

5 Status of Rare Earth Products

Phosphors (Yttrium, Europium, Terbium, etc.)

In 1988, demand growth continued for yttrium oxide and europium oxide. The growth is largely attributed to the substantial use of these materials in three-band fluorescent lights and colour television picture tubes.

In particular, the recent trend among consumers towards establishing a comfortable living environment at home has boosted the demand for fluorescent lights, resulting in a 14 per cent production increase over the previous year for this product category. It was estimated that this category would increase 15 to 20 per cent in 1989.

Demand continues to increase for larger colour television screens. In January 1988, larger colour picture tubes of over 56 cm (22 in.) accounted for 29.5 per cent of the overall shipments for this product sector. The share grew to 41.3 per cent in September of the same year, and was expected to reach 50 per cent in 1989.

The more screen size increases, the more yttrium and europium will be required for 7- to 8-micron phosphor particles -- the standard being 5 to 6 microns. This trend does not, however, guarantee a boost for the rare earth industry. First, domestic phosphor makers have begun using lower-priced products manufactured in China, and second, production facilities are being established abroad, creating a more competitive business environment for domestic phosphor producers.

Another trend that bears watching with respect to the future of this product category is the increasing use of liquid crystal displays (LCDs).

At present, LCDs are finding extensive use in lap-top word processors and compact computers. Although colour monitors are not threatened at the moment, the possibility exists for the development of colour LCDs with screen sizes of over 36 cm (14 in.). Should such displays reach the mass-production stage, this category will certainly be adversely affected.

For 1988, yttrium oxide demand was 270 tons, up 12.5 per cent over the previous year's 240 tons. This uptrend in demand was expected to continue into 1990. Likewise, demand for europium oxide increased to 11 tons, approximately 10 per cent higher than the previous year.

Catalysts (Cerium, Lanthanum)

Cerium and lanthanum have become integral additives for use in automotive catalysts. This is because their use:

- improves heat resistance of catalysts;
- enhances the active properties of catalysts while allowing reduced use of precious metals; and
- assists the oxidation/deoxidation reaction of catalysts.

The 1988 production of automotive catalysts totalled 5 080 tons. Based on the assumption that rare earth content is approximately 7.5 per cent, rare earth oxide use in catalysts can be estimated at 381 tons -- roughly the same as the previous year.

Rare earth use is expected to increase in the near future due to factors such as tighter exhaust emission regulations. For example, West Germany is expected to take regulatory measures for small-class passenger vehicles in 1992.

Fine Ceramics (Yttrium, Cerium, Lanthanum, etc.)

Use of rare earth has become fairly common with fine ceramic products.