeters: pages 39 to 42

Note: These sources are uncalibrated and can only be used for checking that the instrument is operating correctly and is stable.

#### ISO classification

The International Organization for Standardization has published a classification of sealed sources based on safety requirements of typical usage. The source types have been assessed to ISO2919 which is equivalent to ANSI N542-1977.

#### Useful working life

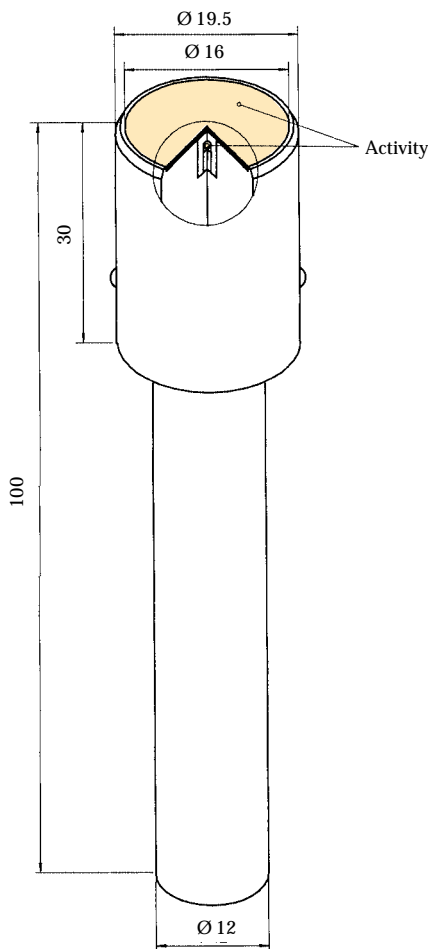
Regular improvements in source design mean that it would be good working practice to renew the sources every 10 years. Sources may be cleaned by wiping the surfaces with a lint free cloth with alcohol (detergents or abrasive compounds such as metal polish should not be used).

#### Availability

Sources are normally delivered within 6 weeks of receipt of order.

## 2.2 Check sources for contamination monitors and survey dosimeters

## Mixed nuclide check sources



## Application

These sources emit alpha-, beta- and gamma-radiation for checking the operation of surface contamination monitors and survey dosimeters. The advantages are

Cost effective	-one source type can be used for all monitors on site
Convenient	-saves specifying 3 or more sources
Compact	-saves carrying sets of sources

## Construction

The source is constructed from 3 active components (drawing: VZ-1444). Am-241 is incorporated in the surface of an anodized aluminium foil, and mounted at the top of the source. A Sr-90 foil is constructed in the same way and mounted below the Am-241 foil. An ion-exchange resin bead impregnated with Cs-137 is glued into an inner capsule and mounted under the foils.

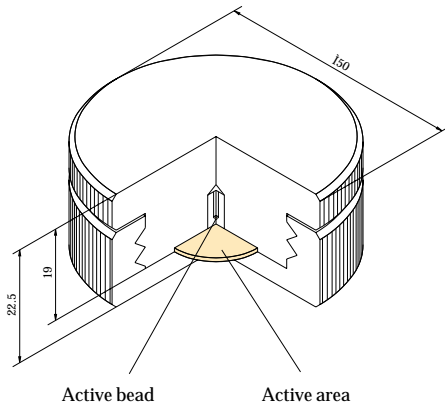
The casing is constructed from black anodized aluminium and the source is supplied in a lightweight storage case. A plastic cap is supplied to protect the surface of the source when not in use.

## Ordering information

Radionuclides	Nominal activity [kBq]	Particle emission rate	Product code
Am-241	0.8	400 alphas/s	QCRB1282
Sr-90	0.5	150 betas/s	
Cs-137	15	Gamma radiation	

## 2. Instrument check sources

### 2.2 Check sources for contamination monitors and survey dosimeters



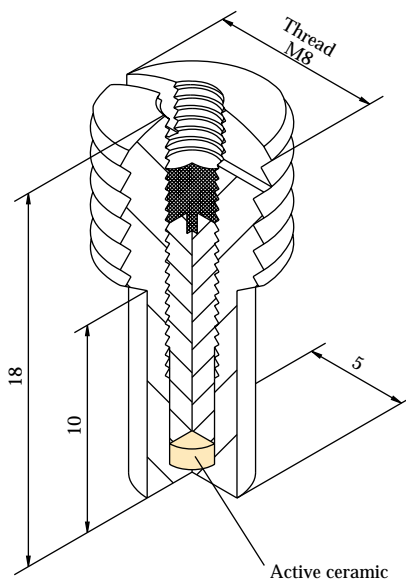
#### Construction

The source is constructed from 3 active components (drawing: VZ-2263). Am-241 is incorporated in the surface of an anodized aluminium foil, and mounted at the top of the source. A Sr-90 foil is constructed in the same way and mounted below the Am-241 foil. An ion-exchange resin bead impregnated with Cs-137 is glued into an inner capsule and mounted under the foils.

The casing is constructed from aluminium. An aluminium cover screws in place over the source to protect the surface of the source when not in use.

#### Ordering information

Radionuclides	Nominal activity [kBq]	Particle emission rate	Product code
Am-241	0.14	70 alphas/s	QCRB5203
Sr-90	2	2200 betas/s	
Cs-137	15	Gamma radiation	



#### Construction

The Cs-137 activity is incorporated into a ceramic pellet which is mounted in a brass capsule. The head of the capsule has an M8 thread, and a slot for a screwdriver so that the source can be mounted easily into a jig.

The sources meet the requirements of standard DIN44427 'Test source with container - Materials, dimensions and marking'.

#### ISO classification

C.33323 Drawing: VZ-269

#### Ordering information

Radionuclide	Nominal activity [kBq]	Product code
Cs-137	37	CDR11
Cs-137	370	CDR12
Cs-137	3700	CDR13

## 2.2 Check sources for contamination monitors and survey dosimeters

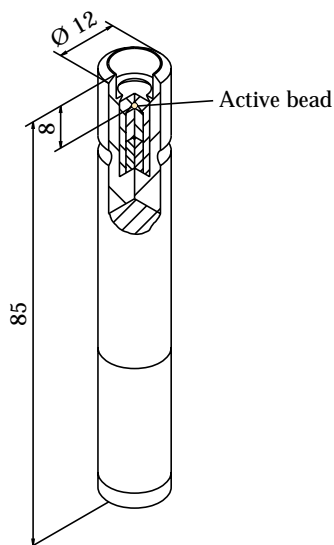
**Cs-137 check sources for survey dosimeters****Application**

These sources can be used for functionality checking of dose and dose-rate survey meters.

**Construction**

The Cs-137 activity is incorporated into an ion exchange resin bead which is enclosed in a stainless steel capsule sealed into an aluminium holder. The source is supplied with an aluminium shielded container.

For other nuclides more detailed information is available on pages 137 and 138.

**ISO classification**

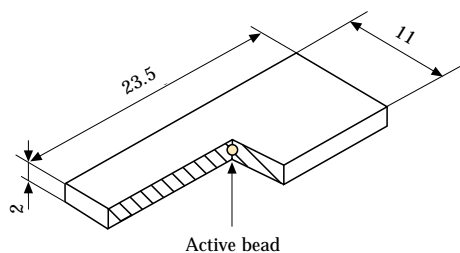
C.23312 Drawing: VZ-296 and storage container VZ-297

**Ordering information**

Radionuclide	Nominal activity [kBq]	Product code
Cs-137	370	CDR82902

## 2. Instrument check sources

### 2.3 Low energy check sources for surface contamination monitors



#### ISO classification

C.34343  
Drawing: VZ-1240

#### Application

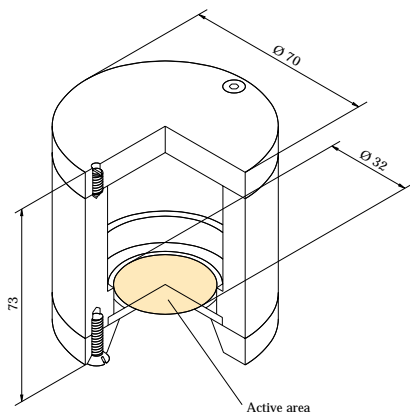
These sources can be used to check the performance of surface contamination monitors designed for detecting low energy photon-emitting radionuclides such as I-129, Cr-51 etc.. The photons emitted by Fe-55 are close in energy to the low energy threshold of these monitors, so a check using an Fe-55 source is a sensitive method to identify any faults with the equipment (eg., drifts in the high voltage applied to the detector).

#### Construction

The source consists of an ion exchange resin bead mounted in a solid plastic holder.

#### Ordering information

Radionuclide	Nominal activity [MBq]	Product code
Fe-55	1.85	IER15510



#### Fe-55 test source and jig for Mini Instruments 44B probe

This source and jig are intended for daily performance checks on Mini Instruments 44B monitors. The jig positions the detector at an accurately reproducible distance from the source so that long term drifts in instrument response can be recorded.

#### Construction

The Fe-55 active deposit is heat-sealed between two plastic foils which are mounted on an aluminium backing plate. The source is then placed into a robust Teflon jig, with a protective rotating cover.

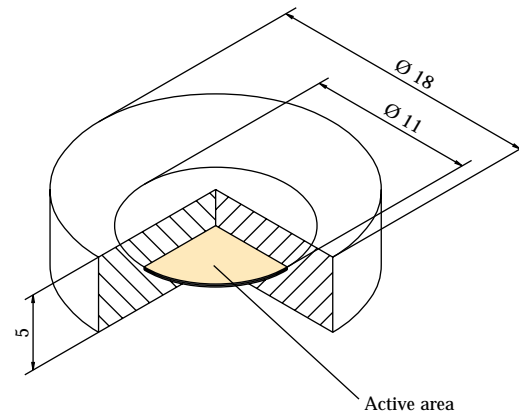
#### Ordering information

Radionuclide	Description	Nominal activity [kBq]	Product code
Fe-55	Source and jig to drawings VZ-2044 and VZ-2012	70	IERB3621
Fe-55	Replacement source to drawing VZ-2044	70	IERB3748

## 2.4 Neutron source

**Application**

These Am-241/Be sources are designed for the functionality checking of neutron dosimeters. The source produces a neutron flux, which simulates a neutron background which allows the dosimeter's measurement function to be checked.

**ISO classification**

C.34313  
Drawing: VZ-342

**Construction**

The Am-241 activity is fixed between 2 beryllium discs 11 mm in diameter and 1 mm thick and sealed into a plastic capsule 18mm in diameter and 5mm thick.

**Ordering information**

Radionuclide	Nominal activity [MBq]	Product code
Am-241/Be	3.33	AMNB3423

### 2.5 Sources for particular applications

#### Application

These calibrated sources have been designed for routine checking and calibration of radiation detection instrumentation eg.

- Gamma dosimeters
- Survey meters
- Radiation alarms
- Oil well logging devices



#### High pressure tested sources

##### Construction

The Cs-137 is fixed in a glass matrix and sealed by welding the glass between two stainless steel discs. This inner capsule is welded into an outer stainless steel capsule. The overall dimensions are 12.7mm diameter x 3.2mm. The active diameter is 5.8mm.

These sources meet the requirements for oil well logging sources and each source is pressure tested to 25,000psi.

##### ISO classification

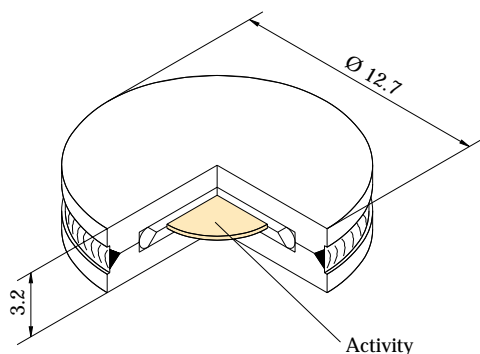
C.66646

Drawing: VZ-2134

The IDNS model number is CDC.PLS.

##### Certification

Each source is supplied with an AEA Technology certificate of measurement.

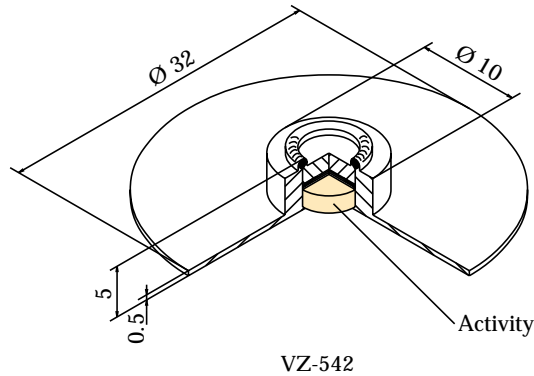


#### Ordering information

Radionuclide	Nominal activity		Product code
	[kBq]	[nCi]	
Cs-137	18.5	500	CDRB4399
Cs-137	30.0	810	CDRB5517
Cs-137	59.2	1600	CDRB4400

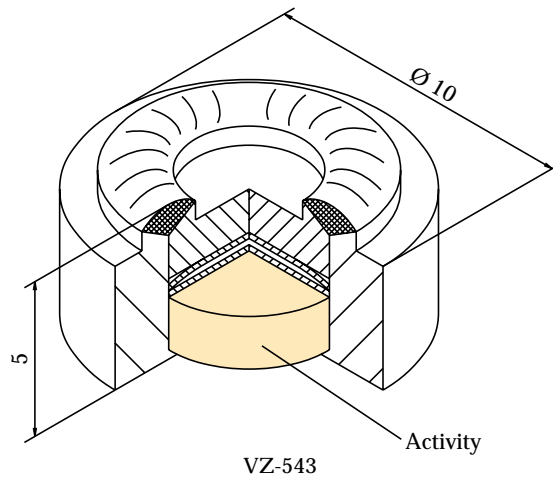
## 2.5 Sources for particular applications

## Calibrated gamma point sources

**Construction**

The activity is in the form of a ceramic disc, fixed with a bronze spring and welded into an stainless steel capsule (drawing VZ-543). In case of drawing VZ-542 this capsule is mounted on a stainless steel disc.

The overall dimensions of the capsule are 10mm diameter x 5mm. The dimensions of the stainless steel plate are 32mm diameter x 0.5mm.

**ISO classification**

C.66543

Drawing: VZ-542

**Certification**

Each source is supplied with an AEA Technology certificate of measurement.

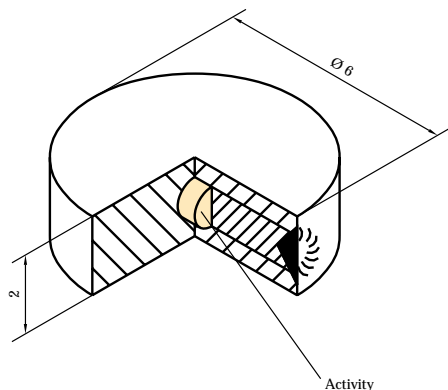
**Ordering information**

Radionuclide	Drawing	Nominal activity [kBq]	Product code
Am-241	VZ-542	1850	AMRK6140
Cs-137	VZ-542	1850	CDRK5800
Cs-137	VZ-542	33.3	CDRQ6986
Co-60	VZ-542	555	CKRK6141
Cs-137	VZ-543	37	CDRK4853

## 2. Instrument check sources

### 2.5 Sources for particular applications

#### Calibrated gamma point sources



#### ISO classification

C.65344  
Drawing: VZ-469

#### Construction

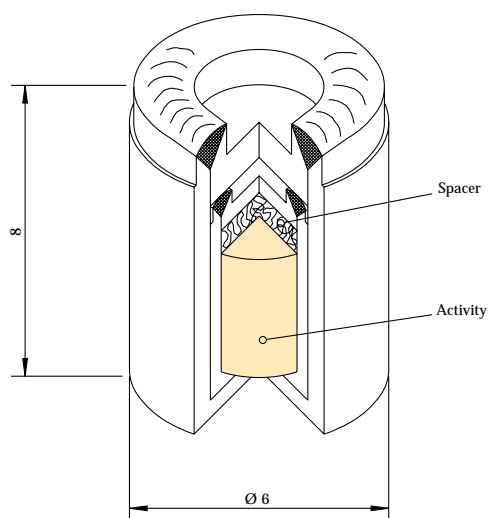
Cs-137 in the form of a ceramic pellet is welded into a stainless steel capsule. The overall dimensions are 6mm diameter x 2mm thick.

#### Certification

Each source is supplied with an AEA Technology certificate of measurement.

#### Ordering information

Radionuclide	Nominal activity [kBq]	Product code
Cs-137	37	CDRB3078



#### Calibrated welded Cs-137 gamma point sources

#### Construction

Cs-137 in the form of a ceramic disc is welded into an inner stainless steel capsule. The inner capsule is mounted into an outer stainless steel capsule. The overall dimensions are 6mm diameter x 8mm.

#### ISO classification

C.64444 Drawing: VZ-130  
The IDNS model number is CDC.P1.

#### Certification

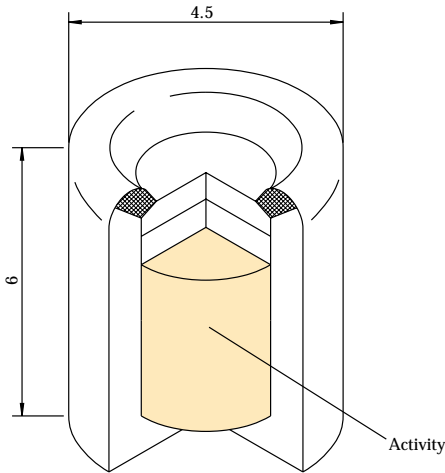
Each source is supplied with an AEA Technology certificate of measurement.

#### Ordering information

Radionuclide	Nominal activity [kBq]	Product code
Cs-137	37	CDRB5947
Cs-137	370	CDRB5948
Cs-137	3700	CDRB5949

2.5 Sources for particular applications

Calibrated robust Cs-137 gamma point sources



**ISO classification**

C.66445  
Drawing: VZ-1145

**Construction**

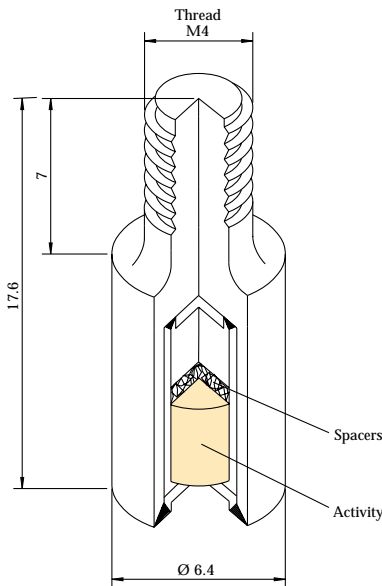
Cs-137 in the form of a ceramic pellet is welded into a stainless steel capsule. The overall dimensions are 4.5mm diameter x 6mm long.

**Certification**

Each source is supplied with an AEA Technology certificate of measurement.

**Ordering information**

Radionuclide	Nominal activity [kBq]	Product code
Cs-137	37	CDRB5952
Cs-137	370	CDRB5953
Cs-137	3700	CDRB5954



Calibrated robust Cs-137 point sources with thread

**Construction**

Cs-137 in the form of a ceramic disc is welded into an inner stainless steel capsule. The inner capsule is mounted into an outer stainless steel capsule which has an M4 thread on the top of the source. The overall dimensions are 6.4mm diameter x 17.6mm.

**ISO classification**

C.66646 Drawing: VZ-1508  
The special form certificate number is D/0051/S.

**Ordering information**

Radionuclide	Nominal activity [kBq]	Product code
Cs-137	37	CDRB5950
Cs-137	370	CDRB3542
Cs-137	3700	CDRB5951

**Certification**

Each source is supplied with an AEA Technology certificate of measurement.

### 2.6 Custom preparation service

If the check source required is not shown in this catalogue, HTSL will try to assist you.

Please photocopy the form on the opposite page, fill in the details as far as possible, and fax the form to HTSL.

Alternatively, contact us by Email on:

**[duncan@hightechsource.co.uk](mailto:duncan@hightechsource.co.uk)**

or visit our WWW site at:

**<http://www.hightechsource.co.uk>**

## Request for custom check source

**FAX-  
BACK  
FORM****To:** +44 (0) 1235 514219

**From:** Name: \_\_\_\_\_  
 Institute/company \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Country: \_\_\_\_\_  
 Tel: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

Date: \_\_\_\_\_

Please send me a quotation for the following check source:

Radionuclide: \_\_\_\_\_

Nominal emission required: \_\_\_\_\_ particles/second

or

Nominal activity required: \_\_\_\_\_ Bq or \_\_\_\_\_ nCi

Active dimensions: \_\_\_\_\_

Dimensions of backing  
plate holder: \_\_\_\_\_ (note: it is sometimes possible to fix  
sources to holders supplied by yourselves)

Please write here a brief description of the application of the source, type of instrument to be checked and indicate if the source will be subject to extreme conditions (for example, high temperature/vibration/humidity/corrosive atmosphere). This may help us to offer alternative sources if we cannot manufacture to your exact specification.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_