

# Nickel-63 data sheet

## Physical Data

Maximum  $\beta$  energy: 0.067 MeV  
Transition probability: 100%  
Half-Life: 100.0 years

Maximum range of  $\beta$  in air: 5-6cm

## Dosimetry

Since the beta radiation from nickel-63 will not penetrate the outer layers of the skin (maximum range 7mg.cm<sup>-2</sup>) it does not present a significant risk from external radiation. If nickel-63 compounds are ingested the majority of the activity will be excreted, in the faeces, within 24 hours. In the case of inhalation the fate of the material will depend on it's chemical and physical form, but about half would usually be excreted in the faeces within 24 hours and the majority of the remainder will be excreted in the urine within a few days. <sup>(1)</sup>

## Occupational Limits <sup>(2)</sup>

	Annual limit on intake (ALI)	Derived air concentration (DAC)
Oral	3 x 10 <sup>8</sup> Bq	-
Inhalation	Class D* 6 x 10 <sup>7</sup> Bq Class W* 1 x 10 <sup>8</sup> Bq	2 x 10 <sup>4</sup> Bq m <sup>-3</sup> 4 x 10 <sup>4</sup> Bq m <sup>-3</sup>

## Safety Warnings and Procedures

Suitable radiation and contamination monitoring instruments must be used when unpacking or using a source as an aid to minimising exposure to radiation. Thin end-window Geiger counters are suitable monitoring instruments for use with nickel-63.

Nickel-63 sources are not sealed sources. They should be handled with care to avoid abrasion to the active face.

Nickel-63 will gradually tarnish under normal atmospheric conditions due to exposure to air, aggravation by moisture and, in confined space, by the effect of beta radiation on air. It is recommended that nickel-63 sources should be stored under an inert atmosphere, such as dry argon, when not in use.

All radioactive products are dangerous if not handled, used, stored, transported or disposed of properly and in accordance with the appropriate regulations. Users must make themselves aware of and observe the local regulations or codes of practice which relate to such matters.

(1) NRPB Publications GS7

(2) based on 40 hour working week. ICRP Publication 30,1981.

\* Oxides, hydroxides and carbides of Ni63 are class W and all other commonly occurring compounds of nickel are class D.

Disclaimer - The "Safety Warnings and Procedures" above only apply if you extract the Radiation source from the Lonestar unit (not recommended). They **do not** apply to the Lonestar System as a whole.