

Explosive Pressing Experiment and Its Challenges to Conduct it on University Level

Abstract

Typical press force for hydraulic press machine for most universities are around 10 to 30 ton. For higher load, student uses Ultimate Testing Machine (UTM). Typical press force for UTM for higher learning institution is 300 ton. To obtain more press force, the specimen must be small. This is according to force equation where the smaller the surface area, the higher the force generated on it. However, the problem with small specimen is that it is difficult for researchers to do further investigations for hardness test, tensile test and microstructural analysis. Besides, there is a limit to maximum force a UTM machine can give. This paper presents steps for doing experiments using explosive pressing at university level. The explosive pressing apparatus was an improved designed by the same author. This experiment uses an amount of explosive that is place at top of the apparatus. The experiment is done underground for safety purposes. Explosive handling was done with help from authorized explosive expert. Major benefits of explosive pressing are larger samples can be pressed and the press force is very high. This paper will discuss the steps to do experiment and the challenges while doing explosive pressing using this apparatus. This paper will also show that higher pressing force can lead to finer microstructure of material being pressed.