

**AUSTRALIA'S DOMINANCE IN THE TITANIFEROUS FEEDSTOCKS MARKET
THE COOLJARLOO PROJECT**

1.0 INTRODUCTION

The mineral sands industry worldwide is relatively young. Demand for titaniferous raw materials increased rapidly with the outbreak of World War II and the inception of most pigment and titanium metal production can be traced back to this world event. The cessation of hostility allowed the mineral sands business to develop, having emerged during the war from its embryonic 1930's form to the current general structure.

Australia's mineral sands industry, which had been intermittent in operation from its early years in the 1870's, matured during World War II and in 1944, the Commonwealth of Australia placed a strategic ban on the export of mineral sands concentrates. The market weakened in post war years, recovered in 1950 and has expanded since that time. Australia is the major producer of mineral sands in the western world and accounts for more than 60% of titaniferous minerals in the world today.

This paper will not discuss non-titaniferous material but the associated zircon which is generally recovered with Australian mineral sands concentrates is an important product, as is monazite, for rare earth extraction.

The Cooljarloo project is the sole vertically integrated "mining to pigment project" anywhere in the western world.

Some details of the Cooljarloo project will be discussed in conclusion of this paper to illustrate a fully integrated mining, beneficiating, upgrading and processing venture in titaniferous materials.

Figure 1 depicts the industry structure and shows the varying stages of processing of titaniferous materials and the end uses of these products.

Ilmenite production forms the basis of the majority of titaniferous feedstocks that are consumed by synthetic rutile plants or direct-feed, sulphate pigment plants. Synthetic rutile, natural rutile and a higher grade slag are used for chloride process pigment production.

Hard rock mined ilmenite is treated via a slagging process which produces a generally lower grade titanium dioxide product.

It is significant to titanium metal production to recognize the output of titanium tetrachloride as an intermediate step in the production of high purity titanium dioxide pigment. Titanium tetrachloride is the primary feed for the manufacture of titanium metal by the Kroll, Hunter or Ginatta processes.