Americium-241 (Am-241)

Americium sealed sources emit both gamma rays and alpha particles, and are commonly used in industrial measuring and gauging devices, radiology, chemical investigations, and medical applications.

Our Americium-241 sealed source designs provide a cost-effective alternative to OEMs, meeting or exceeding regulatory requirements for radiation source encapsulations.

Source Data

**Half Life**: 432 Years  
**Primary Emission:** Gamma  
**Primary Energy:** 14-20 KeV  
**RWL:** 5 Years  
**Capsule Materials**: Stainless steel with Beryllium window

Americium-241 History

Americium-241 was discovered in 1944 by Dr. Glenn Seaborg and his colleagues at the University of Chicago. Americium is a radioactive element in all its isotopic forms. It was named after the continent of America.

Americium-241 Applications

* **Thickness Gauging** - Americium-241 is used in the measurement of light alloys, glass, plastics, and rubber for which beta sources are not suitable.
* **Material Analysis** - Americium-241 is used to excite radiation in non-destructive testing elemental analysis applications.
* **Flow Gauging** -  Americium-241 and a detector are placed on opposite sides of the material to be measured. Gamma radiation transmitted through the sample is then directly related to the sample thickness.

Custom Design Services

QSA has a  large standard product list available to fit your application. Custom sealed source designs are possible for large orders. [Contact QSA](http://www.qsa-global.com/sources/Contact-Us.aspx) for more information.

Traceability

Measured by National labs and statistically verified by QSA. Standard certificates available upon request.

Quality Control

QSA Global uses a multi-part quality assurance system to ensure Americium radiation sources meet the highest integrity levels in the industry, including all statutory and international regulatory requirements.

* **Wipe Test I** - Americium-241 sources are wiped with a swab or tissue, moistened with ethanol or water, then measured for removed activity.
* **Immersion Test II** - Americium-241 sources are immersed in a suitable liquid at 50°C for at least 4 hours, then measured for removed activity.
* **Bubble Test III** - Americium-241 sources are immersed in water or a suitable liquid, and the pressure in the vessel is reduced to 13kPa (100mm Hg). No bubbles must be observed.

Cobalt-60 (Co-60)

Cobalt-60 is ideal for industrial gauging and leveling devices, as well as accurate detection of explosive devices. Cobalt is also used throughout the industrial radiography industry to detect structural damage to metal parts.

Our Co-60 sealed source designs provide a cost-effective alternative to OEMs, meeting or exceeding regulatory requirements for radiation source encapsulations.

Source Data

**Half Life**: 5.27 Years  
**Primary Emission:** Gamma  
**Primary Energy:** 1.173 and 1.333 KeV  
**RWL:** 15 Years  
**Capsule Materials**: Stainless steel.

Cobalt-60 History

Cobalt compounds have been used for centuries to impart a rich blue color to glass, glazes, and ceramics. Cobalt has been detected in Egyptian sculpture and Persian jewelry from the third millennium BC, in the ruins of Pompeii (destroyed AD 79), and in China dating from the Tang dynasty (AD 618–907) and the Ming dynasty (AD 1368–1644) In 1938, John Livingood and Glenn Seaborg discovered cobalt-60.

Cobalt-60 Applications

* **Non-Destructive Testing (NDT)** - Co-60 is a cost-effective source used in gamma radiography applications.
  + See QSA's Full Line of NDT products at [SENTINELNDT.com](http://www.sentinelndt.com/)
* **Security Systems** - Cobalt-60 is used in detecting the presence of nitrogen chemical compounds found in the majority of explosives.
* **Level Gauging** - Co-60 is used in nuclear, radar, and ultrasonic level measurement devices.
* **Medical** - Cobalt 60 is commonly used as a source for radiation therapy, including cancer treatment.
* **Food Safety** - used in food irradiation, Cobalt-60 removes bacteria and other pathogens.

Traceability

Measured by National Labs and Statistically verified by QSA. Standard Certificates available upon request.

Custom Design Services

QSA has a  large standard product list available to fit your application. Custom Co-60 source designs are possible for large orders. [Contact QSA](http://www.qsa-global.com/sources/Contact-Us.aspx) for more information.

Quality Control

QSA uses a multi-part quality assurance system to ensure Cobalt radiation sources meet the highest integrity levels in the industry, including all statutory and international regulatory requirements.

* **Wipe Test I** - Cobalt-60 sources are wiped with a swab or tissue, moistened with ethanol or water, then measured for removed activity.
* **Immersion Test II** - Cobalt-60 sources are immersed in a suitable liquid at 50°C for at least 4 hours, then measured for removed activity.
* **Bubble Test III** - Cobalt-60 sources are immersed in water or a suitable liquid, and the pressure in the vessel is reduced to 13kPa (100mm Hg). No bubbles must be observed.

[Contact QSA](http://www.qsa-global.com/sources/Contact-Us.aspx) for additional information on custom Cobalt-60 sealed source designs.

Cesium/Caesium-137 (Cs-137)

Cesium-137 is widely used throughout the construction industry for level, moisture, and thickness gauging applications. Cesium is also commonly used in medical research & treatment and oil well drilling.

Our Cs-137 sealed source designs provide a cost-effective alternative to OEMs, meeting or exceeding regulatory requirements for sealed source encapsulations.

Source Data

**Half Life**: 30 Years  
**Primary Emission:** Gamma  
**Primary Energy:** 661 KeV  
**RWL:** 15 Years  
**Capsule Materials**: MP35N; stainless steel.

Cesium-137 History

Cesium-137 (or Caesium-137)  was discovered by and an undergraduate at UC Berkely, Margret Melhase in 1941. Historically, the most important use for cesium has been in research and development, primarily in chemical and electrical applications.

Cesium-137 Applications

* **Thickness Gauging** - Cesium-137 is used in the measurement of light alloys, glass, plastics, and rubber for which beta sources are not suitable.
* **Oil Well Logging (OWL)** - Cesium encapsulations are used to characterize rock strata during oil well logging applications such as wireline logging and logging while drilling.
  + Cesium-137 sources are designed to withstand forces encountered during oil well logging without compromising encapsulation integrity.
* **Flow Gauging** - Cesium and a detector are placed on opposite sides of the material to be measured. Gamma radiation transmitted through the sample is then directed related to the sample thickness.
* **Level Gauging** - Cs-137 is used to monitor process fluids without making physical contact with package contents.
* **Medical** - Gamma rays from Cesium are used in radiotherapy as a treatment for brachytherapy.

Traceability

Measured by National Labs and Statistically verified by QSA. Standard Certificates available upon request.

Custom Design Services

QSA has a large standard product list available to fit your application. Custom Cs-137 source designs are possible for large orders. [Contact QSA](http://www.qsa-global.com/sources/Contact-Us.aspx) for more information.

Quality Control

QSA  uses a multi-part quality assurance system to ensure Cesium-137 radiation sources meet the highest integrity levels in the industry, including all statutory and international regulatory requirements.

* **Wipe Test I** - Cesium-137 sources are wiped with a swab or tissue, moistened with ethanol or water, then measured for removed activity.
* **Immersion Test II** - Cesium-137 sources are immersed in a suitable liquid at 50°C for at least 4 hours, then measured for removed activity.
* **Bubble Test III** - Cesium-137 sources are immersed in water or a suitable liquid, and the pressure in the vessel is reduced to 13kPa (100mm Hg). No bubbles must be observed.

[Contact QSA](http://www.qsa-global.com/sources/Contact-Us.aspx) for additional information on our Cesium-137 sealed source designs.