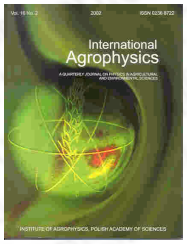

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Angles between cracks developed at primary shrinkage of finegrained soil material

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abstract Angles which are formed between two cracks during primary shrinking were investigated at three open air sites and three laboratory experiments from literature. The objective was to determine the proportion between orthogonal angles (OA) and non orthogonal angles (NOA) in order to assess relative frequency of tensile and shearing cracks. Measurements were performed on photos and on copies from literature figures with a size of 30x21 cm (DIN A4) with a plane goniometer. The accuracy of reading was between ą2 and ą4° depending on the quality of magnification of figures and photos and the geometric form of the cracks. OA were observed in all cases. They were assumed to be tension-shrinkage-cracks. NOA were also observed in all cases. They were considered to be shear cracks. The means of these shear angles were calculated separately for those >90° and those <90°. The sum of means of both of these groups was close to 180°. Angles of internal friction (AIF) at the moment of cracking calculated from these means showed the lowest friction at cracking in the frozen soil, highest in the airdried laboratory samples and in the soil from the arid area. All the calculated AIF were in the order of magnitude that was obtained by direct shearing in an earlier investigation.

keywords shrinkage, cracking patterns