Specific Gravity Encyclopedia Article

Specific Gravity

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Contents

Specific Gravity Encyclopedia Article.....1

Contents.....2

Specific Gravity.....3

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When a variety of different materials are compared for their relative weights, some will be "heavier" than others. To make a fair comparison one should take samples that are identical in volume. Physicists compare by using standard volumes of substances such as one cubic centimeter or one cubic meter of the substance.

Physicists know that one cubic centimeter of a pure substance always has the same **mass**. The value of that mass is called its **density**. The density of any substance is the mass of one unit volume of that substance. For example, the density of gold measures is 19.3 grams per cubic centimeter, or 19.3 g/cm^3 . In the case of pure gold, the density will always be 19.3 g/cm^3 . If it is not 19.3 g/cm^3 , then we know that either the gold is impure or the substance is not gold at all.

It is useful to compare the densities of all substances to that of water. Lead has a density 11.3 times greater than water. The ratio of the density of lead to the density of water is 11.3. This ratio is called the specific **gravity** (or more commonly, relative density) of lead.