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Abstract

The some engineering properties of soybean grains were determined as a function of moisture content in the range of 10.62-27.06% dry basis (d.b.). The average length, width and thickness were 7.795, 7.123 and 4.189 mm, at a moisture content of 10.62% d.b., respectively. In the above moisture range, the arithmetic and geometric mean diameters increased from 6.369 to 8.048 mm and from 6.149 to 7.933 mm, respectively, while the sphericity increased from 0.788 to 0.835. In the moisture range from 10.62-27.06% d.b., studies on rewetted soybean grains showed that the thousand grain mass increased from 200 to 255 g, the projected area from 37.69 to 53.39 mm^2, the true density from 1090 to 1200 kg m^{-3}, the porosity from 40.36 to 54.16% and the terminal velocity from 8.01 to 9.1 m s^{-1}. The bulk density decreased from 650 to 550 kg m^{-3} with an increase in the moisture content range of 10.62-27.06% d.b. The static coefficient of friction of soybean grains increased the linearly against surfaces of six structural materials, namely, rubber (0.3443-0.3919), aluminum (0.2867-0.3115), stainless steel (0.2905-0.3443), galvanized iron (0.2962-0.3482), glass (0.2309-0.2773) and MDF (medium density fiberboard) (0.2126-0.2679) as the moisture content increased from 10.62-27.06%.