

RECONDITIONING THE IMPREGNATED MICROBITS - THE WAY TO STUDY ROCK DRILLABILITY ON A LABORATORY SCALE

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Scientific and engineering informations of basic performances of the impregnated diamond bits have been rather limited. Since it is difficult to bring the bit back to a standard sharp condition after it has drilled hard rock and become dull, impregnated microbits were used in this research project. A reconditioning process, which is believed to be simple, quick, and reproducible, is introduced in this paper. Wear of the matrix could also be quantified by using a wear measuring device developed in this work. Basic performances of the bit on drilling a very abrasive sandstone and hard, non-abrasive norite will be compared. Statistically, penetration rate decreases linearly with drilling distance. This simply allows the initial penetration rate (V_0) to be calculated and presented as rock drillability of the bit and the slope to be presented as an abrasive index (b). Rock drillability of seven rock types was plotted against some well established physical rock properties. It is concluded that uniaxial compressive strength, Brazilian tensile strength, and Sklerograf hardness could be only used as a rough guide to rock drillability with some exception.
