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The coefficient of resistance as a function of Reynolds number for solids of various shapes

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Abstract

The purpose of the present article is twofold. First it is an attempt to show the usefulness of the degree of true sphericity as an expression for shape of rock particles. Second it is intended as a background for a new, analytical, sedimentographic method to be given in a forthcoming paper. Any radical variation in shape influences the numerical value of the degree of true sphericity and affects the size of the surface area, the size of the largest cross-sectional area and the degree of circularity of a great number of cross-sections of a solid. These factors determine to a large extent the settling velocity of that solid. The resistance of wholly submerged bodies, as a theoretical foundation for determining the coefficient of resistance as a function of Reynolds number for solids of different degree of sphericity, is discussed. The influence of the degree of circularity on the resistance is then shown by graphs constructed on the basis of available data. Formulas for calculating the coefficient of resistance and Reynolds number are

introduced and their practical value demonstrated by graphic illustrations. The sedimentological significance and usefulness of the results are discussed.



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