Pengaruh penambahan zro2 terhadap karakteristik paduan al-12zn-5mg-1cu-1si hasil squezee casting untuk aplikasi balistik = The effect of zro2 addition on squeeze cast al-12zn-5mg-1cu-1si alloy characteristic as ballistic application

Ghozali Suprobo, author

Abstrak

Metal Matrix Composite (MMC) dengan matriks alumunium memiliki potensi yang tinggi untuk aplikasi balistik karena kombinasi kekuatan dan ketangguhan yang bagus serta massanya yang ringan. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan ZrO2 sebanyak 5; 7,5 dan 10 vol. % terhadap karakteristik paduan Al-12Zn-5Mg-1Cu-1Si hasil Squezee Casting. Semakin banyak ZrO2 yang ditambahkan, kekerasan dan harga impak komposit semakin turun karena ZrO2 menginisiasi terjadinya pori. Adanya porositas membuat komposit dengan penguat ZrO2 belum mampu menahan peluru berkaliber 7,62 mm (Tipe III).

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Metal Matriks Composite (MMC) with aluminium as matrix has high potency for ballistic application that provided good combination of strength and toughness with low density. The purpose of this research is to know the effect of ZrO2 addition as volume fraction 5, 7.5 and 10 on squeeze-cast Al-12Zn-5Mg-1Cu-1Si alloy characteristic. As ZrO2 content was increased, the hardness and impact values reduced. This is due to that addition of ZrO2 leads to formation of void so when ZrO2 content was increased, void content was increased too. Composites with ZrO2 as reinforcement were not effective to withstand ballistic impact load of 7,62 mm calibre projectile due to its void content.