

FIELDS APPLICATIONS FOR THE SCARTCHING TEST

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ABSTRACT:

Several papers have already been presented in the literature to describe the methodology to assess strength of geomaterials with “partially-destructive” scratching tests. Experiments on several geomaterials have shown that the intrinsic specific energy is well correlated to the strength of the rock. Furthermore the friction coefficient mobilized along the wear flat of a blunt cutter has been found to be well correlated to the internal friction coefficient of rock materials.

The paper gives an overview of the scratching method principles and presents some particular field applications where the scratching test has been applied to characterized materials strength:

1. In petroleum engineering, the scratching test has been considered to detect weak reservoir sections with high potential for sanding production or to calibrate log derived mechanical properties.
2. In mining engineering, the test has been used to compare the behavior of rocks while cutting or to characterize carboniferous schists properties nearly impossible to assess with standard uniaxial compressive tests.
3. In civil engineering, the scratching test has been conducted for material characterization of historical building materials like mortars or jet grouting in the projet for the foundation stabilization of Our Lady Cathedral in Tournai.
4. The scratching test has also been used for the detection and the measure of mechanical damage due to coring, pollution, fluid invasion, heat, ...

The description of those different applications points out the high efficiency of the scratching test to characterize materials strength even if samples are poor quality, too small to perform standard tests or if the sample may not be damaged.