



## New source of foundry minerals

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**Oregon Resources, on the cusp of production at its site in Coos Bay, USA, looks set to become the next major supplier to the foundries market. Mineral assets on offer include chromite, garnet, high-Fe ilmenite, and zircon.**

Oregon Resources Corp., a wholly owned subsidiary of Australian company Industrial Minerals Corp. Ltd, began exploration work on the Coos Bay heavy mineral sands deposit in Oregon, USA, in 1989. After taking the project to feasibility, the company postponed the site for future development, which commenced in 2004.

The Coos Bay project is in the final stages of pre-production, and the company recently announced that it has appointed Azure Capital Pty Ltd as lead manager to an equity capital raising, to compliment Bligh Capital who are managing the securing of the senior debt.

This is an exciting stage for the company, which expects project funding to be in place by mid-August. Proceeds from the capital raising will be used to fund the purchase of plant equipment, additional mineral leases, and provide working capital.

### Mining & development

Coos Bay comprises heavy mineral sands located in ancient, uplifted beach terraces, and was previously developed in the 1940s, with around 50,000 tonnes of ore mined for its chromite content.

Oregon Resources has identified an extensive heavy mineral sands resource, comprising foundry grades of chromite, ilmenite and zircon, and also garnet with suitable specifications for the water jet cutting industry.

A due diligence report prepared by Behre Dolbear & Co. (USA) Inc. has confirmed positive project economics, while tests conducted by Outotec on the heavy sands indicate that the Coos Bay chromite, garnet, ilmenite, and zircon all meet industry specifications.

The mine will be operated similarly to a sand and gravel operation, and produce an average of 925,000 tpa for the first eight years, and an average of 770,000 tpa for the next 12 years.

From the heavy sands, chromite will be the company's main product – accounting for 74% of production by value, and 64% by tonnage, for the first three years of mining. Oregon Resources' production plan indicates that it will produce 64,000 tpa of chromite for the first seven years.

Philip Garratt, chief executive officer of Industrial Minerals Corp., told **IM**: “Using a simplistic average mine throughput of 635,000 tpa, our production will be approximately 65% chromite, 20% garnet, 10% high-Fe ilmenite, and 5% zircon.”

Oregon Resources is targeting the foundry sand market, and has signed Memorandum of Understanding agreements with two international foundry sand distributors for sales into Asia and Europe.

Interestingly, the company's high-Fe ilmenite – which is not in direct competition with an existing product – will also be sold into the foundry market.

### Deposit locations and heavy mineral tonnages

Deposit	Short	% HM	% Chromite (foundry)	%	% Zircon	% High Fe chromite, Cr-Fe
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	tonnes (ST)	total ST	sand)	Garnet		ilmenite, magnetite
South Seven Devils	793,500	28.74	12.49	2.81	0.83	3.2
West Section 10	30,000	18	6	1	0.3	4.3
West Bohemia	5.13m.	15.04	5.33	0.74	0.23	4.3
Section 33	205,664	19.48	8.54	1.41	0.34	4.3
North Seven Devils	948,469	33.67	11.79	2.62	0.63	3.2
Westbrook	824,344	21.9	8.53	1	0.43	4.3
Shepard	755,859	42.87	10.05	5.41	0.6	7.9
Weighted average	~8.7m.	21.52	7.5	1.6	0.4	4.4

### Source: Oregon Resources Corp.

The company is developing five deposits, located around 13.5 miles south-west of the town of Coos Bay in Oregon, and has selected a site in Coos Bay itself for the location of its processing facility.

Regarding the processing facility, Garratt told **IM**: “We have collaborated with Outotec and expect to acquire the principle components from them (spirals, dry plant etc.) as well as Eimco (water processing and thickeners).”

The 27-acre site in Coos Bay, purchased from Teck Cominco, has excellent transport links, with a navigable water inlet containing a ship loading dock, as well as rail access.

### Foundry outlook

The start date for mining looks set for 2010. Garratt commented: “We expect production to commence 10 months after closing of total funding (\$45m.) with full production 60 days thereafter. We’re currently assuming project funding to be in place by mid-August.”

“The current issue is a prelude to a larger funding expected to comprise senior debt/convertible and equity. This issue will ensure that obligations for a portion of long lead time equipment from Outotec can be satisfied and sufficient working capital be in place for another year of operation (pre-commercial production),” Garratt said.

As always, timing is everything. Currently the foundry market – particularly that for chromite – is fairly flat, with chromite prices hovering around \$260-290/tonne (FOB Transvaal, 45% Cr<sub>2</sub>O<sub>3</sub>, wet bulk basis). Around a year ago prices were \$580-610/tonne.

Despite this, Garratt is confident that the Coos Bay minerals – particularly chromite – will sell. Owing to its composition and particle size characteristics, the Oregon chromite is being marketed as a *zircon substitute*. While contracts have not yet been finalised, the Oregon chromite is expected to be priced at around \$500/tonne.

Garratt explained: “We regard the Oregon chromite as a superior quality foundry material... Therefore the product is expected to command a premium over standard RSA foundry sand.”

### Chromite foundry sand quality

Oxide	Specifications
Cr <sub>2</sub> O <sub>3</sub>	≥45%
TiO <sub>2</sub>	≤1.2%
SiO <sub>2</sub>	≤1.2%
Al <sub>2</sub> O <sub>3</sub>	12-18%
Fe <sub>2</sub> O <sub>3</sub>	18-28%

Source: Oregon Resources Corp.

The foundry market is unfortunately very closely tied to the automotive market and heavy industry, so future demand for foundry minerals will depend on recovery in these areas.