

SULFUR-35 [³⁵S]

Physical and Radiological Data

Physical half-life:	87.4 days
Low energy beta emitter:	0.167 MeV (max), 0.049 MeV (avg)
Maximum range in air:	24 cm = 9.45 inches
Critical organ:	whole body

Concerns

- ◆ Monitoring
Because ³⁵S is a low energy beta emitter, it is difficult to monitor with a radiation survey instrument. Wipe testing should be done frequently to monitor possible contamination.

Shielding

- ◆ Low-density materials can be used to shield ³⁵S. Plexiglas (lucite) is the most highly recommended.

General Safety Precautions

- ◆ All persons handling ³⁵S must wear a lab coat and disposable gloves. Safety glasses are recommended.
- ◆ Do not work directly over an open vial or container of ³⁵S.
- ◆ Do not pipette ³⁵S by mouth.
- ◆ Pipettes should be committed solely to ³⁵S use and clearly labeled.
- ◆ Always have a radiation detection instrument in operation when handling ³⁵S. Check the batteries before beginning. A single sheet of plastic wrap should be kept around the detection window to avoid contaminating it.
- ◆ Frequently monitor gloves, work area, floor, and shoes for contamination. Wipe test regularly.

Contamination

A radiation level greater than or equal to three times background is considered contamination. Here are some tips on what to do when contamination is found.

- ◆ If contamination is found on your hands:
Do not touch anything, this may spread contamination to door handles, etc. Wash thoroughly with non-abrasive soap and water, *blot* dry. Do not rub or abrade skin. Contact the RSO if this does not remove the contamination. Monitor areas that may have been touched.

- ◆ If contamination is found on your shoes/clothing:
Do not walk around in contaminated shoes. Contaminated clothing will need to be removed, but some shoes may be decontaminated with a commercial contamination remover. Survey the area and floor to determine the extent of contamination. Contact the RSO.

- ◆ If contamination is found on the floor:
Immediately mark off the area and prevent anyone from walking near the contamination. Use a commercial decontaminant (i.e. Radiacwash) with paper towels to clean the area. Swipe the paper towels only once across the area and discard (in radioactive waste). To use a sweeping motion would only spread the contamination. Be sure to monitor shoes. Contact the RSO.

- ◆ If contamination is found on the countertop, lab equipment, etc:
Use a commercial decontaminant and paper towels to clean the area. Place equipment in a shielded area if contamination cannot be removed.

Decay Table

DAYS	DECAY FRACTION	% ACTIVITY REMAINING
0	1.000	100
10	0.946	94.6
20	0.895	89.5
30	0.847	84.7
40	0.801	80.1
50	0.758	75.8
60	0.717	71.7
70	0.678	67.8
80	0.641	64.1
90	0.607	60.7
100	0.574	57.4
110	0.543	54.3
120	0.514	51.4
874 (10 Half Lives)	0.001	0.10