

# <sup>65</sup>Zn

## Radioisotope Fact Sheet Zinc 65

**Half life** 244 days

### Radiations emitted

Radiation	Energy (keV)	Yield(%)
Positron	330 - max, 143 - average	1.4
X-ray	8 and 9	~39
Gamma ray	1116	51
Gamma ray (annihilation)	511	~3

### Safety precautions

<sup>65</sup>Zn is a high energy gamma ray emitter presenting both an internal and external hazard.

Handling tools and standard laboratory PPE (gloves, lab coat, safety glasses) should be used to minimise exposure.

Amounts of 37 MBq or greater should only be manipulated behind lead bricks. A single thickness wall of two courses of 50 mm bricks should provide sufficient shielding while allowing good access.

Lead brick shielding may also be required for wastes stored for decay in the laboratory.

### Radiotoxicity data

<sup>65</sup>Zn is classed as being of high hazard (Group 2) according to AS/NZS 2243.4.

The Annual Limit on Intake by ingestion (ALI<sub>ing</sub>) is 5 MBq and the most restrictive inhalation limit (ALI<sub>inhal</sub>) is 6.9 MBq.

### Dose rates

The gamma ray dose rate constant is 89  $\mu$ Sv/h/ GBq at 1 m.

Dose rate to the basal skin cells from contamination of 1 kBq cm<sup>-2</sup>: 76  $\mu$ Sv h<sup>-1</sup>.

Dose rate from a 1 kBq (0.05 ml) droplet on skin: 15  $\mu$ Sv h<sup>-1</sup>.

### Shielding

Half value layer (HVL) for X and gamma rays:  
14 mm lead

Tenth value layer (TVL) for X and gamma rays:  
42 mm lead

### Licensing requirements

Under the *Radiation Safety Regulation 2021*, a licence is required for the possession of <sup>65</sup>Zn sources with concentrations of greater than or equal to 10 Bq per gram and with activities of 1 MBq or greater. A use licence is also required for any persons who use such sources for research purposes.

### Disposal data

The maximum concentration of <sup>65</sup>Zn in aqueous wastes released to a sewerage system is given in the *Regulation* as 350 kBq per m<sup>3</sup> i.e. 350 Bq per litre.

The concentration of <sup>65</sup>Zn in solid wastes disposed of to either the general or pathology waste streams must be less than 5 Bq per gram (5 kBq per kg) – i.e. half the concentration limit for licensing.

### Radiation detection and monitoring

Either a Geiger Muller tube or scintillation monitor is suitable for contamination control. For personal monitoring, TLD/OSL dosimeters are recommended for both whole body and extremity monitoring.

### Laboratory requirements

Indicative maximum activities:

Low level	Bench	1 MBq
	Fume cupboard	10 MBq
Medium level	Bench	4 MBq
	Fume cupboard	40 MBq