

**\* Name Origin:**

From Scandinavia.

**\* Sources:**

Occurs mainly in the minerals thortveitite and wiikite. Also in some tin and tungsten ores.

**\* Uses:**

Used in leak detectors, space industry materials and seed germinating agents.

**\* Additional Notes:**

On the basis of the Periodic System, Mendeleev predicted the existence of ekaboron, which would have an atomic weight between 40 of calcium and 48 of titanium. The element was discovered by Nilson in 1878 in the minerals euxenite and gadolinite, which had not yet been found anywhere except in Scandinavia. By processing 10 kg of euxenite and other residues of rare-earth minerals, Nilson was able to prepare about 2 g of scandium oxide of high purity. Cleve later pointed out that Nilson's scandium was identical with Mendeleev's ekaboron. Scandium is apparently a much more abundant element in the sun and certain stars than here on earth. It is about the 23rd most abundant element in the sun, compared to the 50th most abundant on earth. It is widely distributed on earth, occurring in very minute quantities in over 800 mineral species. The blue color of beryl (aquamarine variety) is said to be due to scandium. It occurs as a principal component in the rare mineral thortveitite, found in Scandinavia and Malagasy. It is also found in the residues remaining after the extraction of tungsten from Zinnwald wolframite, and in wiikite and bazzite. Most scandium is presently being recovered from thortveitite or is extracted as a by-product from uranium mill tailings. Metallic scandium was first prepared in 1937 by Fischer, Brunger, and Grieneisen, who electrolyzed a eutectic melt of potassium, lithium, and scandium chlorides at 700 to 800°C. Tungsten wire and a pool of molten zinc served as the electrodes in a graphite crucible. Pure scandium is now produced by reducing scandium fluoride with calcium metal. The production of the first pound of 99% pure scandium metal was announced in 1960. Scandium is a silver-white metal which develops a slightly yellowish or pinkish cast upon exposure to air. It is relatively soft, and resembles yttrium and the rare-earth metals more than it resembles aluminum or titanium. It is a very light metal and has a much higher melting point than aluminum, making it of interest to designers of spacecraft. Scandium is not attacked by a 1:1 mixture of conc.  $\text{HNO}_3$  and 48% HF. Scandium reacts rapidly with many acids. Nineteen isotopes and isomers of scandium are recognized. About 20 kg of scandium (as  $\text{Sc}_2\text{O}_3$ ) are now being used yearly in the U.S. to produce high-intensity lights, and the radioactive isotope  $^{46}\text{Sc}$  is used as a tracing agent in refinery crackers for crude oil, etc. Scandium iodide added to mercury vapor lamps produces a highly efficient light source resembling sunlight, which is important for indoor or nighttime color TV. Little is yet known about the toxicity of scandium; therefore, it should be handled with care.