

Safe Handling of Sodium Iodide [NaI(Tl)] Crystal Material

(Excerpt from the Saint-Gobain Crystals Scintillation Detector Operating Manual)

Technical Information Note
Document #512

A sodium iodide [NaI(Tl)] crystal is activated by the addition of a very low concentration of thallium iodide (TlI). We asked our law firm to give us an opinion whether this product should be treated as a hazardous material for labeling purposes. A quote from their response dated November 29, 1984, follows. "We have examined the Dangerous Goods Regulations effective 1 January 1985, as promulgated by the International Air Transport Association and the Hazardous Materials Regulations promulgated by the U.S. Department of Transportation, Research and Special Programs Administration, Materials Transportation Bureau. It is our opinion, based upon our review of these materials, that your products containing sodium

iodide crystals with traces of thallium iodide are not considered hazardous or poisonous."

However, thallium iodide as a pure chemical is toxic. One of our suppliers tells us that amounts of more than 1 gram per person can cause death. Another supplier states the LD-50 is 28 milligrams per kilogram body weight. On a more practical basis, there is the personnel hazard that exists from a damaged, and possibly leaking, crystal container. A thallium-activated sodium iodide crystal on average is 99.8% sodium iodide and 0.2% thallium iodide. The weight of a 2-inch diameter by 0.25 inch thick NaI(Tl) crystal is

47.24 grams including 0.094 grams of TlI. Casual contact with the small fraction of this material which might leak from a damaged container is not a serious hazard.

If a container is damaged, handle with disposable rubber gloves. Dispose of the detector materials according to local and federal regulations at an approved site. If you are unable to do so, please call Saint-Gobain Crystal's customer service department for a Return Materials Authorization (RMA) number so the damaged detector can be returned to us for proper disposal.

For more information on the installation of your scintillation detector, download our entire Operating Manual (SGC Scintillation Operating Manual 0304.pdf).

Scintillation Products
Technical Information Note



USA

Saint-Gobain Crystals
12345 Kinsman Road
Newbury, OH 44065
Tel: (440) 564-2251
Fax: (440) 564-8047

Europe

Saint-Gobain Cristaux
104 Route de Larchant
BP 521
77794 Nemours Cedex, France
Tel: 33 (1) 64 45 10 10
Fax: 33 (1) 64 45 10 01

P.O. Box 3093
3760 DB Soest
The Netherlands
Tel: 31 35 60 29 700
Fax: 31 35 60 29 214

Japan

Saint-Gobain KK, Crystals Division
3-7, Kojimachi, Chiyoda-ku,
Tokyo 102-0083 Japan
Tel: 81 (0) 3 3263 0559
Fax: 81 (0) 3 5212 2196

China

Saint-Gobain (China) Investment Co., Ltd
15-01 CITIC Building
19 Jianguomenwai Ave.
Beijing 100004 China
Tel: 86 (0) 10 6513 0311
Fax: 86 (0) 10 6512 9843

www.detectors.saint-gobain.com