

# Scandium International Update on Results from Eck Industries Testing of Scandium in Alloys

written by Raj Shah | February 19, 2019



February 19, 2019 ([Source](#)) – Scandium International Mining Corp. (**TSX: SCY**) ("**Scandium International**" or the "**Company**") is pleased to provide a second update on select aluminum casting trial results undertaken by Eck Industries

Inc. ("**Eck**"), employing scandium provided by SCY. These trial results demonstrate unique properties from a new aluminum casting alloy, employing cerium and scandium, that shows superior resistance to permanent strength erosion in high heat environments.

SCY announced a Letter of Intent ("**LOI**") with Eck in Q2 2018, and announced preliminary scandium testing results in Q4 2018. This press release reflects further technical disclosure on the ongoing testing programs.

Eck is an industry leader in sophisticated casting systems and high-performance aluminum casting materials, currently supplying cast parts to commercial aircraft, automotive/transport, military and marine propulsion systems customers, from its facilities in Manitowoc, Wisconsin. Eck is currently focused on improving high temperature stability in certain casting parts they manufacture, and has filed patent applications on a novel alloy exhibiting superior heat tolerance properties, using cerium, and scandium.

## **HIGHLIGHTS OF NEW ALLOY CASTING RESULTS:**

- New aluminum casting alloy employing cerium and scandium shows superior resistance to permanent strength erosion in high temperature environments.
- Cerium additions inhibited inter-granular corrosion, a known problem area in high magnesium content aluminum alloy variants.
- Significant scandium strength gains observed (both ambient and post-heat exposure).
- New alloy is highly castable, using standard commercial processes.
- Eck VP Engineering/R&D (David Weiss) to present findings at TMS Conference in March 2019

## **George Putnam, CEO of Scandium International Mining Corp. commented:**

“The R&D team at Eck Industries has made an important advance in high temperature aluminium alloys with their cerium-scandium casting alloy. They have taken collaborative early work with Department of Energy affiliated researchers on cerium, and combined that with their previous scandium work and testing, to create a new and superior temperature-tolerant alloy. A new aluminum alloy that extends those temperature range limits is then highly valuable, where higher cost alternatives such as titanium or stainless steel can be avoided. We expect the aluminium casting industry to follow this rapidly developing work with great interest.”

## **David Weiss, VP Engineering/R&D at Eck Industries commented:**

“Our research to date suggests that scandium in combination with magnesium and cerium in aluminum offers excellent stability at elevated temperatures. We continue to develop these systems to maximize performance and minimize cost for structural

applications in transportation, aerospace and the military.”

## **DISCUSSION**

Researchers at the Department of Energy’s Oak Ridge National Laboratory, in partnership with Lawrence Livermore National Laboratory and Wisconsin-based Eck Industries announced in 2016 the development of an aluminum alloy containing significant quantities of cerium (8-10%) that demonstrates significantly higher heat tolerance than existing alloys used today.

David Weiss, VP Engineering/R&D at Eck Industries was a part of that work, and has continued development with an aim to commercialize the results for Eck customers. Importantly, Weiss has demonstrated that a combination of cerium, magnesium and scandium, can both increase cast aluminum alloy strength and dramatically extend alloy temperature tolerance.

Temperature testing and strength recovery includes a 350°C temperature bake for 100 hours, to determine permanent strength reduction after cool-down. This exposure is well beyond the survival limit of typical casting alloys, and is a serious test for the best high temperature alloys available today.

Early results show this cerium-magnesium-scandium alloy fully recovers 100% of yield strength after the hi-temp test, dramatically outperforming standard cast alloys, and also premium high-temperature alloys such as AA201. These results represent exceptional high-temperature stability from a commercially castable aluminum alloy.

High temperature alloys are essential materials in aerospace, automotive, and marine powerplant applications, and in a host of other high temperature systems. Aluminum alloys tend to be the preferred economic choice, provided the application allows them to remain within their high temperature range limits.

The 2016 research work findings on cerium's positive influence on inter-granular corrosion in magnesium-containing alloys also holds significant value, particularly in marine applications. The marine alloy certified for use today is a 5000 series (containing magnesium), where SCY has previously shown scandium additions can deliver further significant strength benefits.

David Weiss has been invited to present Eck Industries' findings on this cast alloy program at the 2019 TMS Annual Meeting and Exhibition, in San Antonio, Texas, in mid-March.

### **ABOUT SCANDIUM INTERNATIONAL MINING CORP.**

The Company is focused on developing its Nyngan Scandium Project, located in NSW, Australia, into the world's first scandium-only producing mine. The project owned by our 100% held Australian subsidiary, EMC Metals Australia Pty Limited, has received all key approvals, including a mining lease, necessary to proceed with project construction.

The Company filed a NI 43-101 technical report in May 2016, titled **"Feasibility Study – Nyngan Scandium Project"**. That feasibility study delivered an expanded scandium resource, a first reserve figure, and an estimated 33.1% IRR on the project, supported by extensive metallurgical test work and an independent, 10-year global marketing outlook for scandium demand.

Willem Duyvesteyn, MSc, AIME, CIM, a Director and CTO of the Company, is a qualified person for the purposes of NI 43-101 and has reviewed and approved the technical content of this press release on behalf of the Company.

*This press release contains forward-looking statements about the Company and its business. Forward looking statements are statements that are not historical facts and include, but are*

not limited to statements regarding any future development of the project. The forward-looking statements in this press release are subject to various risks, uncertainties and other factors that could cause the Company's actual results or achievements to differ materially from those expressed in or implied by forward looking statements. These risks, uncertainties and other factors include, without limitation: risks related to uncertainty in the demand for scandium, the possibility that results of test work will not fulfill expectations, or not realize the perceived market utilization and potential of scandium sources that may be developed for sale by the Company. Forward-looking statements are based on the beliefs, opinions and expectations of the Company's management at the time they are made, and other than as required by applicable securities laws, the Company does not assume any obligation to update its forward-looking statements if those beliefs, opinions or expectations, or other circumstances, should change.