

Density and Specific Gravity

Method: ASTM D792 – “Density and Specific Gravity (Relative Density) of Plastics by Displacement”

Specific gravity (also called relative density) and density are used to follow physical changes in a sample due to loss of plasticizer, absorption of solvents, thermal effects, etc. It is useful for calculating strength-weight and cost-weight ratios when not concerned with changes of the material caused by outside influences such as those mentioned above.

Specific gravity – a sample is weighed while suspended in air, then weighed again while suspended in water (Method A, which is the most common). The water is to be at room temperature (23°C). This material floats, so a sinker is used to hold the sample under the water surface. A calculation of basically taking the air weight, divided by the weight in water, gives a specific gravity value. There are no units to specific gravity, it is simply a value.

Density is measured by obtaining the volume of the sample, which is length x width x thickness, and converting this into cubic centimeters. The weight of the sample in air, measured in grams, divided by the volume, in cm³, gives a density presented in grams per cc, which is cubic centimeter.

	Specific Gravity	Density
Rumber material	0.982	0.924 g/cc