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## 1 Scope

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**1.1** This report presents abbreviations and fundamental conversion factors commonly used in manometry, recommended definitions of pressure in terms of a column of mercury and water, and for a large number of liquids, tables of pressures indicated by, or equivalent to, heights of columns at various temperatures. These data have the object of facilitating and standardizing the use of manometers and U-tubes as direct pressure indicating instruments or in the calibration of pressure recorders and controllers.

**1.2** A discussion is included of the more frequent or more important sources of error in manometric measurements, together with correction tables for mercury and water columns. To conform to general practice in this country, English units of measurements are largely used (i.e., pounds, inches, etc.) and with several exceptions, decimals are used to denote parts of units, rather than octonary fractions.

**1.3** In particular, it will be seen that conversion factors for kerosine, gage oil, alcohol, dibromobenzene, dibromoethane, and acetylene tetrabromide are given only to obtain equivalent water columns at 60°F. Further, no conversion data are presented for benzol, butyl collosolve, carbitol, *n*butyl phthalate, or halowax oil. The filling in of these omissions will have to await demonstrated need.

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## 2 Manometer tables

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### 2.1 Discussion of standards of manometers

For a more complete discussion on mercury manometers, see "Mercury barometers and manometers," Nat. Bur. of Standards Monograph No. 8, 1960.

Standards. The pressure in terms of height of a column of liquid is given by the fundamental relation

$$P = Dhg \quad (1)$$

where  $P$  is the pressure in absolute units, as dynes/sq cm or pounds/sq in.

$D$  is the density of the liquid in grams/cu cm or lb/cu in.

$h$  is the height of the column from horizontal surface to horizontal surface of the menisci in cm or in.

$g$  is the acceleration of gravity in cm/sec<sup>2</sup> or in./sec<sup>2</sup>

$P/g$  is the pressure in grams/sq cm or psi

If the height of the column of a liquid is used as a unit of pressure,

$$h = \frac{P}{Dg} \quad (2)$$