Our diamond business

Rio Tinto is a leading international business involved in each stage of metal and mineral production. The Group combines Rio Tinto plc, which is listed on the London Stock Exchange, and Rio Tinto Limited, which is listed on the Australian Securities Exchange.

Rio Tinto is a significant diamond producer and the world’s largest producer of natural coloured diamonds. Rio Tinto has been in the diamond business since 1979 and today operates three world class diamond mines and an advanced diamond project. Our focus is on the mining, sales and marketing of “rough” or uncut diamonds. We also operate a niche business cutting and polishing the rare pink diamonds produced at the Argyle diamond mine in Australia, which are sold as loose polished diamonds under the Argyle Pink Diamonds brand.

Rio Tinto produces the full spectrum of diamonds, in terms of qualities, sizes and colours. All diamonds produced by Rio Tinto are destined for the fine jewellery market.

Overall Rio Tinto holds a significant position in the diamond industry. The way we go about our business is of interest to the wider community and we invest a lot of time and energy in issues of “product stewardship”. Increasingly our customers want to know that the products we produce have integrity: that we don’t offer “conflict” diamonds to the market, that we offer exemplary working conditions to our employees, that we respect the environments in which we operate and that we add value to the communities in which we participate. For our part, we also want to know that the people we do business with are also operating ethically.

For some time, Rio Tinto has been at the vanguard of reform in the jewellery industry to build better practices in governance, environmental and social performance. In addition to our own programmes around the origins of our diamonds, we are a founding member of the Responsible Jewellery Council (RJC) which operates as a not for profit organisation and draws members from all sections of the diamond and gold supply chain. The RJC provides an industry wide certification process that aims to reinforce consumer and stakeholder confidence in jewellery products.

The Diamonds business is part of Rio Tinto’s Diamonds & Minerals product group.
Producing diamonds

Diamonds are made of carbon atoms that are arranged in a very rigid, stable crystal lattice. They formed some 150 – 200km beneath the Earth’s surface around a billion years ago. Under the intense heat and pressures at those depths, carbon atoms crystallised and grew into diamonds within rocks.

Beneath the diamonds, in a part of the Earth called the upper mantle, molten rock, or “magma” formed. This magma was forced upwards, melting through the diamond bearing rock. The diamonds themselves, being very resistant to high temperatures, were carried towards the surface. Some of the magma erupted through the Earth’s crust, and some was left within the crust, solidifying into pipes of diamond bearing rock.

Diamonds can be extracted by alluvial, open pit and underground mining techniques. Once extracted, the diamond bearing ore is taken to a processing plant where it is crushed, scrubbed and screened. The particles of ore at that point are between 1 and 30mm in size.

A technique called dense medium separation (DMS) separates the diamonds and other heavy minerals from the less dense waste ore. The diamonds can then be separated from the other minerals in the concentrate using an x-ray sorter. Under x-rays, diamonds fluoresce. The flashes of light that they emit trigger a blast of air that blows only the diamonds out of the concentrate. The diamonds are then cleaned, washed and weighed, ready to be sorted and valued for sale.
Using diamonds

Today, over half a billion men and women own at least one piece of diamond jewellery.

Because of their historic rarity and value, diamonds sourced from ancient fields in India were originally the preserve of royalty in Asia and then in medieval Europe. Diamonds grew in popularity among the ruling elites of the West, facilitated by trade between India and the mercantile classes of Europe, who were mainly located in the ports of Venice, Lisbon and Bruges. This trade resulted in rapid progress in cutting and polishing technology in Flanders in the 15th century.

Later, as diamond supply increased from new diamond discoveries around the world, and prosperity grew among the populations of the industrialised countries, diamond consumption became more widespread.

Modern processing and marketing methods have also contributed to increased ownership of diamonds around the world, so that today over half a billion men and women own at least one piece of diamond jewellery.

The use of diamond jewellery addresses several fundamental human and social needs, including adornment and the giving and receiving of gifts at many of life’s important rites of passage, such as birthdays, engagements and anniversaries.

A very small proportion of diamonds are also suitable for specialist uses such as scalpel blades for eye surgery, which take advantage of diamond’s natural water repelling qualities.

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Diamonds’ principal end use is in jewellery, but they can also have industrial and specialist applications.
Rio Tinto currently has interests in three operating diamond mines on three continents: Argyle in Australia, Diavik in Canada, and Murowa in Africa. It also has an advanced diamond project, the Bunder project, in Madhya Pradesh, India.

The majority of diamonds that Rio Tinto sells are rough, or uncut stones. Rio Tinto has a centralised sales and marketing function based in London with an office in Antwerp, Belgium. Antwerp is the global centre for the wholesale trade in rough diamonds. Rio Tinto conducts its rough diamond sales from its Antwerp offices approximately ten times a year.

Throughout the process from mining to sales, Rio Tinto keeps each mine’s production separate, thus maintaining the national identity of each mine. This allows Rio Tinto to specify the country and mine of origin when selling to customers. Our goal is to provide retailers with the assurance that if they buy a Rio Tinto diamond from a Rio Tinto customer, they will face no issues over the origin of the stone, the quality of the mine which produced it or the factory that polished it.

More than two thirds of Rio Tinto’s diamonds are cut in India, and our representative office in Mumbai liaises with diamond traders, jewellery manufacturers and exporters. We also have representative offices in the US and Hong Kong, to better understand the needs of the world’s largest retail diamond jewellery market (US) and the important emerging market of China.

In 2006, Rio Tinto introduced the “Select Diamantaire Mark”, a registered trademark that its customers can use to certify their diamonds have been produced by Rio Tinto applying the most stringent health, safety, environmental and social standards. The trademark, and supporting marketing material is Rio Tinto’s flagship customer recognition programme for its rough diamond business. It celebrates and promotes the distinctive skills of Rio Tinto’s customers who are chosen for their specific experience and expertise in the trading, cutting and polishing of diamonds.

Rio Tinto operates a standalone pink diamond business to sell and market the loose polished pink diamonds from the Argyle mine. Rio Tinto is the world’s only consistent producer of rare pink diamonds, producing them in a depth and range of colour never seen before. Rio Tinto carefully manages the distribution of Argyle pink diamonds with the best from each year’s production sold through the Argyle Pink Diamonds Tender. Of the 600 million stones produced by Argyle each year, only the best 50 or so are included in the Pink Diamonds Tender.

The Argyle diamond mine
Rio Tinto owns and operates the Argyle diamond mine in the remote east Kimberley region of Western Australia. The Argyle diamond mine has been operating since 1983 and has produced more than 750 million carats of rough diamonds. Current estimates indicate a mine life through to 2018. The Argyle diamond mine comprises one pipe which has been mined using both alluvial and open pit mining methods. An underground mine is currently being constructed beneath the open pit.

Argyle produces diamonds in a range of colours, including white, champagne and pink. All diamonds from the Argyle mine are cut and polished and destined for the fine jewellery market. The mine is the world’s primary source of rare pink diamonds, which have become the company’s signature stone. Accounting for less than 0.01 per cent of the mine’s output, Argyle’s pink diamonds are retained for cutting and polishing, and sold to an international customer base.
The Diavik diamond mine
Rio Tinto owns a 60 per cent interest in, and operates, the Diavik diamond mine in Canada’s remote Northwest Territories, 220km south of the Arctic Circle. Fuel, materials and equipment for the mine are hauled from Yellowknife, 300km away, over a temporary ice road built mostly across frozen lakes that lasts for around two months each year.

The Diavik deposit comprises three diamond bearing pipes that are being mined using open pit and underground mining methods, with a fourth pipe being reviewed to determine the viability of mining. By 2012, Diavik is expected to be a 100 per cent underground mine. The mine’s life, from the start of production in 2003, and including the underground mining operation, is estimated to be 16 to 22 years.

The Diavik Diamond Mine produces some of the most sought after gem quality diamonds in the world. Although small, the diamond bearing pipes that make up the Diavik mine are of a very high grade and the resulting diamonds are a much sought after product. Diamonds from the Diavik mine offer the international diamond market a desirable range of gem quality rough diamonds, with most of the value in white diamonds of one carat and larger and of good clarity and shape.

The Murowa diamond mine
Rio Tinto owns a 78 per cent stake in Murowa, an open pit diamond mine near Zvishavane in southern Zimbabwe. The mine comprises three pipes which were discovered in 1997. Production from Murowa began in 2004 with a current capability of around 300,000 carats per annum.

Safeguards ensure the chain of custody of our product.
Our diamond projects

Rio Tinto has a proven record of world class diamond exploration success.

The most advanced exploration project is at Bunder in the Indian state of Madhya Pradesh where Rio Tinto has discovered a cluster of eight diamondiferous pipes. An Order of Magnitude review was completed at Bunder in 2009 and a sample processing plant constructed the same year to further evaluate the nature of the production. The Bunder deposit is the first diamond discovery in India for over 50 years and one of only four new diamond mines likely to become functional globally in the next ten years.

Diamond operations and projects†

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†Locations on the map are indicative
Operations and projects are wholly owned unless otherwise shown.
Fact sheets

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