Rio Tinto Alcan

ALCAN PRIMARY METAL GROUP
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Technical Assistance Report

Mr. Chris Love
Almag Aluminum Inc.
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Canada

April 16th, 2008

Ref: TAR JF CA Almag Thermal Conductivity 6360 04-08

Subject: Thermal Conductivity of Alcan High Performance Alloy AA6360 (patented alloy)

Dear Mr. Love:

The following information should confidently answer your request regarding the information indicated in the Alcan High Performance Alloy AA6360 brochure. The question is about the 4% thermal conductivity improvement announced with Alcan High Performance Alloy AA6360 – T6 versus AA6063.

I would like to share with you the information recorded during the alloy evaluation carried by an independent laboratory.

Thermal conductivity values for AA6360-T6 were generated by the Thermophysical Properties Research Laboratory Inc, West Lafayette, Indiana, USA.

- The thermal diffusivity was measured using the laser flash technique ASTM E1461.
- The specific heat was measured using differential scanning calorimetry ASTM 1269.
- The thermal expansion was measured using a dual push rod dilatometer ASTM 228.

Finally, the thermal conductivity was calculated from the above measured values.

The following table summarizes the conductivity versus temperature measured for Alcan AA6360 alloy.

Temp	Conductivity	Conductivity	Temp
C	W-cm-1K-1	BTU in/hr.sqft.F	F
23	2.14	1483	73.4
50	2.17	1504	122
100	2.26	1575	212

The values quoted by the Aluminum Association for AA6063-T6 are 1390 BTU in/hr.sqft.F (English units) at 77˚F, which is round about 6% lower than the value indicated in the table at 73.4˚F.
Alcan conservatively announced an improvement of 4%.

I remain available if you need any additional information.

Best regards,

Jerome Fourmann – Process Improvement Engineer