

**FINDING SUITABLE SRI LANKAN SAND FOR  
WATER JET CUTTING MACHINE**

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## Abstract

This study presents the effect of jet pressure, abrasive flow rate and work feed rate on smoothness of the surface produced by abrasive water jet cutting machining of garnet. The mesh number of Garnet in between  $150\mu m$  and  $500\mu m$  of the sieved particle sizes are very hard and cannot be machined by conventional technique. Purity of the garnet stays in between 72% and 76%. Cutting was performed on a water jet machine model YONGDA 3020. It was tried to cut garnet with low and medium levels of abrasive flow rate, but upper limits and the lower limits of the garnet failed to cut the porcelain tile plate because of the block of the nozzle tip and unable to generate the enough pressure consequently. Although the flow rate of the water jet cutting machine is not affect to the cutting process in considerably. Difference of the minimum and medium flow rate of the water jet machine of model YONGDA 3020 is neglected. The smoothness of the surface depends on the kinetic energy of the abrasive material. Normally the surface near the jet entrance is smothering and the surface gradually becomes rougher downwards and is the roughest near the jet exit. But the property of the garnet is smoothing the cutting surfaces gradually becomes not roughest than to the existing abrasive material near the jet exit. Increase in motion of the nozzle on the porcelain surface also makes the smoother of the cutting surfaces under the various composition of the porcelain.

Key words: abrasive water jet machine, abrasive flow rate, garnet