



Sulphur-35



WORKING SAFELY WITH SULPHUR-35

Radioactive half-life $T_{1/2}$	87.4 days
Principal emission	0.167 MeV beta (maximum)
Monitoring for contamination	Thin end-window Geiger-Müller detector
Biological Monitoring	Urine samples
Annual Limit on Intake (ALI) by ingestion	4 x 10 ⁸ Bq (~10mCi) ** (Inorganic compounds) 2 x 10 ⁸ Bq (~5mCi) * (Elemental sulphur)
Maximum range in air	26 cm
Maximum range in water	0.32 mm
Shielding	1 cm Perspex / Plexiglas. Thinner Perspex / Plexiglas down to 3mm, although adequate to reduce doses, does not have good mechanical properties.

	DAYS	0	1	2	3	4	5	6
WEEKS	0	1.000	0.992	0.984	0.976	0.969	0.961	0.954
	1	0.946	0.939	0.931	0.924	0.916	0.909	0.902
	2	0.895	0.888	0.881	0.874	0.867	0.860	0.853
	3	0.847	0.840	0.833	0.827	0.820	0.814	0.807
	4	0.801	0.795	0.788	0.782	0.776	0.770	0.764
	5	0.758	0.752	0.746	0.740	0.734	0.728	0.722
	6	0.717	0.711	0.705	0.700	0.694	0.689	0.683
	7	0.678	0.673	0.667	0.662	0.657	0.652	0.646
	8	0.641	0.636	0.631	0.626	0.621	0.616	0.612
	9	0.607	0.602	0.597	0.592	0.588	0.583	0.579
	10	0.574	0.569	0.565	0.560	0.556	0.552	0.547
	11	0.543	0.539	0.534	0.530	0.526	0.522	0.518
12	0.514	0.510	0.506	0.502	0.498	0.494	0.490	

Special Considerations

Note that organic compounds are often strongly retained and no limits of exposure have been set for them. Care also needs to be taken not to generate sulphur dioxide or hydrogen sulphide which could be inhaled. Radiolysis of ³⁵S-amino acids during storage and use may lead to the release of ³⁵S-labelled volatile impurities. Although the level of these impurities is small (typically less than 0.05%) contamination of the internal surfaces of storage and reaction vessels may occur. Vials should be opened and used in ventilated enclosures.

** Based on occupational effective dose equivalent limit of 50 mSv for stochastic risks. In Germany the ALI value is 3x10⁸ Bq

* Based on occupational effective dose equivalent limit of 500 mSv for deterministic risks. In Germany the ALI value is 7x10⁷ Bq

The Annual Limit on Intake (ALI) data are based on the recommendations of the International Commission on Radiological Protection (ICRP) Publication 30 but may change should the ICRP Publication 60 recommendations be adopted by your national regulatory authority.

The data provided is general information which gives a basic understanding of radiation safety. You must however consult your local radiation protection adviser to ensure that you comply with all national regulations and local rules.