

## Disc & Laminate Sources

These sources are supplied as plastic discs or as thin plastic laminates. With the exception of the alpha source, the small quantity of radioactive material is sealed in the plastic with epoxy to prevent leakage and contamination. The transmission window is sufficiently thin to transmit both beta and gamma emissions without undue absorption.



Disc sources are available in 1" and 2" diameter plastic disc with the 1" being standard and other sizes on special order.

The alpha source is of open window construction with the source material bonded to the surface of a silver foil mounted in the recess of the plastic disc. This design yields excellent emission of alpha particles without window losses.

Plastic laminates provide a convenient alternative packaging being easy to handle and store. The standard laminates have a transmission window of 0.005" and produce minimum attenuation for photons and higher energy beta particles.

Now the C14, FE55 and Po210 sources have a thin, Mylar window. Order as, for example, **C14LMW - Laminated Mylar Window**



Three sizes are available, 5"x2.75", 3.75"x2.25" and a 1.75" circular disc. Low energy x-ray, beta and alpha sources can be produced in the 1.75" diameter laminate with a 80µgm/cm<sup>2</sup> aluminized Mylar window offering excellent transmission for Fe-55, C-14 and Po-210.

Radioisotope sources are available individually or packaged as sets of three, five, and eight in convenient storage boxes. These items are uncalibrated and of nominal activity to provide a safe, yet inexpensive supply of radioactive material for educational and commercial use.

Standard individual sources for alpha, beta and gamma emissions are available in the isotopes shown in the table to the right.

Isotope	Activity	Half-life	Emissions	Energies (keV)
Ba-133S1	1uCi.	10.7 years	Gamma	81.0, 276.3, 303.7, 355.9, 383.7
C14S10	10uCi.	5730 years	Beta	β156.5
Cd109S1	1uCi.	453 days	Gamma	88.0
Co57S1	1uCi.	270 days	Gamma	122.1, 136.4
Co60S1	1uCi.	5.27 years	Gamma, Beta	1173.2, 1332.5, β317.9
Cs137S.2	0.2uCi.	30.1 years	Gamma, Beta	32, 661.6, β511.6, β1173.2
Cs137S.5	0.5uCi.	30.1 years	Gamma, Beta	32, 661.6, β511.6, β1173.2
Cs137S1	1uCi.	30.1 years	Gamma, Beta	32, 661.6, β511.6, β1173.2
Cs137S5	5uCi.	30.1 years	Gamma, Beta	32, 661.6, β511.6, β1173.2
Cs/ZnS	1uCi.	Mixed	"Unknown"	32, 661.6, 1115.5
Eu152S1	1uCi.	13.5 Years	Gamma, Beta	Multiple energies
Fe55S100	100uCi.	2.73 years	X-ray, Beta	5.9, 6.5, β231.4
Mn54S1	1uCi.	312 days	Gamma, Beta	834.8, β542.2
Na22S1	1uCi.	2.6 years	Gamma	1274.5, 511
Po210S	0.1uCi.	138 days	Alpha	5407.5
Sr90S	0.1uCi.	28.8 years	Beta	β546
Ti204S1	1uCi.	3.78 years	Beta	β763.7
Zn65S1	1uCi.	244 days	Gamma, Beta	1115.6, β236.34 β1351.9

## Disc Sets

**RSS-2 - GM Resolving Time Set** - This set is used for determining the resolving time of GM Counters. It consists of three half discs, two of which contain 5 microcuries of TI-204 plus a third half disc with no activity. The count-rate of each half disc plus the blank (to maintain constant geometry) is measured and then both active half discs are combined for a measurement with high count-rate. The counting loss may now be calculated by adding the rates from each half disc and comparing the result to the count-rate with both halves combined.



**RSS-3** - The **RSS-3** contains 1 each Po-210, Sr-90 and Co-60 emitting a range of alpha, beta and gamma radiation's. This set is ideal for demonstration and introductory nuclear labs covering basic characteristics of radiation.

**RSS-5** - Containing 1 each Cs-137, Co-60, Sr-90, TI-204 and Po-210, the **RSS-5** provides a wide of alpha, beta and gamma emissions making it a popular choice for nuclear science instruction. The set contains two beta emitters, two beta/gamma emitters and one alpha source for in-depth studies of radiation.



**RSS-8** - Designed for gamma spectroscopy, the **RSS-8** contains eight different gamma emitting isotopes covering the entire energy range from 32 to 1333 keV. Also included in the set is a mixed source of Cs-137 and Zn-65 which students may use to identify an "unknown" isotope. The set consists of Ba-133, Cd-109, Co-57, Co-60, Cs-137, Mn-54, Na-22 and Cs/Zn.

**PO-210** - Due its relatively short half-life, the **Po-210** alpha source must be replaced on a regular basis. Currently this is the only alpha emitting byproduct material available as a NRC Exempt Quantity which may be held without a radioactive material license.



## LSDISK1



### Lead Shields for Shipping and Storage –

The **LSDISK5** shield is used for shipping and storage of 1" diameter disc sources. With a wall thickness of 0.5", this container is suitable for higher activity gamma sources and holds up to 20 discs. Outside Dimensions: 3.6 x 2.3 in, Interior Dimensions: 2.65 X 1.25 in, 0.5 in thick, approximately 4.6 lbs weight, painted exterior.

The **LSDISK1** and **LSDISK4** are used for shipping and storage of 1 – 8 disks and are painted on both sides for safety.



**LSDISK5**

**LSDISK4**

## RLB - Radioactive Material Lock Box -

The Radioactive Material Lock Box (RLB) is ideal for securing and storing radioactive sources. The exterior housing is made from 16 gauge steel that is both durable and pry resistant. The interior contains protective foam. The RLB also come with a heavy duty, 1500 lb rated, steel cable that can be used to secure the lock box to any stationary object. (9.5 x 6.5 x 1.75 in, 4 lbs. )

