# Corelationship between Powder Metallurgy and Casting Method Using SiC Powder for Metal Foam

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**Abstract**

Metal foams are very challenging materials as their manufacture involves the simultaneous occurrence of solid, liquid and gaseous phases at varying temperatures and the morphology of the solidified foam is quite complex. The stabilisation mechanism for metal foams has not yet been discussed in the literature. To be able to compare the stabilisation of metal foams that different method, Powder metallurgy and Casting method using SiC powder. Our SEM and EDX examination showed deeply etched valleys with high oxygen content and secondary phases attached to line-shaped pores with higher SiC content than the matrix. These line-shaped pores - most probably oxide bifilms - form networks decorated with secondary phases. We suspect that these decorated bifilms play a crucial role in the stabilisation of metal foams. In our paper the effect of solid inclusions on foam stability is considered. We can conclude that solid inclusions are influencing foam stability through their wetting behaviour, their shape and their distribution in the melt (network formation, clustering or segregation). Besides the particle concentration and size, recent investigations showed that the compositions of both the metallic melts and the stabilising particles influence stability. It is believed that the temperature and the composition of the melt act through the formation of additional surface layers on the particles.



# A Study on Titanium Hydride Powder Formation of Used Titanium Scrap for Metal Foaming Agents

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**Abstract**

Aircraft industry is developed very fast so titanium scrap was generated to manufacture. Titanium scrap was wasted and used to deoxidize cast iron so we are study recycling of it. In this research were studied that metal hydride powder of reacted in hydrogen chamber of AMS4900, 4901, return scrap titanium alloy and sponge titanium granule. The temperature of hydrogenation was 400 ℃ in the case of pure sponge titanium, but return scrap titanium alloy were step reaction temperature at 400℃ and 500℃, and after the hydride of titanium alloy were crushed by ball mill for 5h. Titanium hydride powder contains to 4wt.% of hydrogen theoretically as theory. It was determined by heating and cooling curve in reaction chamber. The result of XRD was titanium hydride powder peak only that it was similar to pure titanium. Titanium hydride powder particle size was about 45 ㎛, and recovery ratio was 95w% compared with scrap weight for a aluminum foam agent. If control the surface and oxide layer effect of titanium, it is possible to use the return scrap titanium. The hydride formation temperature of return scrap titanium was increased more than pure titanium. XRD showed that the titanium hydride powder have single phase without second one. The effect of oxide layer and impurities in foaming agent must be considered and controlling the powder size will benefit the equality of foaming properties

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