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| 年度 | 1959年 |
| 巻 | 11 |
| 頁 | 508-509 |
| URL | http://hdl.handle.net/10097/26951 |
ABSTRACTS OF PAPERS
Not Published in This Report

Subaquatic Casting of Aluminum Ingots*

Ichiji OBINATA and Hiroshi TANAKA
The Research Institute for Iron, Steel and Other Metals

Abstract

As a result of observations of the process of solidification of molten aluminum droplets in water, a method of making ingots by casting molten aluminum and its alloys in thin-walled metal molds set in hot water has been introduced by the writers and the method is called the SAC process.

It is herein shown that by this SAC process sound ingots of fine and homogeneous equiaxed structure are obtained. While there exists no marked difference between SAC and chill ingots in the physical and chemical properties, the mechanical properties of the former are somewhat superior to those of the latter.

By subaquatic continuous casting method (SACC), cylindrical 2S ingots of practical size have been obtained and their macrostructures are compared with those of ordinary continuous casting ingots. (ASM-SLA Classification: C5; Al, 5-59)

Über das System Titan-Magnesium**

Ichiji OBINATA, Yō TAKEUCHI and Rokurō KAWANISHI
The Research Institute for Iron, Steel and Other Metals

Auszug

Zur Erzielung des Gleichgewichtes zwischen Titan und Magnesium bei höheren Temperaturen wurde ein luftdichter Titanbehälter, in dem sich ein Magnesiumstäbchen oder ein Gemisch von Titan und Magnesium zu gleichen Teilen befand, bei verschiedenen Temperaturen bis zu 1200°C erhitzt. Die Ergebnisse der mikroskopischen, röntgenographischen und Elektronenbeugungsuntersuchungen bestätigten, daß keine intermetallische Verbindung (etwa wie Mg₄Ti) im System Titan-Magnesium vorhanden ist. Es wurde auch gefunden, daß die Löslichkeit des Titans im Magnesium bei 1200°C 0.85 Gew.-%, bei 900°C 0.30 Gew.-% und bei 700°C 0.17 Gew.-% beträgt. In allen Fällen zeigen diese Ergebnisse höhere Werte

** The 958th report of the Research Institute for Iron, Steel and Other Metals. Published in Metall, 13 (1959), 392.

Stress-Ordering Effect on Thermal Expansion of CuAu Single Crystals*

Makoto HIRABAYASHI

The Research Institute for Iron, Steel and Other Metals

Abstract

Linear thermal expansion of CuAu single crystals was measured. When a bar-formed specimen was slowly cooled from above the transition temperature under compressive stress along its longitudinal direction, it was confirmed that the c-axes of the ordered phase were predominantly lined up in one of the cubic axes nearest to the stress direction. Furthermore a linear relationship was established to hold between the compressive stress previously applied and the amount of the dilatometric change due to the order-disorder transition. However, even when some of the crystals were initially annealed free from external stress, the tetragonal c-axes were not distributed statistically along the three original cubic axes.

* The 959th report of the Research Institute for Iron, Steel and Other Metals. Published in Journal of the Physical Society of Japan, 14 (1959), 149.