CCCCXXVI.—*The Absolute Density and Coefficient of Expansion of Silicon Tetrachloride.*

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IT has been already reported (*Nature*, 1926, **118**, 303) that the densities and coefficients of thermal expansion of silicon tetrachloride previously given by us (this vol., p. 1262) were relative, the difference in density of the glass floats at the temperature of standardisation and of use not having been considered. The makers of Durosil glass give $14{\cdot}1 \times 10^{-6}$ as the coefficient of cubical expansion. Prof. W. E. S. Turner, to whom we applied for information, very kindly calculated the probable value from its composition and obtained 15×10^{-6}. We have since made a rough measurement by a flotation method and our results indicate that the second value is probably nearer to the truth. If corrections based on this figure are applied to the data in Table VIII (*loc. cit.*, p. 1279) the new values of the absolute density are as set out in Table I, in which for the sake of comparison the previous relative results also are incorporated. Table II gives the coefficients of thermal expansion derived from these new values.

TABLE I.

Source.	Relative d at 20·00°.	Diff. from mean ($\times 10^6$).	Absolute d at 20·00°.	Diff. from mean ($\times 10^6$).
Canada	1·481231	−14	1·481461	−14
U.S.A.	1·481230	−15	1·481461	−14
Sweden	1·481223	−22	1·481454	−21
Scotland	1·481266	+21	1·481496	+21
France.....	1·481273	+28	1·481503	+28
Mean	1·481245	±20	1·481475	±20

TABLE II.

Source.	Relative coeff. of expansion.	Diff. from mean ($\times 10^7$).	Absolute coeff. of expansion.	Diff from mean ($\times 10^7$).
Canada	0·0014163	+39	0·0014082	+38
U.S.A.	0·0014109	−15	0·0014029	−15
Sweden	0·0014136	+12	0·0014056	+12
Scotland	0·0014083	−41	0·0014005	−39
France.....	0·0014129	+ 5	0·0014047	+ 3
Mean	0·0014124	±22	0·0014044	±21

Thus, silicon tetrachloride has a density of 1·481475 with a calculated probable error of $\pm 0{\cdot}0_568$, and a coefficient of thermal expansion of 0·0014044 with a calculated probable error of $\pm 0{\cdot}0_687$.

Evidently the application of these corrections leaves unaltered

the relative atomic weights derived from the densities, and does not affect our previous conclusion that silicon shows no greater variation than 0·005 unit in the samples examined.

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