

# RADIONUCLIDE DATA SHEET

[**POTASSIUM**]

K-42

19 protons

23 neutrons

**Half Life:** 12.36 hours

**Radiation:** Decay Mode: Beta

**Gamma Constant:** 1.59 mR/hr per 1 mCi at 30 cm

**Major Betas:**

| Max E(MeV) | Avg E (MeV) | # per 100 dis |
|------------|-------------|---------------|
| 1.684      | 0.701       | 0.3           |
| 1.996      | 0.822       | 18            |
| 3.521      | 1.564       | 82            |

Max. Beta Range in Air : 1505 cm

Max. Beta Range in Water : 1.8 cm

**Major Gammas:**

| E(MeV) | # per 100 Dis |
|--------|---------------|
| 0.313  | 0.3           |
| 1.525  | 18            |

Average gamma E = 1.500 MeV

**Intake Data (annual):**

Minimum Ingestion: 5000  $\mu$ Ci equals 5 rem TEDE (WHOLE BODY)

Minimum Inhalation: 5000  $\mu$ Ci equals 5 rem TEDE (WHOLE BODY)

**Doses:**

**Skin Dose:** Reported for 1  $\mu$ Ci over 10 cm<sup>2</sup> of skin  
4.35 mrad/hr (gamma dose)

Point Source: 738 mrad/hr (beta dose)

Disk Source: 736 mrad/hr (beta dose)

**Shielding Information:**

|  |          |         |
|--|----------|---------|
| Maximum Range For Beta                   | Plastic  | 1.8 cm  |
|  | Aluminum | 0.82 cm |
| Tenth Value Thickness For Average Gamma: | Concrete | 19 cm   |
|  | Lead     | 3.9 cm  |

**Detection information:** Usable Detectors listed with estimate efficiencies

|                                    |     |                     |     |
|------------------------------------|-----|---------------------|-----|
| Ludlum 3 w/ pancake probe at 1 cm  | 16% | Liq. Scint. Counter | 85% |
| Ludlum 3 w/ NaI probe near surface | 1%  | Gamma Counter       | 7%  |

**Action Quantities:**

|  |                |
|--|----------------|
| Bench Top Quantity Must Be Less Than                               | 50000 $\mu$ Ci |
| Containers Require Labeling When Greater Than                      | 1000 $\mu$ Ci  |
| Rooms Require Posting When There Is Greater Than                   | 10000 $\mu$ Ci |
| Contamination Lasting More than 24 hrs Require NRC Notification At | 25000 $\mu$ Ci |