10 HEAT AND ARC RESISTANT ELECTRICAL INSULATION BOARDS

There is only one manufacturer of heat and arc resistant electrical insulation board in South Africa. This manufacturer producers insulation boards made from chrysotile asbestos fibre and Portland cement, mixed with water and moulded under very high-pressure – each sheet being individually moulded, regardless of thickness. Both surfaces are then sanded smooth to close tolerances.

High arc resistance, combined with good anti-tracking properties make these insulation boards ideal material for Arc Chutes that are extensively used on 3 KV DC railway systems and Induction Furnaces.

10.1 MARKET SIZE

Annually, between R10 million and R18 million worth of insulation boards are sold in South Africa. The major customers for these insulation boards include the Transnet group, steel and Ferro-metal producers, Eskom and the mining industry.

Approximately 65% of sales are made directly to end-user customers (i.e. Transnet), whilst the remaining 35% of sales are made via five regional agents.

10.2 ASBESTOS FIBRE PURCHASES

Table 45 reflects asbestos fibre purchasers for the five-year period starting in 2000.

TABLE 45: ASBESTOS FIBRE PURCHASERS

	2000	2001	2002	2003	2004
Chrysotile Asbestos Fibre (tons)	35	35	48	55	55

Reasons for the increase in purchasers are related to the fact that customers are being "forced" to replace old, failing arc chutes, and the fact that imported alternatives do not perform adequately and are expensive.

10.3 EMPLOYMENT

Table 46 reflects the number of people employed at the primary manufacturing level of this industry sector.

TABLE 46: MANUFACTURING EMPLOYMENT

	EARLY 1990S	2001	2002	2003
Management			3	3
Professional (Acc/Leg/R&D/IT)			1	1
Administration			2	2
Technical/Artisans			1	1
Workers			11	17
TOTAL	30	18	18	24

The increased staff numbers projected for 2003 are based on the assumption that a second shift will need to be added to cope with anticipated customer demand.

10.4 ALTERNATIVE FIBRES AND SUBSTITUTE PRODUCTS

10.4.1 Alternative Fibre Cement Arc Chutes

Transnet is required to avoid the use of hazardous materials such as asbestos. Therefore, the manufacturer has made a number of attempts to develop an alternative non-asbestos insulation board that meets the requirements of BS3497, the standard used by Transnet for 3Kv DC Arc Chute boards.

So far, it has been possible to develop a non-asbestos insulation board using a glass fibre formulation that meets the electrical requirements of BS 3497. However, "there are reservations as to their possible in-service performance"[87]. As a result, arc chutes made from asbestos cement continue to be made and sold. The expert opinion is that this option – replacing asbestos arc chutes with non-asbestos chutes – is not feasible.

10.4.2 Substitute Technology

The only possible solution is to use the new generation circuit breakers developed by international businesses. These circuit breakers use a different technology that incorporates arc chutes made from ceramic materials. It should be noted that it is not possible to use these ceramic arc chutes with the circuit breakers designed to use asbestos arc chutes. These "old technology" circuit breakers (that incorporate asbestos arc chutes) will have to be replaced with the new generation circuit breakers that incorporate the ceramic arc chutes.

10.5 THE IMPACT OF PHASING OUT ASBESTOS IN SOUTH AFRICA

Spoornet have 2,500 circuit breakers in place throughout its South African rail network. Of these, approximately 80% (i.e. 2,000) are of the old asbestos arc chute technology. The cost of replacing an old asbestos arc chute circuit breaker with a new ceramic arc chute circuit breaker is approximately R200,000 per circuit breaker. This implies that replacing all of Spoornet's asbestos arc chute circuit breakers will involve an investment of R400 million.

Currently, Spoornet replaces approximately 1.5% of its installed base of circuit breakers per annum. At this rate, it will take approximately 60 to 70 years to replace the existing installed base of asbestos arc chute circuit breakers with the new technology ceramic arc chute circuit breakers.

10.6 BUSINESS VIABILITY

The sole South African manufacturer of asbestos cement arc chutes will not be able to manufacture the new technology ceramic arc chutes and will, therefore, close down. As such, this business will have to retrench all eighteen of its workers.

10.7 TRANSITIONAL MEASURES

It is possible that this business may require some form of support in managing the financial costs associated with the writing off of the redundant equipment, and with the retrenchment of its production staff.