

Donald Mineral Sands Project

Premium Zircon Test Results

HIGHLIGHTS

- Testing of Donald premium zircon determines that it rates favourably in terms of whiteness – a highly desirable characteristic for the main ceramics end use market - compared to three competitor products.
 - Donald premium zircon, which is expected to constitute 80% or approximately 95,000 tonnes per annum of Stage 1 zircon production, will not require acid leaching to meet customer specifications. Stage 2 of the Donald project has the ability to double zircon production.
 - The zircon quality results form an important adjunct to recent metallurgical test results; they enable Astron to progress discussions with potential customers for off-take agreements.
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Astron Corporation Limited (“Astron”, “the Company”) (ASX: ATR) announces the results of test work conducted at the company’s China test facilities on initial zircon test product produced from its Donald mineral sands deposit, in regional Victoria. The test work results, designed to test a key requirement for the use of zircon in ceramic applications, are favourable and demonstrate that a major proportion of the zircon production stream will be of a premium grade zircon, which is suitable for use in the high value ceramic market as a whitening agent and opacifier. Zircon in ceramic applications (tiles, sanitary ware and other ceramic uses) can form part of engobes (layer coatings), glazes and frits. Premium zircon (defined by ZrO₂ content of higher than 66%) is sought for ceramic applications and typically achieves a higher price to standard and chemical grade zircon products. The production of the Donald premium zircon will not require additional acid leaching treatment for impurities such as iron oxide, aluminium oxide and titanium dioxide, as can be the case to produce a premium product.

The Donald project represents one of the largest known zircon and titanium ore bodies in the world and a potentially significant new source of global supply. As announced on 18 February 2021, the Donald deposit currently contains Ore Reserves of 602 million tonnes (mt) of ore with an average heavy mineral (HM) grade of 4.8%. This equates to an approximate, in-situ ore body of 28.9 mt of heavy minerals, comprised: 5.4 mt of zircon; 9.2 mt of ilmenite; 8 mt of higher titanium content products of rutile and leucoxene, as well as a significant rare earth element component of approximately 490 thousand tonnes.

Astron recently released (see ASX announcement 30 March 2021) metallurgical test work results associated with the mineral processing of a sample of heavy mineral concentrate produced from ore recovered from a test pit on the Donald deposit. Subsequent to this test work – which demonstrated the ability to achieve commercial level recoveries of the main mineral sands products, including a zircon stream – Astron has conducted laboratory test work on the Donald zircon.

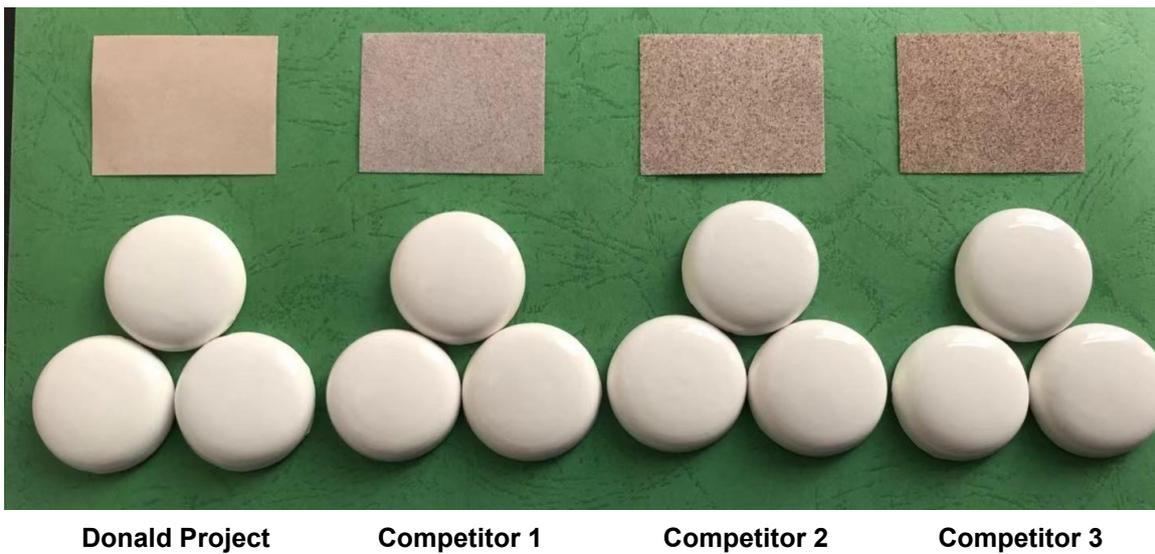
Nature of Test Work

Premium grade zircon used in the manufacturer of ceramic tiles (the largest end-use for zircon) is typically sought due to its “whiteness” characteristics. As part of whiteness testing for Donald zircon, Astron undertook comparative testing of samples of three different competitor premium zircon products, using industry accepted testing procedures.

The samples were ground to ultrafine powders with an average particle size of less than 1µm before drying at 120 degrees. A glaze slurry was then produced from each zircon powder and used to coat nine ‘white plates’. The plates were dried at 60 degrees Celsius, before being fired in a muffle furnace at 1,110 degrees Celsius. Brightness test were then conducted on the plates.

The results are shown below. They demonstrate that the Donald zircon displayed the highest brightness or whiteness characteristics of the four zircons sampled (as seen by the L scale), as well as favourable characteristics on other criteria typically used to differentiate the characteristics of premium zircon (as seen by the A scale and B scale, which represents red-green and yellow-blue scales respectively, and lower ratings are associated with better quality).

Figure 1. Donald Premium Zircon Compared to Competitor Premium Zircon Products



Note: Donald fine-grade premium zircon vs. competitor premium zircon where examples are shown above in the ‘plates’

Figure 2. Product CIE Whiteness Test Results

Product	L - Brightness	A – Red-Green Scale	B Yellow-Blue Scale
Donald Premium Zircon	94.84	0.12	3.86
Competitor Premium Zircon 1	94.39	1.02	4.08
Competitor Premium Zircon 2	93.57	0.86	3.82
Competitor Premium Zircon 3	94.32	0.23	4.22

Note

1. The CIE system is used to characterise colour by a luminance parameter and two colour co-ordinates.
2. Results were produced using a calibrated ‘brightness tester’ and standard deviation error can be expected
3. Results are measured on the CIE whiteness scale, L represents ‘brightness’, A represents ‘red-to-green’ scale, B represents ‘yellow-to-blue’ scale

Given the importance of the zircon opacifier market, which constitutes over half of the current demand for zircon sand, the test work demonstrates the attractive whiteness characteristics of Donald premium zircon, which is an important attribute in ultimate market acceptance of the Donald premium zircon production stream, which is expected to constitute approximately 80% of the expected zircon produced from the operation. The fine grain size of the zircon Donald has the added advantage that it reduces the grinding required by customers to produce a zircon flour for ceramics use. This is a cost-advantage for ceramics customers compared with coarser-grained zircons. Stage 1 zircon production is expected to be approximately 120,000 tonnes per annum, of which approximately 95,000-100,000 tonnes of will be premium zircon. The remaining approximate 20,000-25,000 tonnes will be a standard or chemical grade zircon 60 product, which will have an application in other markets.

The work on the whiteness characteristics of the Donald zircon forms an integral part of the development of overall product specifications for the Donald suite of mineral sands products. These specifications will form an integral part of identifying potential customers and markets for the Donald products, allowing product samples to be despatched for testing purposes by potential customers.

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This announcement is authorised for release to ASX by the Board of Directors of Astron

About Astron Corporation Limited

Astron Corporation Limited (ATR: ASX) is an ASX listed company, with extensive (30 years+) experience in mineral sands processing, technology and downstream product development, as well the marketing and sale of zircon and titania (titanium dioxide) products, most notably in China. Astron conducts a mineral sands trading operation based in Shenyang, China and operates a zircon and titanium chemicals and metals research and development facility in Yingkou, China. The company's prime focus is upon the development of the large, long-life and attractive zircon assemblage Donald Mineral Sands deposit in the Murray Basin, Victoria. Donald has the ability to represent a new major source of global supply in mineral sands. Astron is also the owner of the Niafarang mineral sands project in Senegal, West Africa. Niafarang is a high-grade coastal mineral sands deposit, planned to be developed using simple dredge mining and processing methodology.

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