

Radioactive Material Safety Data Sheet

This data sheet presents information on radioisotopes only.

For information on chemical compounds incorporating this radionuclide, see the relevant Material Safety Data Sheet.

Cobalt-60

Part 1 – Radioactive Material Identification

Common Names: Cobalt-60

Chemical Symbol: Co-60 or ^{60}Co

Atomic Number: 27

Mass Number: 60 (33 neutrons)

Chemical Form: Cobalt metal

Physical Form: Thin cylinder of cobalt metal

Part 2 – Radiation Characteristics

Physical half-life: 5.27 years

Specific Activity (GBq/g): 41,800

Principle Emissions	E_{Max} (keV)	E_{eff} (keV)	Dose Rate ($\mu\text{Sv/h/GBq}$ at 1m)	Shielding Required
Beta* (β)	318 (100%)	96	-	-
Gamma (γ) / X-Rays	1173 (100%) 1332 (100%)	-	370 ^a	HVL Lead: 1.2 cm
Alpha (α)	-	-	-	-
Neutron (n)	-	-	-	-

* Where Beta radiation is present, Bremsstrahlung radiation will be produced. Shielding may be required.

Note: Only emissions with abundance greater than 10% are shown.

^a *The Health Physics and Radiological Health Handbook*, Scintra, Inc., Revised Edition, 1992

Progeny: Nickel-60 (Ni-60)

Part 3 – Detection and Measurement

Methods of detection (in order of preference)

1. A radiation survey meter equipped with an energy-compensated Geiger Mueller detector.
2. Ion chamber survey meter – tends to be less sensitive than a Geiger Mueller survey meter but is able to respond more precisely in higher radiation fields.
3. Gamma scintillation detector – very sensitive but is also energy dependent. Must be calibrated for Co-60 before it can be used for dose assessment surveys.

Part 7 - Emergency Procedures

*The following is a guide for first responders. The following actions, including remediation, should be carried out by qualified individuals. In cases where life-threatening injury has resulted, **first** treat the injury, **second** deal with personal decontamination.*

Personal Decontamination Techniques

- Wash well with soap and water and monitor skin
- Do not abrade skin, only blot dry
- Decontamination of clothing and surfaces are covered under operating and emergency procedures

Spill and Leak Control

- Alert everyone in the area
- Confine the problem or emergency (includes the use of absorbent material)
- Clear area
- Summon Aid

Damage to Sealed Radioactive Source Holder

- Evacuate the immediate vicinity around the source holder
- Place a barrier at a safe distance from the source holder (min. 5 meters)
- Identify area as a radiation hazard
- Contact emergency number posted on local warning sign

Suggested Emergency Protective Equipment

- Gloves
- Footwear Covers
- Safety Glasses
- Outer layer or easily removed protective clothing (as situation requires)

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