ABSTRACT

The piston is meant to be the maximum load withstanding structure in an engine. To increase the tensile strength, lifetime and thermalresistance of the piston, composite materials which have properties such as high strength to weight ratio, ease of fabrication, surface finish, good thermal properties compared to metals are used. Since Molybdenum Di Sulphite has the ability to form highly efficient dry lubricating film,they are utilized in composites as self-lubricating materials and Silicon Carbide which have high hardness and wear resistance are used as load bearing materials. Thus, superior tribological behavior compared to aluminum alloys can be attained using hybrid Aluminium matrix composites which incorporate Silicon Carbide and Molybdenum Di Sulphite. Reinforcements are added for the benefit of hybrid composites accompanied by increasing the tensile strength. This work deals with the fabrication of the Al LM 13 reinforced with Silicon Carbide and Molybdenum Di Sulphite particulates by stir casting method. Aluminium metal matrix composite is applied as a material for piston by reinforcing Silicon Carbide, Molybdenum Di Sulphite to Aluminium in percentages such as 0%, 5%, 10%, 15%. And the resultant properties such as tensile stress, hardness, wear behavior and microstructure are determined using various tests like Tensile test, Hardness test, Wear test and Microstructure analysis respectively. From the results we concluded that Al LM 13 MMC ratio is most suitable to make piston with high strength and hardness.