

can only be the case if all atoms, no matter of what element, require a constant amount of heat to raise their temperatures one degree. That is to say, in all elementary substances the heat capacity of the atom is constant, and independent of the nature of the element (with the qualifications above noted).

The study of compounds has shown that this same generalization is also true of them. This means that in all substances the heat capacity of every atom is nearly constant and is independent of its nature and of that of the compound in which it finds itself.

Accordingly the law of Dulong and Petit may be formulated as follows; — the specific heat of a substance multiplied by the average of the atomic weights of all the constituent atoms in the molecule is often equal to about 6.4, and is always not very different from this number. This conclusion may be tested with the data above recorded.

SUBSTANCE	MOLECULAR WEIGHT	NUMBER OF ATOMS	AVERAGE ATOMIC WEIGHT	SPECIFIC HEAT	SPECIFIC HEAT × ATOMIC WEIGHT
Water .	18	3	6	1.0	6.0
Ammonia	17	4	4	1.2	4.8
Quartz .	60	3	20	0.2	4.0
Salt . .	58	2	29	0.2	5.8
Sugar . .	342	45	8	0.3	2.4
Hexane .	86	20	4	0.5	2.0