SMITHSONIAN MISCELLANEOUS COLLECTIONS.
276

THE

CONSTANTS OF NATURE.

PART II.

A TABLE OF SPECIFIC HEATS

FOR

SOLIDS AND LIQUIDS.

COMPILED BY
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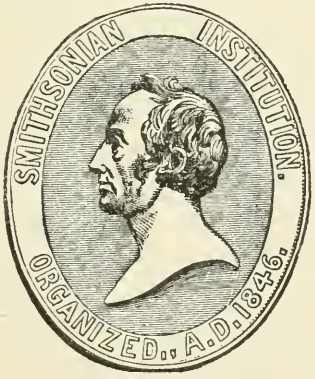

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THE following is the *second* part of a general work on the "CONSTANTS OF NATURE," prepared gratuitously for the Smithsonian Institution by Professor F. W. Clarke, and published at the expense of its fund.

JOSEPH HENRY,
Secretary Smithsonian Institution.

WASHINGTON, APRIL, 1876.

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INTRODUCTION.

The following tables of Specific Heat for Solids and Liquids are believed to be practically complete up to October, 1875. Of course it was not considered necessary to include much very old material, there being little of value prior to the time of Dulong and Petit. Undoubtedly the oldest determinations have a certain historical value, but this would be hardly sufficient to warrant the labor involved in searching them out. However, quite a number of such determinations have been included in the tables, notably some by Dalton, Crawford, Gadolin, and Lavoisier and Laplace.

For convenience, the columns of atomic or molecular heats have been added. These values, it is hardly necessary to say, are the products obtained by multiplying the specific heat of a substance into its atomic or molecular weight. For this purpose the most recent determinations of atomic weight have been employed.

Details concerning the methods of determination could not well be given in such tables as these. For such details the original papers must be consulted, and to these original papers references are almost always supplied.

F. W. C.

Cincinnati, Jan. 5, 1876.

A LIST

OF SOME OF THE MORE IMPORTANT PAPERS UPON SPECIFIC HEAT.*

1. Dulong and Petit.—"Recherches sur la mesure des températures, et sur les lois de la communication de la chaleur." Ann. Chim. Phys. (2). 7; pages 113 and 225. 1817.
2. Dulong and Petit.—"Recherches sur quelques points importans de la théorie de la chaleur." Ann. Chim. Phys. (2). 10. 395. 1819.
3. Weber.—"Ueber die specifische Wärme fester Körper, insbesondere der Metalle." Poggend. Annal. 20. 178. 1830.
4. Neumann.—"Untersuchungen über die specifische Wärme der Mineralien." Poggend. Annal. 23. 1. 1831.
5. Neumann.—"Bestimmung der specifischen Wärme des Wassers in der Nähe des Siedpunkts gegen Wasser von niedriger Temperatur." Poggend. Annal. 23. 40. 1831.
6. Avogadro.—"Mémoire sur les chaleurs spécifiques des corps solides et liquides." Ann. Chim. Phys. (2). 55. 80. 1833.
7. Avogadro.—"Nouvelles récherches sur la chaleur spécifique des corps solides et liquides." Ann. Chim. Phys. (2). 57. 113. 1834.
8. Regnault.—"Recherches sur la chaleur spécifique des corps simples et composés." Ann. Chim. Phys. (2). 73. 5. 1840. Poggend. Annal. 51. 44 and 213.
9. Schröder.—"Ueber die specifische Wärme zusammengesetzter Körper. Ein Beitrag zur Volumentheorie." Poggend, Annal. 52. 269. 1841.
10. Delarive and Marcet.—"Einige Untersuchungen über die specifische Wärme." Poggend. Annal. 52. 120. 1841.

*No attempt at completeness is made in this list. It is intended merely as a guide to the literature of the subject, useful in connection with the following tables. Papers earlier than those of Dulong and Petit, and many very important papers upon the specific heat of gases, are entirely omitted. Among such papers may be mentioned those of Clement and Desormes, Delaroche and Bérard, Lavoisier and Laplace, Irvine, Crawford, Wilke, Black, Haykraft and Mayer.

11. Regnault.—"Sur la chaleur specifique des corps simples et des corps composés." Ann. Chim. Phys. (3). 1. 129. 1841. Poggend. Annal. 53. 60 and 243.

12. Delarive and Marcet.—"Ueber die specifische Wärme des Kohlenstoffs in seinen verschiedenen Zuständen." Poggend. Annal. 54. 125. 1841.

13. Regnault.—"Recherches sur les chaleurs spécifiques." Ann. Chim. Phys. (3). 9. 322. 1843. Poggend. Annal. 62. 50.

14. Desains.—"Mémoire sur la chaleur spécifique de la glace." Compt. Rend. 20. 1345. 1845. Ann. Chim. Phys. (3). 14. 306. Poggend. Annal. 65. 435.

15. Person.—"Recherches sur la chaleur latente." Compt. Rend. 23. 162. 1846. Poggend. Annal. 70. 300.

16. Kopp.—"Ueber die specifische Wärme einiger Flüssigkeiten." Poggend. Annal. 75. 98. 1848.

17. Woestyn.—"Ueber die specifischen Wärmen." Poggend. Annal. 76. 129. 1849.

18. Regnault.—"Note sur la chaleur spécifique et la chaleur latente du fusion du brome, et sur la chaleur spécifique du mercure solide." Ann. Chim. Phys. (3). 26. 268. 1849. Poggend. Annal. 78. 118.

19. Regnault.—"Ueber die specifische Wärme des flüssigen Wassers bei verschiedenen Temperaturen." Poggend. Annal. 79. 241. 1850.

20. Person.—"Recherches sur la chaleur spécifique des dissolutions salines." Ann. Chim. Phys. (3). 33. 437. 1851. Ann. Chem. Pharm. 80. 136.

21. Garnier.—"Recherches sur les rapports entre le poids atomique moyen des corps simples, et leur chaleur spécifique." Compt. Rend. 35. 278. 1852. Ann. Chem. Pharm. 84.

22. Regnault.—"Recherches sur les chaleurs spécifiques des fluides élastiques." Compt. Rend. 36. 676. 1853. Poggend. Annal. 89. 335.

23. Regnault.—"Note sur la chaleur spécifique du phosphore rouge." Ann. Chim. Phys. (3). 38. 129. 1853. Poggend. Annal. 89. 495.

24. Angström.—"Notiz über die latente und specifische Wärme des Eises." Poggend. Annal. 90. 509. 1853.

25. Regnault.—"Mémoire sur la chaleur spécifique de quelques corps simples, et sur les modifications isomériques du sélénium." Ann. Chim. Phys. (3). 46. 257. 1856. Poggend. Annal. 98. 396.

26. Regnault.—"Sur la chaleur spécifique de quelques corps simples." Ann. Chim. Phys. (3). 63. 5. 1861.

27. Regnault.—"Sur la chaleur spécifique du thallium." Ann. Chim. Phys. (3). 67. 427. 1863.

28. Kopp.—"Ueber die specifische Wärme starrer Körper, und Folgerungen bezüglich der zusammengesetzheit s. g. chemischer Elemente." Ann. Chem. Pharm. 126. 362. 1864.

29. Pape.—"Ueber die specifische Wärme wasserfreier und wasserhaltiger schwefelsaurer Salze." Poggend. Annal. 120. 337 and 579. 1864.

30. Regnault.—"Bemerkungen über die zur Bestimmung der specifischen Wärme fester Körper angewendeten Verfahren." Poggend. Annal. 122. 257. 1864.

31. Bohn.—"Noch einige Bemerkungen über die Bestimmung der specifischen Wärme aus Mischversuchen." Poggend. Annal. 122. 289. 1864.

32. Pape.—"Ueber die specifische Wärme unterschwefligsaurer Salze." Poggend. Annal. 122. 408. 1864.

33. Neumann.—"Beobachtungen über die specifische Wärme verschiedener, namentlich zusammengesetzter Körper." Poggend. Annal. 126. 123. 1865.

34. Kopp.—"Investigations of the specific heat of solid bodies." Phil. Trans. 1865. 71. Ann. Chem. Pharm. 3rd. supp. bd. Chem. Soc. Journ. 1866.

35. Buff.—"Ueber eine Beziehung der Valenz der Atome zu der specifischen Wärme derselben." Ann. Chem. Pharm. 4th. supp. bd. 164. 1865–6.

36. Bettendorf and Wüllner.—"Einige Versuche über specifische Wärme allotroper Modificationen." Poggend. Annal. 133. 293. 1868.

37. Schüller.—"Ueber die specifische Wärme von Salzlösungen." Poggend. Annal. 136. 70 and 235. 1869.

38. Dupré and Page.—"On the specific heat and other physical characters of mixtures of ethylic alcohol and water." Phil. Trans. 1869. 591.

39. Wüllner.—"Ueber die specifische Wärme von Salzlösungen und Flüssigkeitsgemischen." Poggend. Annal. 140. 479. 1870.

40. Pfaundler and Platter.—"Ueber die Wärmecapacitat des Wassers in der Nähe seines Dichtigkeitsmaximums." Poggend. Annal. 140, 574; and 141, 537. 1870

41. Bunsen.—"Calorimetrische Untersuchungen." Poggend. Annal. 141. 1. 1870.

42. Marignac.—"Researches on the specific heats, densities, and expansions of some liquids." Phil. Mag. (4). 41. 134. 1871.

43. Mixter and Dana. "Specifische Wärme des Zirkoniums, Siliciums, und Bors." Ann. Chem. Pharm. 169. 388. 1873.

44. Winkelmann.—"Ueber die Mischungswärme und specifische Wärme von Flüssigkeitsgemischen." Poggend. Annal. 150. 592. 1873.

45. Weber.—"The specific heat of the elements Carbon, Boron, and Silicon." Phil. Mag. (4). 49. 161 and 276. 1875.

46. Schüller and V. Wartha.—"Ueber das Bunsen'sche Eiscalorimeter." Ber. d. Deutsch. Chem. Gesellschaft. 8. 1011. 1875.

EXPLANATORY NOTES.

To the following tables a few, and only a few, notes of explanation are needed, referring chiefly to abbreviations.

The letter S. affixed to the name of any substance, or to a determination of specific heat, indicates that the substance was in the *solid* condition. The letter L., on the other hand, stands for *liquid*. These signs are used only when for any given substance determinations have been made both in the solid and liquid states.

When figures indicating any given temperature are appended to a determination of specific heat, they show that the determination applied only to that temperature. When, however, two temperatures are given, as for instance, .0557, 0°–100°, the determination is the mean specific heat between them as extremes.

Such an abbreviation as *m. of 2*, *m. of 5*, attached to any determination, indicates that it is a *mean of 2*, *mean of 5*, &c., experiments.

In referring to authorities more extended abbreviations have to be employed. A single number attached to the name of any authority, refers to the accompanying list of papers. Thus, Kopp. 34, refers to Kopp's paper numbered 34, and so on.

With other abbreviations, as a rule, which refer to periodicals or large works, numbers indicating series, volume, and page are also used. Of course when no number for series is given, the first (or perhaps only) series is referred to. The following abbreviations are employed:—

A. C. P. "Annalen der Chemie und Pharmacie."

A. C. Phys. "Annales de Chimie et de Physique."

A. S. P. N. "Annales des Sciences Physiques et Naturelles."

C. R. "Comptes Rendus."

C. S. J. "Journal of the Chemical Society."

Ed. J. S. "Edinburgh Journal of Science."

Fortsch. D. Phys. "Fortschritte der Physik."

Gilb. Ann. "Gilbert's Annalen."

Gm. H. Gmelin's "Handbook." Edition of the Cavendish Society, vol. 1, article on Specific Heat. (Hermann's paper, frequently referred to under this heading, was originally published in Moscow; the work containing it was not accessible to the compiler.)

J. "Jahresbericht für Chemie."

P. A. "Poggendorf's Annalen."

Watt's Dict. "Watt's Dictionary."

Wien Ak. "Sitzungsberichte der Akademie zu Wien."

A TABLE
OF
SPECIFIC HEAT,
FOR SOLIDS AND LIQUIDS.

I. Elementary Substances.

Name.		Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Hydrogen.		1.			
Fluorine.		19.			
Chlorine.		35.5			
Bromine.	L.	80.0	.135.	10.80	Delarive & Marcet. 10.
"	"		.1071.	8.57	Andrews. P. A. 75. 335.
"	"		.11094.	8.87	Regnault. 18. [(4). 22. 385.
"	"		.11294.	9.03	
"	"		.10513.	8.41	
"	"		.1125. 18°–43.°6.	9.00	Marignac. A. C. Phys.
"	S.		.08432.	6.75	Regnault. 18. [6. 78.
Iodine.	L.	127.	.10822.	13.74	Favre & Silbermann. J.
"	S.		.082.		Avogadro. 7.
"	"		.05412.	6.87	Regnault. 8.
Lithium.		7.	.9408.	6.59	Regnault. 26.
Sodium.		23.	.2934.	6.75	" 25.
Potassium.		39.1			
Rubidium.		85.4			
Caesium.		133.0			
Silver.		108.0	.0557, 0°–100.°	6.02	Dulong & Petit. 1.
"			.0611, 0°–300.°	6.60	
"			.063.	6.80	Potter. Ed. J. S. 5. 80.
"			.05701.	6.16	Regnault. 8.
"			.05433, 5°–10.°	5.87	Regnault.* 13.
"			.05458, 10°–15.°	5.89	
"			.05424, 15°–20.°	5.86	
"			.05611, 5°–10.°	6.06	
"			.05612, 10°–15.°	6.06	
"			.05620, 15°–20.°	6.07	
"			.05698, 0.°	6.15	Byström. Fortsch. d. Phys. 16. 370.
"			.05715, 50.°	6.17	
"			.05749, 100.°	6.21	
"			.05800, 150.°	6.26	
"			.05868, 200.°	6.34	
"			.05953, 250.°	6.43	
"			.06055, 300.°	6.54	

*In the same paper are many determinations for *precipitated* silver.

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Silver		.0560.	6.05	Kopp. 34.
"		.0559.	6.04	Bunsen. 41.
"		.05494.	5.93	Mixter & Dana. 43.
Thallium.	204.	.03250.	6.63	Lamy. Watts' Dict. 3. 30.
"		.03355.	6.84	Regnault. 27.
Oxygen.	16.			
Sulphur. Liquid.	32.	.2337, 119.°3–146.°7	7.48	Person. P. A. 74. 509.
" Solid.		.1900.	6.08	Dalton. Gm. H. I.
" "		.1880. [Sulphur.	6.02	Dulong & Petit. 2.
" "		.209. Flowers of	6.69	Neumann. 4.
" "		.20259.	6.49	Regnault. 8.
" "		.1776. Native cryst.	5.68	Regnault. 13.
" "		.1764. Fused since 2 ys.	5.64	
" "		.1803. " " 2 ms.	5.77	
" "		.1844. Lately fused.	5.90	
" "		.235, 120°–147.°	7.52	Person. 15.
" "		.163, 17°–45.° Rhomb.	5.22	Kopp. 34.
" "		.1712. Roll Brimstone.	5.48	Bunsen. 41.
Selenium.	79.5	.0675.	5.37	Hermann. Gm. H. I.
"		.0834, 5°–15.°	6.63	Delarive & Marcet. 10.
"		.07446. Metallic.	5.92	Regnault. 25.
"		.07468. Vitreous.	5.94	
"		.0860, m. of 13. Cryst.	6.84	Neumann. 33.
"		.08404. Cryst.	6.68	Bettendorf & Wüllner. 36.
"		.08399. 2 Samples.	6.68	
"		.0953. Amorphous.	7.58	
Tellurium.	129.	.0912.		Dulong & Petit. 2.
"		.05155.	6.65.	Regnault. 8.
"		.05165. Undist'd.	6.66.	Regnault. 25.
"		.04737. Distilled.	6.11.	
"		.0475.	6.13.	Kopp. 34.
Calcium.	40.	.1686.	6.74.	Bunsen. 41.
"		.1722.	6.88.	
Strontium.	87.5			
Barium.	137.0			
Lead. Melted.	207.0	.039, 340°–440.°	8.07.	Person. 15.
" "		.0402.	8.32.	Person. P. A. 76. 426.
" Solid.		.0400.		Dalton. Gm. H. I.
" "		.0293.	6.07.	Dulong & Petit. 2.
" "		.032.	6.62.	Potter. Ed. J. S. 5. 80.
" "		.0299.	6.19.	Hermann. Gm. H. 1.
" "		.03140, 10°–100.°	6.50.	Regnault. 8.
" "		.03065, -77°75 to +10°	6.34.	Regnault. 18. [38. 39.
" "		.0321.	6.64.	Schmidaritsch. Wien A.
" "		.03050, 14°–108.°	6.31.	Bede. Fortsch. d. Phys. 11. 379.
" "		.03170, 16°–172.°	6.56.	

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Lead. Solid.		.0315.	6.52.	Kopp. 34.
Chromium.	52.5			
Manganese.	55.	.14411. Very impure		Regnault. 8.
"		.1332. } 2 samples.		Regnault. 26.
"		.1217. }	6.69.	[Ann. 5. 42.
Iron.	56.	.1269.	7.11.	Crawford. See Gilb.
"		.1300.	7.28.	Dalton. Gm. H. I.
"		.1098, 0°–100.°	6.15.	Dulong & Petit. 1.
"		.1150, 0°–200.°	6.44.	
"		.1218, 0°–300.°	6.82.	
"		.1255, 0°–350.°	7.03.	
"		.110.	6.16.	Potter. Ed. J. S. 5. 80.
"		.1054.	5.90.	Hermann. Gm. H. I.
"		.11379.	6.37.	Regnault. 8. [Ak. 38. 39.
"		.1131.	6.33.	Schnidaritsch. Wien
"		.1123, 15°–100.°	6.29.	Bede.
"		.11533, 16°–142.°	6.46.	Fortsch. d. Phys.
"		.12331, 20°–247.°	6.91.	11. 379.
"		.111641, 0.°	6.25.	Byström.
"		.112369, 50.°	6.29.	
"		.113795, 100.°	6.37.	Fortsch. d. Phys.
"		.115949, 150.°	6.49.	16. 370.
"		.118821, 200.°	6.65.	
"		.122411, 250.°	6.85.	
"		.126719, 300.°	7.10.	
"		.112.	6.27.	Kopp. 34.
"		.1125.	6.30.	Weber. P. A. 146. 257.
"		.1138. } 99°1.	6.37.	Weinhold.
"		.1151. }	6.45.	P. A. 149. 186.
"		.1120. }	6.27.	
"		.1118. 235°2.	6.26.	
"		.1126. 247°2.	6.31.	
"		.1126. 248°1.	6.31.	
"		.1248. 475.°	6.99.	
"		.1261. 490.°	7.06.	
"		.1284. 522.°	7.19.	
"		.1407. 697.°	7.88.	
"		.1422. 736.°	7.96.	
"		.1570. 874.°	8.79.	
"		.1567. 900.°	8.77.	[50. 555.
"		.13693, 0°–1040.°	8.79.	W. C. Roberts, P. M. 4.
Cast Iron.		.12728.		Regnault. 8.
" "		.12768, 0.°		Byström.
" "		.12830, 50.°		Fortsch. d. Phys.
" "		.12954, 100.°		16. 370.

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Cast Iron.		.13140, 150.°		Byström. Fortsch. d. Phys. 16. 370.
" "		.13388, 200.°		
" "		.13698, 250.°		
" "		.14070, 300.°		
White Cast Iron.		.12983.		Regnault. 8.
Steel.		.11848.		Regnault. 8.
"		.1165. Soft.		Regnault. 13.
"		.1175. Hard.		
"		.11782, 0.°		Byström. Fortsch. d. Phys. 16. 370.
"		.11850, 50.°		
"		.11986, 100.°		
"		.12190, 150.°		
"		.12462, 200.°		
"		.12802, 250.°		
"		.1321, 300.°		
Nickel.	58.7	.1035.	6.07	Dulong & Petit. 2.
"		.10863.	6.38	Regnault. 8.
"		.11192. Unfused (Contain Carbon.)		
"		.11631. Cast (Contain Carbon.)		
"		.11095.	6.51	Regnault. 25.
"		.10752.	6.31	Regnault. 26.
"		.1108.	6.50	
Cobalt.	58.7	.1498.		Dulong & Petit. 2.
"		.10696. [Carbon.	6.28	Regnault. 8.
"		.11712. Cast. Contains]		
"		.1172, 5°–15.°	6.88	Delarive & Marcet. 10.
"		.10094.	5.93	Regnault. 26.
"		.10620.	6.23	
"		.10727.	6.30	
Uranium.	120.	.06190.	7.43	Regnault. 8.
Copper.	63.5	.0949, 0°–100.°	6.03	Dulong & Petit. 1.
"		.1013, 0°–300.°	6.43	
"		.096.	6.10	Potter. Ed. J. S. 5. 80.
"		.0961.	6.10	Hermann. Gm. H. I.
"		.09515.	6.04	Regnault. 8.
"		.095, 5°–15.°	6.03	Delarive & Marcet. 10.
"		.08842, 5°–10.°		Regnault. 13.
"		.08913, 10°–15.°		
"		.08847, 15°–20.°		
"		.09331, 15°–100.°	5.93	Bede. Fortsch. d. Phys. 11. 379.
"		.09483, 16°–172.°	6.02	
"		.09680, 17°–247.°	6.15	
"		.0951.	6.04	Pape. 29.
"		.0930.	5.90	Kopp. 34.
Ruthenium.	104.4	.0611.	6.38	Bunsen. 41.
Rhodium.	104.4	.05527. 2 Samples.	5.77	Regnault. 26.
"		.05803.	6.07	

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Rhodium.		.05408, m. of 3.	5.64	Regnault. 25.
Palladium.	106.6	.05927.	6.32	Regnault. 8.
"		.05921.	6.31	Roberts & Wright. C. S. J. (2). 11. 117. See this paper for full details concerning palladium with occluded hydrogen
"		.06007. 15°–100.°	6.40	
"		.06022.	6.42	
"		.05918, –10° to +15°	6.31	
Platinum.	197.5	.0355, 0°–100.°	7.01	Dulong & Petit. 1.
"		.0355, 0°–300.°	7.01	
"		.0314.	6.20	Dulong & Petit. 2.
"		.03243. Rolled.	6.40	Regnault. 8.
"		.03293. Spongy.	6.50	
"		.03509, 5°–10.° Spongy.	6.93	Regnault. 13.
"		.03449, 10°–15.° Spongy.	6.81	
"		.03509, 15°–20.° Spongy.	6.93	
"		.0335, 0°–100.°	6.62	Pouillet. See Balfour Stewart's "Elementary Treatise on Heat." P. 268.
"		.0343, 0°–300.°	6.77	
"		.0352, 0°–500.°	6.95	
"		.0360, 0°–700.°	7.11	
"		.0373, 0°–1000.°	7.37	
"		.0382, 0°–1200.°	7.54	
"		.032386, 0.°	6.39	Byström. Fortsch. d Phys. 16. 370.
"		.032480, 50.°	6.41	
"		.032668, 100.°	6.45	
"		.032950, 150.°	6.51	
"		.033326, 200.°	6.58	
"		.033796, 250.°	6.67	
"		.034750, 300.°	6.86	
"		.0325.	6.42	Kopp. 34.
"		.03290.	6.49	Weinhold. P. A. 149. 186.
"		.03270. 99°.1.	6.46	
"		.03297.	6.51	
"		.03508. 238°.5.	6.93	
"		.03520. 246°.4.	6.95	
"		.03411. 256°.8.	6.74	
"		.03188. 476.°	6.30	
"		.03230. 478.°	6.38	
"		.03253. 507.°	6.42	
"		.03333. 705.°	6.58	
"		.03381. 766.°	6.68	
"		.03396. 934.°	6.71	
"		.03333. 952.°	6.58	
Iridium.	198.	.03683. Very impure		Regnault. 8.
"		.0363.	7.19	Regnault. 25.
"		.04186.	6.45	Regnault. 26.
"		.03259. 2 samples.		

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Osmium.	199.2.	.03063, m. of 3.	6.10.	Regnault. 25.
«		.03063.	6.10.	Regnault. 26.
«		.03113. 2 samples.	6.20.	Regnault. 26.
Molybdenum.	95.9.	.07218.	6.92.	Regnault. 8.
«		.0659, 5°–15°	6.32.	Delarive & Marcet. 10.
Tungsten.	184.	.03636.	6.69.	Regnault. 8.
«		.035, 6°25–15.	6.44.	Delarive & Marcet. 10.
«		.03342.	6.15.	Regnault. 26.
Indium.	113.4.	.0565.	6.40,	Bunsen. 41.
«		.0574.	6.51.	Bunsen. 41.
Zinc.	65.2.	.1000.	6.52.	Dalton. Gm. H. I.
«		.0927, 0°–100.°	6.04.	Dulong & Petit. 1.
«		.1015, 0°–300.°	6.62.	Dulong & Petit. 1.
«		.0929.	6.06.	Neumann. 4.
«		.098.	6.40.	Potter. Ed. J. S. 5. 80.
«		.09555.	6.23.	Regnault. 8.
«		.09142, 5°–10.°	5.96.	Regnault. 13.
«		.09252, 10°–15.°	6.03,	Regnault. 13.
«		.09123, 15°–20.°	5.95.	Regnault. 13. [Ak. 38. 39.
«		.0924.	6.02.	Schnidaritsch. Wien
«		.09088, 16°–101.°	5.93.	Bede. Fortsch. d. Phys. 11. 379.
«		.09385, 17°–172.°	6.12.	Bede. Fortsch. d. Phys. 11. 379.
«		.09563, 17°–213.°	6.23.	Bede. Fortsch. d. Phys. 11. 379.
«		.0932.	6.08.	Kopp. 34.
«		.0935.	6.10.	Bunsen. 41. [46.
« Distilled.		.09393.	6.12.	Schüller & V. Wartha.
Cadmium.	112.	.0385.		Hermann. Gm. H. I.
«		.05669.	6.35.	Regnault. 8.
«		.0576, 5°–15.°	6.45.	Delarive & Marcet. 10.
«		.05908, 5°–10.°	6.62.	Regnault. 13.
«		.05969, 10°–15.°	6.68.	Regnault. 13.
«		.05938, 15°–20.°	6.65.	Regnault. 13.
«		.0542.	6.07.	Kopp. 34.
«		.0548.	6.14.	Bunsen. 41.
Magnesium.	24.	.2499.	6.00.	Regnault. 26.
«		.245.	5.88.	Kopp. 34.
Mercury.	200.	.0330.	6.60.	Kirwan. Gm. H. I.
«		.0330, 0°–100.°	6.60.	Dulong and Petit. 1.
«		.0350, 0°–300.°	7.70.	Dulong and Petit. 1.
«		.03332, 10°–100.°	6.64.	Regnault. 8.
«		.0318.	6.36.	Delarive & Marcet. 10.
«		.0282, 5°–10.°		Regnault. 13.
«		.0283, 10°–15.°		Regnault. 13.
«		.0290, 15°–20.°		Regnault. 13.
«		.0332, 24°–44.°	6.64.	Kopp. 16.
«		.0335, m. of 5.	7.37.	Kopp. 34.

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Mercury. Solid.		.03192,-77°.75 to-40°	6.38.	Regnault. 18.
Nitrogen.	14.			
Boron.Amorphous	11.	.3598.	3.96.	Regnault. 26.
" "		.3483.	3.83.	
" "		.4053.	4.46.	
" "		.254.	2.79.	Kopp. 34.
" Graphitoidal.		.2352.	2.59.	Regnault. 26.
" Crystalline.		.2622.	2.88.	Regnault. 26.
" "		.2253.	2.48.	
" "		.2574.	2.83.	
" "		.230.	2.53.	Kopp. 34.
" "		.2518.	2.77.	Mixter & Dana. 43.
" "		.1915,—39°.6.	2.11.	F. Weber. P. M. (4) 49. 290.
" "		.2382,+26°.6.	2.72.	
" "		.2737, 76°.7.	3.01.	
" "		.3069, 125°.8.	3.38.	
" "		.3378, 177°.2.	3.72.	
" "		.3663, 233°.2.	4.03.	
Phosphorus.	31.	.196, 50°-100.° Melted	6.08.	Desains. P. A. 70. 315.
"		.2045. "	6.34.	Person. P. A. 74. 509.
" Common.		.2900.		Hermann. Gm. H. I.
" "		.385.		Avogadro. 7.
" "		.1887, 10°–30.°	5.85.	Regnault. 8.
" "		.25142, 0°–100.°		
" "		.212, 50°–100.°	6.57	Person. 15.
" "		.2000, 25°–50.°	6.20	Desains. P. A. 70. 315.
" "		.1788, –21° to +7.°	5.54	Person. P. A. 74. 509.
" "		.1740, -77°.75 to +10.°	5.39	Regnault. 18.
" "		.1887, 10°–30.°	5.85	
" "		.202, 13°–36.°	6.26	Kopp. 34.
" Red.		.16981.	5.26	Regnault. 23.
Arsenic.	75.	.0804.	6.03	Hermann. Gm. H. I.
"		.081.	6.07	Avogadro. 7.
"		.08140.	6.10	Regnault. 8.
		.09006, 5°–10.°	6.75	Regnault. 13.
"		.09085, 10°–15.°	6.81	
"		.09019, 15°–20.°	6.76	
"		.0822, m. of 6.	6.16	Neumann. 33.
"		.0830. Crystalline.	6.22	Bettendorf & Wüllner. 36.
"		.0758. Amorphous	5.68	
Antimony.	122.	.0507, 0°–100.°	6.19	Dulong & Petit. 1.
"		.0549, 0°–300.°	6.69	
"		.047.	5.73	Neumann. 4.
"		.0496.	6.05	Hermann. Gm. H. I.
"		.05077.	6.19	Regnault. 8.

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Antimony.		.06305, 5°–10.°		Regnault. 13.
«		.06367, 10°–15.°		
«		.06424, 15°–20.°		
«		.04861, 13°–106.°	5.93	Bede. Fortsch. d. Phys. 11. 379.
«		.04989, 15°–175.°	6.09	
«		.05073, 12°–209.°	6.19	
«		.0523.	6.38	Kopp. 34.
«		.0495.	6.04	Bunsen. 1.
Bismuth. Melted.	210.	.035, 280°–370.°	7.35	Person. 15.
« «		.0363.	7.62	Person. P. A. 76. 426.
« Solid.		.0288.	6.05	Dulong & Petit. 2.
«		.027.	5.67	Neumann. 4.
«		.039.		Potter. Ed. J. S. 5. 80.
«		.03084.	6.48	Regnault. 8.
«		.03732, 5°–10.°		Regnault. 13.
«		.03788, 10°–15.°		
«		.03639, 15°–20.°		
»		.0309.	6.49	Schnidaritsch.Wien.Ak.38.39.
«		.02889, 13°–106.°	6.07	Bede. Fortsch. d. Phys. 11. 379.
«		.03036, 15°–175.°	6.38	
«		.03085, 13°–205.°	6.48	
«		.02979,9°-102.° Pu-	6.26	
«		.0305. [rified.	6.40	Kopp. 34.
Vanadium.	51.5			
Gold.	197.	.0298.	5.47	Dulong & Petit. 2.
«		.046.		Potter. Ed. J. S. 5. 80.
«		.03294.	6.49	Regnault. 8.
Carbon. Diamond.	12.	.1192, 3°–11.°	1.43	Delarive & Marcet. 10.
« «		.14687.	1.76	Regnault. 11. [36.
« «		.1483, m. of 6.	1.78	Bettendorf & Wüllner.
« «		.1434. 0°–100.°	1.72	Weber. P. A. 147. 311.
« «		.1439.	1.73	
« «		.0947, 0.°	1.14	
« «		.1435, 50.°	1.72	
« «		.1905, 100.°	2.29	
« «		.2357, 150.°	2.83	
« «		.2791. 250.°	3.35	
« «		.10, 0.°	1.20	Weber. C. S. J. (2). 12. 224.
« «		.28, 300.°	3.36	
« «		.0635, — 50°.5.	0.76	F. Weber. P. M. (4). 49. 161.
« «		.0955, — 10°.6.	1.15	
« «		.1128, + 10°.7	1.35	
« «		.1318, 33°.4.	1.58	
« «		.1532, 58°.3.	1.84	
« «		.1765, 85°.5.	2.12	

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Carbon. Diamond.		.2218, 140.°	2.66	F. Weber. P. M. (4). 49. 161.
" "		.2733, 206°.1.	3.28	
" "		.3026, 247.°	3.63	
" "		.4408, 606°.7.	5.29	
" "		.4489, 806°.5.	5.39	
" "		.4589, 985.°	5.51	
" Graphite.		.20187. Natural.	2.42	Regnault. 11.
" "		.19702. From iron.	2.36	
" "		.174. Natural.	2.09	Kopp. 34.
" "		.166. From iron.	1.99	
" "		.1911. Extremes of 5 det. from different samples.	2.29	Regnault. J. 19. 22.
" "		.2019.	2.42	
" "		.1955. Natural.	2.35	Bettendorf & Wüllner. 36.
" "		.1961. From iron.	2.35	
" "		.1439, 0°–34.°	1.73	Weber. P. A. 147. 311.
" "		.1967, 0°–100.°	2.36	
" "		.17, 0.°	2.04	Weber. C. S. J. (2). 12. 224.
" "		.35, 300.°	4.20	
" "		.1138, — 50°.3,	1.37	F. Weber. P. M. (4). 49. 276.
" "		.1437, — 10°.7.	1.72	
" "		.1604, + 10°.8.	1.92	
" "		.1990, 61°.3.	2.39	
" "		.2542, 138°.5.	3.05	
" "		.2966, 201°.6.	3.56	
" "		.3250, 249°.3.	3.90	
" "		.4454, 641°.9.	5.34	
" "		.4539, 822.°	5.46	
" "		.4670, 977°.9.	5.60	
" Charcoal.		.25.	3.00	Crawford. See 6.
" "		.24111.	2.89	Regnault. 8.
" "		.24150.	2.90	Regnault. 11.
" "		.165, 6°.25–15.°	1.98	Delarive & Marcet. 10.
" "		.1592. From sugar.	1.91	Delarive & Marcet. 12.
" "		.1801. " turpentine	2.16	
" "		.2009, Popl'r quench'd	2.41	
" "		.2964, " unquench'd	3.56	
" "		.1653, 0°–23°.5.	1.98	F. Weber. P. M. (4). 49. 276.
" "		.1935, 0°–99°.22.	2.32	
" "		.2385, 0°–223°.6.	2.86	
" Animal C.		.257.	3.08	Avogadro. 6.
" "		.26085.	3.13	Regnault. 11.
" Anthracite		.20171. Welsh.		Regnault. 11.
" "		.20100. Penn'a.		
" Amorphous from limestone.		.1906, 0°–99.°	2.29	F. Weber. P. M. (4). 49. 276.
"		.2348, 0°–225°.6.	2.82	
" Coke.		.20307. From cannel.	2.44	Regnault. 11.

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Carbon. Coke.		.20085. From anthracite	2.41	Regnault. 11.
« Gas Carbon.		.20360.	2.44	Regnault. 11.
« « «		.185.	2.22	Kopp. 34. [36.
« « «		.204, m. of 8.	2.45	Bettendorf & Wüllner.
« In general.		.32, 20°–1040.°	3.84	Dewar. C. S. J. (2). 11. 239.
« « «		.42, 2100°	5.04	
Silicon. Cast.	28	.1557. (Early det.)	4.36	Regnault. 26.
« «		.1630. (Early det.)	4.56	
« «		.1747. (Early det.)	4.89	
« «		.1750. Latest det.	4.90	
« «		.138.	3.86	Kopp. 34.
« Graphitic.		.181.	5.07	Kopp. 34.
« Cryst.		.1673.	4.68	Regnault. 26.
« «		.1762.	4.93	
« «		.1742.	4.88	
« «		.1787.	5.03	
« «		.165.	4.62	Kopp. 34.
« «		.16995.	4.76	Mixter & Dana. 43.
« «		.1704.	4.77	
« «		.1360, — 39°.8.	3.81	F. Weber. P. M. (4). 49. 294.
« «		.1697, + 21°.6.	4.75	
« «		.1833, 57°.1.	5.13	
« «		.1901, 86°.0.	5.32	
« «		.1964, 128°.7.	5.50	
« «		.2011, 184°.3.	5.63	
« «		.2029, 232°.4.	5.68	
Titanium.	50.			[Ann. 5. 42.
Tin.	118.	.0704.		Crawford. See Gilb.
«		.0700.		Dalton. Gm. H. I.
«		.0514.	6.06	Dulong & Petit. 2.
«		.056.	6.61	Potter. Ed. J. S. 5. 80.
«		.05623. Banca.	6.63	Regnault. 8.
«		.05965. English.	6.72	
«		.0514, 5°–15.°	6.06	Delarive & Marcet. 10.
«		.05477, 5°–10.° (Granul'd)	6.46	Regnault. 13.
«		.05546, 10°–15.° (Granul'd)	6.54	
«		.05504, 15°–20.° (Granul'd)	6.49	
«		.05651, 5°–10.° (Banca filings)	6.67	
«		.05614, 10°–15.° (Banca filings)	6.62	
«		.05662, 15°–20.° (Banca filings)	6.68	[Ak. 38. 39.
«		.0533.	6.29	Schnidaritsch. Wien
«		.05445, 15°–100.°	6.43	Bede. Fortsch. d. Phys. 11. 379.
«		.05753, 15°–172.°	6.79	
«		.05832, 16°–213.°	6.88	
«		.0548.	6.47	Kopp. 34.
«		.0545. Allotropic.	6.43	Bunsen. 41.

Name.	Atomic Weight	Specific Heat.	Atomic Heat.	Authority.
Tin.		.0559. Cast.	6.60	Bunsen. 41.
" Melted.		.061, 240°–340°	7.20	Person. 15.
" "		.0637.	7.52	Person. P. A. 76. 426.
Zirconium.	89.6	.06666.	5.97	Mixter & Dana. 43.
Thorium.	234.			
Lanthanum.	92.			
Didymium.	96.			
Cerium.	92.	.05.	?	Schuchardt.*
Yttrium.	59.7.			
Erbium.	113.7.			
Glucinum.	9.3			
Aluminum.	27.4.	.21224.	5.82.	Regnault. 25.
"		.2020.	5.53.	Kopp. 34.
Niobium.	94.			
Tantalum.	172.			

*Quoted by Mendelejeff. A. C. P. 8th Supplement. 189.

II. Inorganic Fluorides, Chlorides, Bromides, and Iodides.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Sodium fluoride	Na F.	.2678.	11.25	Hermann.Gm.H.I
Calcium "	Ca F_2.	.1912.	14.91	Hermann.Gm.H.I
" "	"	.2082.	16.24	Neumann. 4.
" "	"	.21492.	16.76	Regnault. 11.
" "	"	.209.	16.30	Kopp. 34.
Cryolite.	3 Na F. Al F_3.	.238.	50.07	Kopp. 34.
Lithium chloride	Li Cl.	.2650.	11.26	Hermann.Gm.H.I
" "	"	.28213.	11.99	Regnault. 25.
Sodium "	Na Cl.	.226.	13.22	Gadolin. See 6.
" "	"	.2300.	13.45	Dalton. Gm. H. I.
" "	"	.1817.		Hermann.Gm.H.I
" "	"	.221.	12.93	Avogadro. 6. [474.
" "	"	.1743.		Rudberg. P. A. 35.
" "	"	.21401.	12.52	Regnault. 11.
" "	"	.2070.	12.11	Neumann. 33.
" "	"	.213. Fused.	12.46	Kopp. 34.
" "	"	.219. Rock salt.	12.81	
Potassium "	K Cl.	.1403.		Hermann.Gm.H.I
" "	"	.184.	13.71	Avogadro. 6.
" "	"	.17295.	12.88	Regnault. 11.
" "	"	.1663.	12.39	Neumann. 33.
" "	"	.171.	12.74	Kopp 34.
Rubidium "	Rb Cl.	.112.	13.54	Kopp. 34.
Ammonium "	NH_4 Cl.	.3908.	20.91	Neumann. 33.
" "	"	.373. Crystallized.	19.96	Kopp. 34.
Silver "	Ag Cl.	.0844.	12.11	Hermann.Gm.H.I
" "	"	.09109.	13.07	Regnault. 11.
" "	"	.0894.	12.83	Neumann. 33.
Sulphur chloride	S_2 Cl_2.	.2048, 5°–10°		Regnault. 13.
" "	"	.2024, 10°–15° L.		
" "	"	.2038, 15°–20°		
Calcium "	Ca Cl_2.	.1102.		Hermann.Gm.H.I
" "	"	.194.	21.53	Avogadro. 6.
" "	"	.16420.	18.23	Regnault. 11.
" "	Ca Cl_2. 6 H_2 0.	.406, –40° to –2.°	88.91	Person. 15.
" "	"	.647, 4°–28.°	141.69	
" "	"	.358, 31°–60.°	78.40	
" "	"	.628, 60°–100.°	137.53	
" "	"	.519, 100°–127.°	113.66	

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Strontium chloride.	$Sr\ Cl_2$.	.0972.		Hermann.Gm.H.I
" "	"	.11990.	19.00	Regnault. 11.
Barium chloride	$Ba\ Cl_2$.	.0780.		Hermann.Gm.H.I
" "	"	.08957.	18.63	Regnault. 11.
" "	"	.0902.	18.76	Kopp. 34.
" "	$Ba\ Cl_2$. $2\ H_2\ 0$.	.171. Crystals.	41.72	" "
Lead	$Pb\ Cl_2$.	.06641.	18.46	Regnault. 11.
" "	"	.0692.	19.24	Neumann. 33.
Chromium "	$Cr_2\ Cl_6$.	.143. Crystallized.	45.47	Kopp. 34.
Manganese "	$Mn\ Cl_2$.	.14255.	17.96	Regnault. 11.
Cuprous "	$Cu\ Cl$.	.13827.	13.69	" "
Zinc "	$Zn\ Cl_2$.	.13618.	18.55	" "
Magnesium "	$Mg\ Cl_2$.	.19460.	18.39	" "
" "	"	.191.	18.14	Kopp. 34.
Mercurous "	$Hg\ Cl$.	.0495.		Hermann.Gm.H.I
" "	"	.041.		Avogadro. 6.
" "	"	.05205.	12.26	Regnault. 11.
Mercuric "	$Hg\ Cl_2$.	.0715.		Hermann.Gm.H.I
" "	"	.069.	18.70	Avogadro. 6.
" "	"	.06889.	18.67	Regnault. 11.
" "	"	.064. Crystallized.	17.34	Kopp. 34.
Phosphorus trichloride.	$P\ Cl_3$.	.20922.	28.07	Regnault. 11.
" "	"	.2017, 5°–10.°	27.73	Regnault. 13.
" "	"	.1987, 10°–15.°	27.32	Regnault. 13.
" "	"	.1991, 15°–20.°	27.35	Regnault. 13.
Arsenic "	$As\ Cl_3$.	.17604.	31.95	Regnault. 11.
Carbon "	$C_2\ Cl_6$.	.178, 18°–37.°	42.19	Kopp. 34.
" tetrachloride.	$C\ Cl_4$.	.207202, 30.°	31.91	Hirn. J. 20. 56.
" "	"	.2095947, 40.°	32.28	Hirn. J. 20. 56.
" "	"	.211533, 50.°	32.58	Hirn. J. 20. 56.
" "	"	.2133591, 60.°	32.88	Hirn. J. 20. 56.
" "	"	.2149066, 70.°	33.10	Hirn. J. 20. 56.
" "	"	.2162598, 80.°	33.30	Hirn. J. 20. 56.
" "	"	.2177109, 90.°	33.53	Hirn. J. 20. 56.
" "	"	.2195151, 100.°	33.81	Hirn. J. 20. 56.
" "	"	.220726, 110.°	33.99	Hirn. J. 20. 56.
" "	"	.221828, 120.°	34.17	Hirn. J. 20. 56.
" "	"	.2236305, 130.°	34.44	Hirn. J. 20. 56.
" "	"	.2260645, 140.°	34.91	Hirn. J. 20. 56.
" "	"	.2291237, 150.°	35.28	Hirn. J. 20. 56.
" "	"	.2327877, 160.°	35.85	Hirn. J. 20. 56.
Silicon "	$Si\ Cl_4$.	.1914, 5°–10.°	32.54	Regnault. 13.
" "	"	1904, 10°–15.°	32.37	Regnault. 13.
" "	"	.1904, 15°–20.°	32.37	Regnault. 13.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Titanium tetrachloride.	$Ti\ Cl_4$.	.19145.	36.76	Regnault. 11.
" "	"	.1810, 5°–10.°	34.75	Regnault. 13.
" "	"	.1802, 10°–15.°	34.60	
" "	"	.1828, 15°–20.°	35.10	
Tin "	$Sn\ Cl_4$.	.14759.	38.37	Regnault. 11.
" "	"	.1421, 5°–10.°	36.95	Regnault. 13.
" "	"	.1402, 10°–15.°	36.45	
" "	"	.1416, 15°–20.°	36.82	
" dichloride.	$Sn\ Cl_2$.	.10161.	19.20	Regnault. 11.
Zinc potassium chloride.	$Zn\ Cl_2$. 2 K Cl.	.152. Crystallized.	43.38	Kopp. 34.
Tin potassium chloride.	$Sn\ Cl_2$. 2 K Cl.	.133. "	44.98	" "
Potassium platinchloride.	$Pt\ Cl_4$. 2 K Cl.	.113. "	55.22	" "
Sodium bromide	Na Br.	.13842.	14.26	Regnault. 11.
Potassium "	K Br.	.11322.	13.47	" "
Silver "	Ag Br.	.07391.	13.90	" "
Lead "	$Pb\ Br_2$.	.05326.	19.55	" "
Sodium iodide.	Na I.	.08684.	13.03	Regnault. 11.
" "	"	.0881.	13.21	Schüller. 37.
Potassium "	K I.	.0657.		Hermann. Gm. H. I
" "	"	.08191.	13.60	Regnault. 11.
Silver "	Ag I.	.06159.	14.47	" "
Lead "	$Pb\ I_2$.	.04267.	19.67	" "
Cuprous "	Cu I.	.06869.	13.09	" "
Mercurous "	Hg I.	.03949.	12.91	" "
Mercuric "	$Hg\ I_2$.	.04197.	19.05	" "

III. Inorganic Oxides.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Water.	H_2 O.	1.0, 0°–1.°	18.00	Standard of comparison.
"	"	1.0002, 0°–10.°	18.00	
"	"	1.0005, 0°–20.°	18.01	Compare with Bosscha. P. A. Jubelband.1874. p. 549.
"	"	1.0009, 0°–30.°	18.02	
"	"	1.0013, 0°–40.°	18.02	
"	"	1.0017, 0°–50.°	18.03	
"	"	1.0023, 0°–60.°	18.04	Regnault. 19.
"	"	1.0030, 0°–70.°	18.05	
"	"	1.0035, 0°–80.°	18.06	
"	"	1.0042, 0°–90.°	18.07	
"	"	1.0050, 0°-100°	18.09	For other series of determinations for water, see Hirn, C. R. 70.592; Jamin and Amaury, C. R. 70. 661; and Pfaundler and Platter, P. A. 140. 574, and P. A. 141. 537.
"	"	1.0058, 0°-110°	18.10	
"	"	1.0067, 0°-120°	18.12	
"	"	1.0076, 0°-130°	18.14	
"	"	1.0087, 0°-140°	18.16	
"	"	1.0097, 0°-150°	18.17	
"	"	1.0109, 0°-160°	18.20	
"	"	1.0121, 0°-170°	18.22	
"	"	1.0133, 0°-180°	18.24	
"	"	1.0146, 0°-190°	18.26	
"	"	1.0160, 0°-200°	18.29	
"	"	1.0174, 0°-210°	18.31	
"	"	1.0189, 0°-220°	18.34	
"	"	1.0204, 0°-230°	18.37	
Snow.	"	.5241.	9.43	Gadolin. See P. A. 90. 511.
Ice.	"	.513, m. of 5.	9.23	Desains. 14.
"	"	.56.	10.08	Person. P. A. 65. 439.
"	"	.505,–30° to 0°.	9.09	Person. 15.
"	"	.504.	9.07	Person. P. A. 74. 439.
"	"	.533.	9.59	Hess. Fortsch d. Phys. 6. 611.
Calcium oxide.	Ca O.	.217.	12.15	Lavoisier & Laplace. See 6.
" "	"	.223.	12.49	Crawford. See 6.
" "	"	.3000.		Dalton. Gm. H. I.
" "	"	.179.	10.02	Avogadro. 6.
Lead "	Pb O.	.049.	10.93	Gadolin. See 6.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Lead oxide.	Pb O.	.0544.	12.13	Hermann.Gm.H.I
" "	"	.050.	11.15	Avogadro. 6.
" "	"	.05118. Powder.	11.41	Regnault. 11.
" "	"	.05089. Fused.	11.35	Regnault. 11.
" "	"	.0553. Powder.	12.33	Kopp. 34.
Red lead. Minium	$Pb_3 O_4$.	.062.	42.47	Lavoisier & Laplace.
" " "	"	.068.	46.58	Crawford & Kirwan.
" " "	"	.059.	40.41	Gadolin.
" " "	"	.0611.	41.85	Neumann. 4.
" " "	"	.072.	49.32	Avogadro. 6.
Chromic oxide.	$Cr_2 O_3$.	.196.	29.99	Neumann. 4.
" "	"	.2126.	32.53	Hermann.Gm.H.I
" "	"	.17960.	27.47	Regnault. 11.
" "	"	.177. Crystalline.	27.08	Kopp. 34.
Manganese monoxide.	Mn O.	.15701.	11.15	Regnault. 11.
" dioxide.	$Mn O_2$.	.191. Pyrolusite.	16.62	Avogadro. 6.
" "	"	.159. "	13.83	Kopp. 34.
Mangano-manganic oxide.	$Mn_3 O_4$.	.1651.	37.80	Hermann.Gm.H.I
Ferric oxide.	$Fe_2 O_3$.	.2500.		Crawford. See Gilb. Ann. 5. 45.
" "	"	.167.	26.72	Gadolin. See 6.
" "	"	.1692. Specular. By two methods.	27.07	Neumann. 4.
" "	"	.163.	27.08	Neumann. 4.
" "	"	.166. Hematite.	26.56	Neumann. 4.
" "	"	.213.	34.08	Avogadro. 6.
" "	"	16695. Specular.	26.71	Regnault. 11.
" "	"	17569. Colcothar. Four samples differently treated.	28.11	Regnault. 11.
" "	"	17167.	27.46	Regnault. 11.
" "	"	16921.	27.07	Regnault. 11.
" "	"	16814.	26.90	Regnault. 11.
" "	"	.154. Specular.	24.64	Kopp. 34.
Ferroso-ferric oxide.	$Fe_3 O_4$.	.1641.	38.07	Neumann. 4.
" " "	"	.16780. Magnetite.	38.93	Regnault. 11.
" " "	"	.156. "	36.19	Kopp. 34.
Nickel oxide.	Ni O.	.16234.	12.13	Regnault. 11.
" "	"	.15885. Ignited.	11.87	Regnault. 11.
Cuprous "	$Cu_2 O$.	.1073. Cuprite.	15.34	Neumann. 4.
" "	"	.111. "	15.87	Kopp. 34.
Cupric "	Cu O.	.227.		Crawford. See 6.
" "	"	.137.	10.89	Neumann. 4.
" "	"	.146.	11.61	Avogadro. 6.
" "	"	.14201.	11.29	Regnault. 11.

See 6.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Uranous oxide.	U O.	.106.	14.40	Neumann. 4.
" "	"	.0764.	10.39	Hermann.Gm.H.I
Pitchblende.	$U_3 O_4$.	.1023.By mixture	43.38	Neumann. 4.
"	"	.106. By cooling.	44.94	
Zinc oxide.	Zn O.	.137.	11.12	Crawford. See 6.
" "	"	.132.	10.72	Neumann. 4.
" "	"	.1488.	12.08	Hermann.Gm.H.I
" "	"	.141.	11.45	Avogadro. 6.
" "	"	.12480.	10.13	Regnault. 11.
Magnesium "	Mg O.	.276.	11.04	Neumann. 4.
" "	"	.1696.		Hermann.Gm.H.I
" "	"	.24344.	9.74	Regnault. 11.
Mercuric "	Hg O.	.0501.	10.82	Lavoisier & Laplace. See 6.
" "	"	.049.	10.58	Neumann. 4.
" "	"	.050.	10.80	Avogadro. 6.
" "	"	.05179.	11.19	Regnault. 11.
" "	"	.0530. Crystalline.	11.45	Kopp. 34.
Molybdenum trioxide.	$Mo O_3$.	.13240.	19.05	Regnault. 11.
" "	"	.1634. Too high?	23.51	Schafarik. Wien
" "	"	.1504.	21.64	Ak. 47. 246.
" "	"	.154. (?) Powder.	22.16	Kopp. 34.
Tungsten	$W O_3$.	.0722.	16.75	Hermann.Gm.H.I
" "	"	.07983.	18.52	Regnault. 11.
" "	"	.0894. (?) Powder.	20.74	Kopp. 34.
Aluminum oxide	$Al_2 O_3$.	.185.	19.01	Gadolin. See 6.
" "	"	.1963. Artificial.	20.18	Hermann.Gm.H.I
" "	"	.1942. Corundum.	19.96	Neumann. 4.
" "	"	.1972. Sapphire.	20.27	
" "	"	.200. Precipitated.	20.56	Avogadro. 6.
" "	"	.19762.Corundum	20.31	Regnault. 11.
" "	"	.21732. Sapphire.	22.34	
Cerium "	$Ce_2 O_3$.	.0984.	22.83	Hermann.Gm.H.I
Yttrium "	Y O.	.1347.	10.20	" " "
Glucinum "	Gl O.	.2637.		" " "
Boron trioxide.	$B_2 O_3$.	.23743.	16.62	Regnault. 11.
" "	"	.2341. Fused.	16.39	Neumann. 33.
Vanadium "	$V_2 O_3$.	.1936.	29.23	Schafarik. Wien Ak. 47. 246.
" "	"	.1918.	28.96	
" "	"	.2049.	30.94	
" "	"	.2002.	30.23	
Arsenic "	$As_2 O_3$.	.1319.	26.12	Hermann.Gm.H.I
" "	"	.141.	27.91	Avogadro. 6.
" "	"	.12786.	25.32	Regnault. 11.
" "	"	.1309. White.	25.92	Delarive & Marcet. 10.
" "	"	.1320. Vitreous.	26.13	

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Arsenic trioxide.	$As_2 O_3$.	.1638. } Too high.		Schafarik. Wien Ak. 47. 246.
" "	"	.1570. }		
Antimony "	$Sb_2 O_3$.	.130.		Neumann. 4.
" "	"	.09009.	26.31	Regnault. 11.
" "	"	.0926.	27.04	Neumann. 33.
" tetroxide.	$Sb_2 O_4$.	.09535.	29.37	Regnault. 11.
Bismuth trioxide	$Bi_2 O_3$.	.06053.	28.33	Regnault. 11.
Silicon dioxide.	$Si O_2$.	.195. Agate.	11.70	Crawford. See 6.
" "	"	.1883. } Quartz cryst.	11.30	Neumann. 4.
" "	"	.1894. }	11.36	
" "	"	.1719. Quartz.	10.31	Hermann.Gm.H.I
" "	"	.179. "	10.74	Avogadro. 6.
	"	.19132.	11.48	Regnault. 11.
" "	"	.186. Quartz.	11.16	Kopp. 34.
Titanium "	"	.1724. Rutile.	14.14	Neumann. 4.
" "	"	.1630. "	13.36	Hermann.Gm.H.I
" "	"	.17032. " }	13.98	Regnault. 11.
" "	"	.17164. Artificial. }	14.07	
" "	"	.157. Rutile. }	12.87	Kopp. 34.
" "	"	.161. Brookite. }	13.20	
" "	"	.1785. } Artificial	14.64	Schüller & v. Wartha. 46.
" "	"	.1779. }	14.59	
" "	"	.1737. Rutile.	14.24	
Tin monoxide.	Sn O.	.096.	12.86	Crawford. See 6.
" "	"	.094.	12.59	Avogadro. 6.
" dioxide.	$Sn O_2$.	.096.	14.40	Crawford. See 6.
" "	"	.0990.	14.85	Crawford.See Gilb. Ann. 5. 43.
" "	"	.0895. } Tinstone. By two methods.	13.42	Neumann. 4.
" "	"	.0965. }	14.47	
" "	"	.0931. }	13.96	
" "	"	.0900. Tinstone.	13.50	Hermann.Gm.H.I
" "	"	.111.	16.65	Avogadro. 6.
" "	"	.09326.	13.99	Regnault. 13.
" "	"	.0894. Tinstone.	13.40	Kopp. 34.
Chromite.	$Fe O Cr_2 O_3$.	.159.	35.77	Kopp. 34.
Spinel.	$Mg O Al_2 O_3$.	.194.	27.70	Kopp. 34.
Iserine.	———	.1762.		Neumann. 4.
"	———	.177.		Kopp. 34.

IV. Inorganic Sulphides, Arsenides, and Nitrides.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Silver sulphide.	Ag_2 S.	.07460.	18.50	Regnault. 11.
Selenium "	Se S.	.1274.	14.21	Ditte. A. C. P. 163. 187.
Lead "	Pb S.	.044. By mixture.	10.52	Neumann. 4.
" "	"	.053. By cooling.	12.66	Neumann. 4.
" "	"	.0527.	13.79	Hermann.Gm.H.I
" "	"	.046.	10.99	Avogadro. 6.
" "	"	.05086.	12.16	Regnault. 11.
" "	"	.0490. Galena.	11.71	Kopp. 34.
Iron monosulphide.	Fe S.	.1396, 5°–15.°	12.28	Delarive & Marcet. 10.
" "	"	.13570.	11.94	Regnault. 11.
Iron disulphide.	Fe S_2.	.1275. Pyrite.	15.30	Neumann. 4.
" "	"	.1310. Pyrite.	15.72	Neumann. 4.
" "	"	.1323. Pyrite.	15.87	Neumann. 4.
" "	"	.1332. Marcasite.	15.99	Neumann. 4.
" "	"	.1282. Marcasite.	15.38	Neumann. 4.
" "	"	.135.	16.20	Avogadro. 6.
" "	"	.13009.	15.71	Regnault. 11.
" "	"	.126. Pyrite.	15.12	Kopp. 34.
Pyrrhotite.	Fe_7 S_8.	.1533.	99.34	Neumann. 4.
"	"	.16023.	103.83	Regnault. 11.
Nickel sulphide.	Ni S.	.12813.	11.62	" "
Cobalt "	Co S.	.12512.	11.35	" "
Cuprous "	Cu_2 S.	.12118.	19.27	" "
" "	"	.120. Cuprite.	19.08	Kopp. 34.
Molybdenite.	Mo S_2.	.1067. By mixture.	17.06	Neumann. 4.
"	"	.102. By cooling.	16.31	Neumann. 4.
"	"	.1097, 5°–15.°	17.54	Delarive & Marcet. 10.
"	"	.12334.	19.72	Regnault. 11.
Zinc sulphide.	Zn S.	.1145. Blende.	11.13	Neumann. 4.
" "	"	.113. By mixture.	10.98	Neumann. 4.
" "	"	.112. By cooling.	10.89	Neumann. 4.
" "	"	.12303.	11.96	Regnault. 11.
" "	"	.120. Blende.	11.66	Kopp. 34.
Mercuric "	Hg S.	.0520. Cinnabar.	12.06	Neumann. 4.
" "	"	.0528.	12.25	Hermann.Gm.H.I
" "	"	.048.	11.14	Avogadro. 6.
" "	"	.0597, 5°–15.°	13.85	Delarive & Marcet. 10.
" "	"	.05117.	11.87	Regnault. 11.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Mercuric sulphide.	Hg S.	.0517. Cinnabar.	11.99	Kopp. 34.
Arsenic disulphide.	$As_2 S_2$.	.1111. By mixture.	23.78	Neumann. 4.
" "	"	.130. By cooling.	27.82	
" trisulphide.	$As_2 S_3$.	.1132. Orpiment.	27.85	Neumann. 4.
" "	"	.1132.	27.85	Hermann.Gm.H.I
" "	"	.105.	25.73	Avogadro. 6.
Antimony "	$Sb_2 S_3$.	.0907. Stibnite.	30.83	Neumann. 4.
" "	"	.0877.	29.82	
" "	"	.083. By mixture	28.22	
" "	"	.092. By cooling.	31.28	
" "	"	.0995.	33.83	Hermann.Gm.H.I
" "	"	.1286, 5°–15.°	43.72	Delarive & Marcet. 10.
" "	"	.08403.	28.57	Regnault. 11.
Bismuth "	$Bi_2 S_3$.	.06002.	30.97	Regnault. 11.
Carbon disulphide.	C S_2.	.1969.		Hermann.Gm.H.I
" "	"	.329.		Delarive & Marcet. 10.
" "	"	.2179, 5°–10°	16.56	Regnault. 13.
" "	"	.2183, 10°-15°.	16.59	
" "	"	.2206, 15°-20°.	16.76	
" "	"	.23878, 30°.	18.15	Hirn. J. 20. 56.
" "	"	.242594, 40°.	18.44	
" "	"	.246143, 50°.	18.71	
" "	"	.248967, 60°.	18.92	
" "	"	.252141, 70°.	19.16	
" "	"	.255309, 80°.	19.40	
" "	"	.258496, 90°.	19.65	
" "	"	.262172, 100°.	19.92	
" "	"	.264901, 110°.	20.13	
" "	"	.268137, 120°.	20.38	
" "	"	.271404, 130°.	20.63	
" "	"	.276782, 140°.	21.04	
" "	"	.282198, 150°.	21.45	
" "	"	.288195, 160°.	21.90	
" "	"	.2575, 4°.47-5°.88	19.57	Winkelmann. 44.
" "	"	.2603, 5°.89-6°.27	19.78	
" "	"	.2567, 4°.57-6°.01	19.51	
" "	"	.2596, 5°.27-6°.59	19.73	
" "	"	.2595, 16°.08-17°.50	19.72	
" "	"	.2618, 17°.40-18°.62	19.89	
" "	"	.2607, 17°.42-18°.55	19.81	

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Tin monosulphide.	Sn S.	.08365.	12.55	Regnault. 11.
" disulphide.	Sn S_2.	.11932.	20.73	Regnault. 11.
Chalcopyrite.	Cu S. Fe S. Fe S_2.	.1289.	39.12	Neumann. 4.
"	"	.131.	39.76	Kopp. 34.
Mispickel.	Fe S_2. Fe As_2.	.1012.	32.99	Neumann. 4.
Cobaltite.	Co S_2. Co As_2.	.1070.	35.46	Neumann. 4.
Smaltite.	(Co Ni Fe) As_2.	.0920.		Neumann. 4.
Titanium nitride	Ti N_2.	.2267, 100°–0°.	17.68	Schüller & v. Wartha. 46.

V. Inorganic Hydrates.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Iodic acid.	H I O_3.	.1625.	28.60	Ditte. A. C. Phys. (4). 21. 63.
Potassium hydrate.	K H O.	.358.	20.05	Avogadro. 6.
Sulphuric acid.	H_2. SO_4.	.3500.	34.30	Dalton. Gm. H. I.
" "	"	.349.	34.20	Delarive & Marcet. 10.
" "	"	.343, 21°–46°.	33.61	Kopp. 16.
" "	"	.3315, 17°–22°.	32.49	Marignac. A. C. Phys. (4). 22. 385.
" "	"	.3363, 20°–56°.	32.96	
" "	"	.3413, 13°–77°.	33.45	Pfaundler. A.S.P. N. (2). 30. 352.
" "	"	.3542, 16°–98°.	34.71	
" "	"	.3740, 15°–137°.	36.65	
" "	"	.355, 22°–80°.	34.79	Pfaundler. C.S.J. (2). 9. 195.
" "	"	.356, 22°–90°.	34.89	
" "	"	.358, 22°–100°.	35.08	
" "	"	.359, 22°–110°.	35.18	
" "	"	.360, 22°–120°.	35.28	
" "	"	.362, 22°–130°.	35.47	
" "	"	.364, 22°–140°.	35.67	
" "	"	.365, 22°–150°.	35.77	
" "	"	.367, 22°–160°.	35.97	
" "	"	.370, 22°–170°.	36.26	
	H_2 SO_4. H_2 O.	.4411, 20°–56.°	51.17	Marignac. A. C. Phys. (4.) 22. 385.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Sulphuric acid.	H_2SO_4. H_2O.	.4478, 14°–75.°	51.94	Pfaundler. A. S. P. N. (2). 30. 352.
" "	"	.4527, 15°–28.°	52.51	
" "	"	.444, 22°–70.°	51.50	Pfaundler. C. S. J. (2). 9. 195.
" "	"	.447, 22°–80.°	51.85	
" "	"	.450, 22°–90.°	52.20	
" "	"	.454, 22°–100.°	52.66	
" "	"	.458, 22°–110.°	53.12	
" "	"	.461, 22°–120.°	53.47	
" "	"	.465, 22°–130.°	53.94	
" "	"	.469, 22°–140.°	54.40	
" "	"	.472, 22°–150.°	54.75	
" "	"	.475, 22°–160.°	55.10	
" "	"	.479, 22°–170.°	55.56	
" "	"	.482, 22°–180.°	55.91	
" "	H_2SO_4. 2 H_2O.	.4703, 14°–70.°	63.02	Pfaundler. A. S. P. N. (2). 30. 352.
" "	"	.4703, 16°–98.°	63.02	
" "	"	.442, 22°–60.°	59.22	Pfaundler. C. S. J. (2). 9. 195.
" "	"	.446, 22°–70.°	59.76	
" "	"	.450, 22°–80.°	60.30	
" "	"	.455, 22°–90.°	60.97	
" "	"	.459, 22°–100.°	61.50	
" "	"	.462, 22°–110.°	61.90	
" "	"	.466, 22°–120.°	62.44	
" "	"	.470, 22°–130.°	62.98	
" "	"	.474, 22°–140.°	63.52	
" "	"	.478, 22°–150.°	64.06	
" "	"	.482, 22°–160.°	64.60	
" "	H_2SO_4. 5 H_2O.	.5764, 15°–19.°	108.36	Marignac. A. C. Phys. (4). 22. 385.
" "	"	.5833, 20°–56.°	109.66	
Calcium hydrate	CaH_2O_2.	.4000.		Dalton. Gm. H. I.
" "	"	.300.	22.20	Avogadro. 6.
Magnesium "	MgH_2O_2.	.312. Brucite.	18.10	Kopp. 34.
Manganic "	Mn_2O_3. H_2O.	.176. Manganite.	30.98	Kopp. 34.
Ferric "	$(Fe_2O_3)_2$. 3 H_2O.	.188.	70.31	Avogadro. 6.
Aluminum "	Al_2O_3. 3 H_2O.	.420.	65.86	Avogadro. 6.
Nitric acid.	HNO_3.	.4450.	28.03	Hess. Gm. H. I.

VI. Chlorates and Perchlorates.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Potassium chlorate.	$K Cl O_3$.	.20956.	25.69	Regnault. 11.
" "	"	.194.	23.78	Kopp. 34.
Barium "	$Ba Cl_2 O_6 . H_2 O$.	.157.	50.55	Kopp. 34.
Potassium perchlorate.	$K Cl O_4$.	.190.	26.33	Kopp. 34.

VII. Hyposulphites.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Sodium hyposulphite.	$Na_2 S_2 O_3 . 5 H_2 O$.	.221.	54.81	Pape. 32.
Potassium "	$K_2 S_2 O_3$.	.197.	37.47	" "
Barium "	$Ba S_2 O_3 . H_2 O$.	.163.	43.52	" "
Lead "	$Pb S_2 O_3$.	.092.	29.35	" "

VIII. Sulphates.

1st. ANHYDROUS SULPHATES.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Sodium sulphate	$Na_2 S O_4$.	.263.	37.34	Avogadro. 6.
" "	"	.23115.	32.82	Regnault. 11.
" "	"	.2280.	32.38	Neumann. 33.
" "	"	.227.	32.23	Kopp. 34.
" "	"	.2293.	32.56	Schüller. 37.
Potassium "	$K_2 S O_4$.	.169.	29.44	Avogadro. 6.
" "	"	.19010.	33.11	Regnault. 11.
" "	"	.1860.	32.40	Neumann. 33.
" "	"	.196.	34.14	Kopp. 34.
" bisulphate.	$K H S O_4$.	.244.	33.21	Kopp. 34.
Ammonium sulphate.	$(N H_4)_2 . S O_4$.	.350.	46.20	Kopp. 34.
Calcium "	$Ca S O_4$.	.1854. By mixture.	25.21	Neumann. 4.
" "	"	.169. By cooling.	22.98	Neumann. 4.
" "	"	.190.	25.84	Avogadro. 6.
" "	"	.19656.	26.73	Regnault. 11.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Calcium sulphate.	$CaSO_4$.	.178. Anhydrite.	24.21	Kopp. 34.
Strontium "	$SrSO_4$.	.1356. Celestine.	24.88	Neumann. 4.
" "	"	.130. "	23.86	"
" "	"	.14279.	26.20	Regnault. 11.
" "	"	.135. Celestine.	24.77	Kopp. 34.
Barium "	$BaSO_4$.	.1088. Barite.	25.35	Neumann. 4.
" "	"	.1071. "	24.95	"
" "	"	.1072. "	24.98	"
" "	"	.1060. "	24.70	"
" "	"	.11285.	26.29	Regnault. 11.
" "	"	.108. Barite.	25.16	Kopp. 34.
Lead "	$PbSO_4$.	.0848. Anglesite.	25.69	Neumann. 4.
" "	"	.08723.	26.43	Regnault. 11.
" "	"	.0827.	25.06	Kopp. 34.
Manganous "	$MnSO_4$.	.182.	27.48	Pape. 29.
Ferrous "	$FeSO_4$.	.145.	22.04	Avogadro. 6.
Nickelous "	$NiSO_4$.	.216.	33.42	Pape. 29.
Copper "	$CuSO_4$.	.180.	28.71	Avogadro. 6.
" "	"	.184.	29.35	Pape. 29.
Zinc "	$ZnSO_4$.	.213.	34.34	Avogadro. 6.
" "	"	.174.	28.05	Pape. 29.
Magnesium "	$MgSO_4$.	.1011.(Too low.Ed.)		Rudberg. P. A. 35. 474.
" "	"	.22159.	26.59	Regnault. 11.
" "	"	.225.	27.00	Pape. 29.
" "	"	.2165.	25.98	Neumann. 33.

2d. HYDRATED SULPHATES.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Calcium sulphate.	$CaSO_4.2H_2O$.	.302. Gypsum.	51.94	Avogadro. 6.
" "	"	.2728. "	46.92	Neumann. 33.
" "	"	.259. "	44.54	Kopp. 34.
Manganous "	$MnSO_4.5H_2O$.	.338.	81.46	Pape. 29.
" "	"	.323.	77.84	Kopp. 34.
Ferrous "	$FeSO_4.7H_2O$.	.357.	99.25	Pape. 29.
" "	"	.346.	96.19	Kopp. 34.
Nickelous "	$NiSO_4.H_2O$.	.237.	40.93	Pape. 29.
" "	$NiSO_4.6H_2O$.	.313.	82.23	Kopp. 34.
" "	$NiSO_4.7H_2O$.	.341.	95.72	Pape. 29.
Cobaltous "	$CoSO_4.7H_2O$.	.343.	96.28	Kopp. 34.
Copper "	$CuSO_4.H_2O$.	.202.	35.85	Pape. 29.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Copper sulphate.	$Cu\,S\,O_4.\,2H_2\,O.$	.212.	41.46	Pape. 29.
« «	$Cu\,S\,O_4.\,3H_2\,O.$	.247.	52.73	« «
« «	$Cu\,S\,O_4.\,5H_2\,O.$	.316.	78.84	« «
« «	«	.285.	71.11	Kopp. 34.
Zinc «	$Zn\,S\,O_4.\,H_2\,O.$	.202.	36.20	Pape. 29.
« «	$Zn\,S\,O_4.\,2H_2\,O.$	.224.	44.17	« «
« «	$Zn\,S\,O_4.\,7H_2\,O.$	.328.	94.20	« «
« «	«	.347.	99.66	Kopp. 34.
Magnesium «	$Mg\,S\,O_4.\,H_2\,O.$	.265.	36.57	Pape. 29.
«	$Mg\,S\,O_4.\,7H_2\,O.$	.2906.		Rudberg. P. A. 35. 474.
« «	«	.407.	100.12	Pape. 29.
« «	«	.362	89.05	Kopp. 34.
Magnesium potassium sulphate.	$MgK_2(SO_4)_2.6H_2O.$	.264.	106.18	Kopp. 34.
Nickel « «	$NiK_2(SO_4)_2.6H_2O.$	.245.	107.04	« «
Zinc « «	$ZnK_2(SO_4)_2.6H_2O.$	.270.	119.72	« «
Potash alum.	$AlK(SO_4)_2.12H_2O.$	.371.	176.04	« «
Chrome «	$CrK(SO_4)_2.12H_2O.$	.324.	161.87	« «

IX. Chromates, Permanganates, Molybdates, and Tungstates.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Potassium chromate.	$K_2\,Cr\,O_4.$	.18505.	36.03	Regnault. 11.
« «	«	.1840.	35.82	Neumann. 33.
« «	«	.189.	36.80	Kopp. 34.
Potassium dichromate.	$K_2\,Cr_2\,O_7.$	.18937.	55.90	Regnault. 11.
« «	«	.1857.	36.25	Neumann. 33.
« «	«	.186.	44.91	Kopp. 34.
Lead chromate.	$Pb\,Cr\,O_4.$	.0900.	29.11	« «
Potassium permanganate.	$K\,Mn\,O_4.$	.179.	28.30	« «
Lead molybdate.	$Pb\,Mo\,O_4.$	.0827. Natural.	30.34	« «
Calcium tungstate.	$Ca\,W\,O_4.$	.0967 «	27.85	« «
Wolfram.	$(Fe\,Mn)\,WO_4.$	.09780.		Regnault. 11.
«	«	.0930.		Kopp. 34.

X. Borates.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Sodium borate.	$Na\ B\ O_2$.	.25709.	16.97	Regnault. 11.
" "	"	.2364.	15.60	Neumann. 33.
" diborate.	$Na_2\ B_4\ O_7$.	.23823.	48.12	Regnault. 11.
" "	"	.229.	46.26	Kopp. 34.
"	$Na_2\ B_4\ O_7 . 10\ H_2O$.	.385.	147.07	" "
Potassium borate	$K\ B\ O_2$.	.20478.	16.81	Regnault. 11.
" diborate	$K_2\ B_4\ O_7$.	.21975.	51.47	" "
Lead borate.	$Pb\ B_2\ O_4$.	.09046.	26.50	" "
" diborate.	$Pb\ B_4\ O_7$.	.11409.	41.41	" "

XI. Nitrates.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Sodium nitrate.	$Na\ N\ O_3$.	.240.	20.40	Avogadro. 6.
" "	"	.27821.	23.65	Regnault. 11.
" "	"	.2747.	23.35	Neumann. 33.
" "	"	.256. Fused.	21.76	Kopp. 34.
" "	"	.257. Crystals.	21.84	Kopp. 34.
" "	"	.2650.	21.52	Schüller. 37.
" "	"	.413,330°-430° L.	35.10	Person. 15.
" "	"	.3975,320°-430°"	33.79	Person. P.A.74.509
Potassium nitrate.	$K\ N\ O_3$.	.269.	27.19	Avogadro. 6.
" "	"	.23875.	24.14	Regnault. 11.
" "	"	.2343.	23.69	Neumann. 33.
" "	"	.256. Fused.	25.88	Kopp. 34.
" "	"	.257. Crystals.	25.98	Kopp. 34.
" "	"	.344,350°-435° L.	34.78	Person. 15.
" "	"	.33186,350°435°"	33.55	Person. P.A.74.509
Sodium potassium nitrate.	$K\ NO_3 . Na\ NO_3$.	.235.	43.73	Kopp. 34.
Ammonium nitrate.	$N\ H_4 . N\ O_3$.	.455.	36.40	Kopp. 34.
Silver nitrate.	$Ag\ N\ O_3$.	.14352.	24.40	Regnault. 11.
" "	"	.1395.	23.71	Neumann. 33.
Strontium "	$Sr\ N_2\ O_6$.	.1683.	35.59	Hermann. Gm. H. I
" "	"	.181.	38.28	Kopp. 34.
Barium "	$Ba\ N_2\ O_6$.	.1334.	34.82	Hermann. Gm. H. I
" "	"	.15228.	39.75	Regnault. 11.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Barium nitrate.	$Ba\ N_2\ O_6$	.1492.	38.94	Neumann. 33.
" "	"	.145.	37.84	Kopp. 34.
Lead "	$Pb\ N_2\ O_6$.	.1173.	38.83	Neumann. 33.
" "	"	.110.	36.41	Kopp. 34.

XII. Phosphates, Arsenates, and Niobates.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Sodium metaphosphate.	$Na\ P\ O_3$.	.217.	22.13	Kopp. 34.
Sodium pyrophosphate.	$Na_4\ P_2\ O_7$.	.22833.	60.74	Regnault. 11.
Sodium phosphate.	$Na_2H\ PO_4\ 12\ H_2O$.	.454,-20 to +2°	167.07	Person. 15.
" "	"	.758,44°—79°.	278.94	
Potassium pyrophosphate.	$K_4\ P_2\ O_7$.	.19102.	63.11	Regnault. 11.
Potassium phosphate.	$K\ H_2\ P\ O_4$.	.280.	38.11	Kopp. 34.
Silver phosphate.	$Ag_3\ P\ O_4$.	.0896.	37.54	Kopp. 34.
Calcium metaphosphate.	$Ca\ P_2\ O_6$.	.19923.	39.45	Regnault.. 11.
Apatite.	$3\ Ca_3\ P_2\ O_8\ Ca\ Cl_2$.	.1787.	186.03	Hermann.Gm.H.I
Lead pyrophosphate.	$Pb_2\ P_2\ O_7$.	.08208.	45.72	Regnault. 11.
Lead phosphate.	$Pb_3\ P_2\ O_8$.	.07982.	64.73	Regnault. 11.
Potassium metarsenate.	$K\ As\ O_3$.	.15631.	25.34	Regnault. 11.
" arsenate.	$K\ H_2\ As\ O_4$.	.175.	31.52	Kopp. 34.
Lead "	$Pb_3\ As_2\ O_8$.	.07280.	65.45	Regnault. 11.
Samarskite.		.10066, before ign.		H. Rose. P. A.
"		.096, after ignition.		103. 323.

XIII. Carbonates.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Sodium carbonate.	$Na_2 C O_3$.	.306.	32.44	Avogadro. 6.
" "	"	.27275.	28.91	Regnault. 11.
" "	"	.246.	26.08	Kopp. 34.
Potassium "	$K_2 C O_3$.	.237.	32.75	Avogadro. 6.
" "	"	.21623.	29.88	Regnault. 11.
" "	"	.2046.	28.28	Neumann. 33.
" "	"	.206.	28.47	Kopp. 34.
Rubidium "	$Rb_2 C O_3$.	.123.	28.39	Kopp. 34.
Calcium "	$Ca C O_3$.	.256.	25.60	Crawford. See 6.
" "	"	.207.	20.70	Gadolin. See 6.
" "	"	.2700.	27.00	Dalton. Gm. H. I.
" "	"	.2015.	20.15	Neumann. 4.
" "	"	.2091. Calcite. By mixture.	20.91	Neumann. 4.
" "	"	.2096. Calcite. By mixture.	20.96	Neumann. 4.
" "	"	.2046. Calcite. By mixture.	20.46	Neumann. 4.
" "	"	.195. Calcite. By cooling.	19.50	Neumann. 4.
" "	"	.1966. Arragonite.	19.66	Neumann. 4.
" "	"	.2018. Arragonite. By mixture.	20.18	Neumann. 4.
" "	"	.203. Marble.	20.30	Avogadro. 6.
" "	"	.1945. Calcite.	19.45	Hermann.Gm.H.I
" "	"	.20858. Calcite.	20.86	Regnault. 11.
" "	"	.20850. Arragonite.	20.85	Regnault. 11.
" "	"	.21585. Marble. Two kinds.	21.58	Regnault. 11.
" "	"	.20989. Marble. Two kinds.	20.99	Regnault. 11.
" "	"	.21485. Chalk.	21.48	Regnault. 11.
" "	"	.2038. Extremes of 19 determinations.	20.38	Regnault. 30.
" "	"	.2087. Extremes of 19 determinations.	20.87	Regnault. 30.
" "	"	.206. Calcite.	20.60	Kopp. 34.
" "	"	.203. Arragonite.	20.30	Kopp. 34.
Strontium "	$Sr C O_3$.	.1445.	21.31	Neumann. 4.
" "	"	.14483.	21.36	Regnault. 11.
Barium "	$Ba C O_3$.	.1078. Witherite.	21.24	Neumann. 4.
" "	"	.11038.	21.74	Regnault. 11.
Lead "	$Pb C O_3$.	.0814. Cerussite.	21.73	Neumann. 4.
" "	"	.0818. "	21.84	Hermann.Gm.H.I
" "	"	.08596. Impure.	22.95	Regnault. 11.
" "	"	.0791. Cerussite.	21.12	Kopp. 34.
Ferrous "	$Fe C O_3$.	.1820. By mixture.	21.11	Neumann. 4.
" "	"	.183. By cooling.	21.23	Neumann. 4.
" "	"	.19345.	22.44	Regnault. 11.
" "	"	.166. Very impure.		Kopp. 34.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Zinc carbonate.	$Zn\ C\ O_3$.	.1712. By mixture.	21.43	Neumann. 4.
"	"	.161. By cooling.	20.16	
Dolomite.	$(Mg\ Ca)\ C\ O_3$.	.2179.		Neumann. 4.
"	"	.2137.		
"	"	.2270. Bitter spar.		
"	"	.2168. Gurhofian.		
"	"	.21743. Very impure		Regnault. 11.
"	"	.206. Bitter spar.		Kopp. 34.
Ankerite.	$(Mg\ Ca\ Fe)\ C\ O_3$.	.1963.		Neumann. 4.

XIV. Silicates.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Glass.		.1900. Flint glass.		Dalton. Gm. H I.
"		.1770, 0°–100°.		Dulong & Petit. 1
"		.1900, 0°–300°.		
"		.19768.		Regnault. 7.
" Glass tears.		.1923. Hard.		Regnault. 13.
" " "		.1937. Annealed.		
Zircon.	$Zr\ O_2.\ Si\ O_2$.	.14588.	26.50	Regnault. 11.
"	"	.132	23.97	Kopp. 34.
Chrysolite.	$(MgO.FeO)_3.\ Si\ O_2$.	.2056.		Neumann. 4.
"	"	.189.		Kopp. 34.
Pyrope.		.1949.		Neumann. 33.
Topaz.		.2017.		Neumann. 4.
Dioptase.	$Cu\ Si\ O_3.\ H_2\ O$.	.182.	28.66	Kopp. 34.
Wollastonite.	$Ca\ Si\ O_3$.	.178.	20.65	Kopp. 34.
Albite.		.1961.		Neumann. 4.
"		.190.		Kopp. 34.
Orthoclase (Felspar).		.1911.		Neumann. 4.
" "		.1861. Adularia.		
" "		.183.		Kopp. 34.
Labradorite.		.1926.		Neumann. 4.
Hornblende.		.1976. From two		Neumann. 4.
"		.1958. localities.		
Tremolite.		.2070.		Neumann. 4.
Actinolite.		.2046.		" "
Augite.		.1938.		" "
Diopside.	$Ca\ Si\ O_3.\ Mg\ Si\ O_3$.	.1906.	41.17	" "
"	"	.186.	40.17	Kopp. 34.
Zoisite.		.1940.		Neumann. 4.
Gadolinite.		.138. Before ignition		H.Rose.P.A. 103. p. 316 & 318.
"		.128. After "		

XV. Alloys.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Lead and mercury.	Hg Pb.	.03234.	13.16	Regnault. 11.
Lead and antimony.	Sb Pb.	.03883.	12.78	" "
Lead and bismuth.	Bi_3 Pb_4.	.0350. L. melted.	51.03	Person. P. A. 76. 426.
Lead and tin.	Sn Pb.	.04039.	13.13	Regnault. 11.
" " "	Sn_2 Pb.	.04461.	19.76	" "
Mercury " "	Sn Hg.	.04172.	13.27	" "
" " "	Sn_2 Hg.	.04563.	19.89	" "
Bismuth " "	Sn Bi.	.03987.	13.08	" "
" " "	Sn_2 Bi.	.04415.	19.69	" "
" " "	Sn_8 Bi_3.	.0452. L. melted.	71.14	Person. P. A. 76. 426.
" " "	"	.0456. L. melted.	71.77	Person. P. A. 76. 426.
Brass.		.09391.		Regnault. 7.
Cymbal metal.		.0858. Brittle.		Regnault. 13.
" "		.0862. Soft.		Regnault. 13.
German silver.		.0944.		Weber. P. A. 146. 257.
Lead, tin, bismuth.	Pb Sn_2 Bi.	.04012.	26.20	Regnault. 11.
" " "	Pb Sn_2 Bi_2.	.03785.	32.66	Regnault. 11.
" " "	Pb_2 Sn_4 Bi_2.	.046, 143°–330°.	60.10	Person. 15.
" " "	"	.0412. L. melted.	53.81	Person. P. A. 76. 426.
" " "	"	.0432. L. melted.	56.42	Person. P. A. 76. 426.
" " "	Pb_4 Sn_4 Bi_3.	.049, 12°–50°.	94.57	Person. 15.
" " "	"	.060, 14°–80°.	115.80	Person. 15.
" " "	"	.047, 107°–136°	90.71	Person. 15.
" " "	"	.036, 136°–300°	69.48	Person. 15.
" " "	"	.0385. L. melted.	74.30	Person. P. A. 76. 426.
" " "	"	.0392. L. melted.	75.66	Person. P. A. 76. 426.
Antimony, bismuth, tin.	Sb Bi Sn_2.	.04564.	25.92	Regnault. 11.
Antimony, bismuth, tin, zinc.	Sb Bi Sn_2 Zn_2.	.05479.	38.32	" "
Copper, tin, zinc.	83.5 per cent. Cu; 8.833 Sn; 7.51 Zn.	.0879. At first.		Mallet. P. M. (3). 23. 144.
" " "		0848. After long friction.		Mallet. P. M. (3). 23. 144.

XVI. Cyanides.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Mercuric cyanide.	$Hg\ Cy_2$.	.100.	25.00	Kopp. 34.
Potassium zinc cyanide.	$(K\ Cy)_2\ Zn\ Cy_2$.	.241.	59.62	" "
" ferrocyanide.	$K_4\ Cy_6\ Fe.\ 3H_2\ O$.	.280.	118.27	" "
" ferricyanide.	$K_3\ Cy_6\ Fe$.	.233.	76.73	" "

XVII. Hydrocarbons.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Benzol.	$C_6\ H_6$.	.475.	37.05	Delarive & Marcet.
"	"	.3999, 5°–10.°	31.19	[10.
"	"	.3865, 10°–15.°	30.15	Regnault. 13.
"	"	.3932, 15°–20.°	30.67	
"	"	.450, 19°–46.°	35.10	Kopp. 16.
"	"	.5250, 3°.32-4°.61	40.95	
"	"	.5257, 4°.08-5°.22	41.00	Winkelmann. 44.
"	"	.5272, 17.°65–18.°89.	41.12	
"	"	.5296, 17.°95–19.°06.	41.31	
Naphthaline.	$C_{10}\ H_8$.	.32075, 0.° S.	41.06	
"	"	.3249, 20°.60° S.	41.59	Alluard. A. C. Phys. (3). 57. 438.
"	"	.4176, 80°.130° L.	53.45	
Oil of citron.	$C_{10}\ H_{16}$.	.4879.	66.35	
" " "	"	.4489, 5°-10.°	61.05	Regnault. 13.
" " "	"	.4424, 10°-15°	60.17	
" " "	"	.4501, 15°-20°	61.21	
" " "	"	.50233.	68.32	Favre and Silbermann. C.R. 23. 411.
" " orange.	"	.4886.	66.45	Regnault 13.
" " juniper.	"	.4770.	64.87	" "
Camphilene.	"	.4518.	61.44	" "
Terebilene.	"	.4580.	62.28	" "
Terebene.	"	.4656.	63.32	
"	"	.4154, 5°-10.°	56.49	" "
"	"	.4156, 10°-15°	56.52	
"	"	.4267, 15°-20°	58.03	
"	"	.52409.	71.28	Favre and Silbermann. C.R. 23. 411.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Oil of turpentine.	C_{10} H_{16}.	.4880.	66.37	Kirwan. Gm. H. I.
" " "	"	.4620.	62.83	Despretz. "
" " "	"	.42593.	57.93	Regnault. 8. [10.
" " "	"	.488.	66.37	Delarive & Marcet.
" " "	"	.4672.	63.54	Regnault. 13.
" " "	"	.46727.	63.55	Favre and Silbermann. J. 6. 78.
" " "	"	.4517.	61.43	Schnidaritsch.
" " "	"	.4318.	58.72	Wien. Ak. 38. 39.
" " "	"	.440.	59.84	Pape. 29.
" " "	"	.4393, m. of 4.	59.74	Neumann. 33.
" " "	"	.4087, m. of 12.	55.58	
" " "	"	.46842116, 40.°	63.71	Hirn. J. 20. 56.
" " "	"	.52421905, 80.°	71.29	
" " "	"	.57117195, 120.°	77.68	
" " "	"	.61257810, 160.°	83.31	
" " "	"	.4321.	58.76	Pfaundler. A. C. Phys. (4). 22. 58.
Petrolene.		.4684.		Regnault. 13. [10.
"		.4321, 5°-10.°		
"		.4325, 10°-15°		
"		.4342, 15°-20°		
Naphtha.		.493.		Delarive & Marcet.
"		.431. 2 samples		Kopp. 34.
"		.419.		
Paraffin.		.683, m. of 3.		Bolley. J. F. P. 103. 481.

XVIII. Compounds Containing C, H, and O.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Methyl alcohol.	C H_4 O.	.5901, 5°–10°.	18.88	Regnault. 13.
" "	"	.5868, 10°–15°.	18.77	
" "	"	.6009, 15°–20°.	19.23	
" "	"	.613, m of 2.	19.61	Andrews. C. S. J. 1. 27.
" "	"	.625, 23°–43°.	20.00	Kopp. 16.
" "	"	.67127.	21.48	Favre and Silbermann. C. R. 23. 411.
" "	"	.58325.	18.66	Dupré. P. A. 148. 236.
Ethyl "	C_2 H_6 O.	.6620.	30.45	Despretz. Gm. H. I.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Ethyl alcohol.	C_2 H_6 O.	.632.	29.07	Delarive and Marcet. 10.
" "	"	.5987, 5°–10°.	27.54	Regnault. 13.
" "	"	.6017, 10°–15°.	27.68	
" "	"	.6148, 15°–20°.	28.28	
" "	"	.617.	28.38	Andrews. C. S. J. 1. 27.
" "	"	.615, 23°–43°.	28.29	Kopp. 16.
" "	"	.6438.	29.01	Favre and Silbermann. J. 6. 78.
" "	"	.64490.	29.66	Favre and Silbermann. C. R. 23. 411.
" "	"	.6219.	28.61	Schnidaritsch. Fortsch. d. Phys. 15. 362.
" "	"	.5748.	26.44	Neumann. 33.
" "	"	.59167637, 40°	27.22	Hirn. J. 20. 56.
" "	"	.71125991, 80°	32.71	
" "	"	.85941613, 120°	39.53	
" "	"	.1.11389145, 160°	51.23	
" "	"	.580, 0°.	27.68	Jamin & Amaury. C. R. 70. 1237.
" "	"	.60430.	27.79	Dupré & Page. 38.
" "	"	.58081, 3°.82–4°.99.	26.72	Winkelmann. 44
" "	"	.57961, 4°.49–5°.67.	26.66	
" "	"	.60004, 16°.33–17°.36.	27.60	
" "	"	.60254, 16°.61–17°.73.	27.72	
" "	"	.62281, 27°.29–28°.32.	28.65	
" "	"	.62219, 27°.23–28°.03.	28.62	
" "	"	.62307, 27°.35–28°.18.	28.66	
Amyl "	C_5 H_{12} O.	.564, 26°–44°.	50.63	Kopp. 16.
" "	"	.58728.	51.68	Favre and Silbermann. C. R. 23. 411.
Cetyl "	C_{16} H_{34} O.	.51600.	124.87	Favre and Silbermann. C. R. 23. 411.
Ethyl oxide.	C_4 H_{10} O.	.5200.	38.48	Despretz. Gm. H. I.
" "	"	.550.	40.70	Delarive and Marcet. 10.
" "	"	.5207, 5°–10°.	38.53	Regnault. 13.
" "	"	.5158, 10°–15°.	38.17	
" "	"	.5157, 15°–20°.	38.16	
" "	"	.517.	38.26	Andrews. C. S. J. 1. 27.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Ethyl oxide.	C_4 H_{10} O.	.50342.	37.25	Favre and Silbermann. C. R. 23. 411.
" "	"	.61965067, 40°	45.85	Hirn. J. 20. 56.
" "	"	.66128878, 70°	48.93	
" "	"	.71586594, 100°	52.97	
" "	"	.79512984, 130°	58.83	
Amyl "	C_{10} H_{22} O.	.52117.	82.34	Favre and Silbermann. C. R. 23. 411.
Formic acid.	C H_2 O_2.	.536, 25°–45°.	24.66	Kopp. 16.
" "	"	.60401.	27.78	Favre and Silbermann. C. R. 23. 411.
Acetic "	C_2 H_4 O_2.	.4587, 5°–10°.	27.52	Regnault. 13.
" "	"	.4599, 10°–15°.	27.59	
" "	"	.4618, 15°–20°.	27.71	
" "	"	.509, 24°–45°.	30.54	Kopp. 16.
" "	"	.50822.	30.49	Favre and Silbermann. C. R. 23. 411.
Butyric acid.	C_4 H_8 O_2.	.503, 21°–45°.	44.26	Kopp. 16.
" "	"	.41420.	36.45	Favre and Silbermann. C. R. 23. 411.
Valeric "	C_5 H_{10} O_2.	.47857.	58.81	Favre and Silbermann. C. R. 23. 411.
Ethyl formate.	C_3 H_6 O_2.	.513, 20°–39°.	37.96	Kopp. 16.
" "	"	.485, m. of 3.	36.29	Andrews. C. S. J. 1. 27.
Methyl acetate.	C_3 H_6 O_2.	.507, 21°–41°.	37.52	Kopp. 16.
Ethyl "	C_4 H_8 O_2.	.496, 21°–45°.	43.65	" "
" "	"	.474, m. of 2.	41.71	Andrews. C. S. J. 1. 27.
" "	"	.48344.	42.54	Favre and Silbermann. J. 6. 78.
Methyl butyrate.	C_5 H_{10} O_2.	.487, 21°–45°.	49.67	Kopp. 16.
" "	"	.49176.	50.16	Favre and Silbermann. J. 6. 78.
Methyl valerate.	C_6 H_{12} O_2.	.491, 21°–45°.	56.96	Kopp. 16.
Ethyl oxalate.	C_6 H_{10} O_4.	.4629, 5°–10.°	67.58	Regnault. 13.
" "	"	.4521, 10°–15.°	66.01	
" "	"	.4554, 15°–20.°	66.49	
" "	"	.457.	66.72	Andrews. C. S. J. 1. 27.
Acetone.	C_3 H_6 O.	.530, 20°–41.°	30.74	Kopp. 16.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Succinic acid.	$C_4 H_6 O_4$.	.313.	36.93	Kopp. 34.
Tartaric "	$C_4 H_6 O_6$.	.288.	43.20	" "
Racemic "	$C_4 H_6 O_6 . H_2 O$.	.319.	53.59	" "
Cane sugar.	$C_{12} H_{22} O_{11}$.	.301. Crystallized.	102.94	" "
" "	"	.342. Amorphous.	116.96	" "
Mannite.	$C_6 H_{14} O_6$.	.324.	58.97	" "
Olive oil.		.504.		Delarive & Marcet. 10.
Beeswax.		.39,-20° to +2°.		Person. 15. [176.
"		.52, 6°–26.°		
"		.79, 26°–42.°		
"		.72, 42°–58.°		
"		.54, 66°–102.°		
Sperm oil.		.45838.		Joule. P. M. (3). 31.
Milk.		.847.		Fleischmann. C. S. J. (2). 13. 278.
Cream.		.780.		

XIX. Salts of Organic Acids.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Barium formate.	$Ba C_2 H_2 O_4$.	.143.	32.46	Kopp. 34.
Potassium quadroxalate.	$K H_3 C_4 O_8 . 2 H_2 O$.	.283.	71.91	" "
" oxalate. Neutral.	$K_2 C_2 O_4 . H_2 O$.	.236.	43.47	" "
" tartrate. Acid.	$K H . C_4 H_4 O_6$.	.257.	48.34	" "
Seignette salt.	$KNaC_4H_4O_6.4H_2O$.	.328.	108.27	" "
Calcium malate. Acid.	$Ca C_4 H_5 O_5 . 4H_2 O$.	.338.	82.81	" "

XX. Miscellaneous Organic Compounds.

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Nitrobenzol.	$C_6 H_5 N O_2$.	.3524, 5°–10.°	43.34	Regnault. 13.
"	"	.3478, 10°–15.°	42.78	
"	"	.3499, 15°–20.°	43.04	
Mercaptan.	$C_2 H_6 S$.	.4715, 5°–10.°	29.23	Regnault. 13.
"	"	.4653, 10°–15.°	28.85	
"	"	.4772, 15°–20.°	29.59	

Name.	Formula.	Specific Heat.	Molec Heat.	Authority.
Allyl sulphocyanide.	$C_4 H_5 N S$.	.432. 23°–48.°	42.77	Kopp. 16.
Ethyl bromide.	$C_2 H_5 Br$.	.2164, 5°–10.°	23.59	Regnault. 13.
« «	«	.2135, 10°–15.°	23.27	
« «	«	.2153, 15°–20.°	23.47	
« iodide.	$C_2 H_5 I$.	.1587, 5°–10.°	24.76	Regnault. 13.
« «	«	.1584, 10°–15.°	24.71	
« «	«	.1584, 15°–20.°	24.71	
« «	«	.1574, 5°–10.°	24.55	
« «	«	.1556, 10°–15.°	24.27	
« «	«	.1569, 15°–20.°	24.48	

XXI. Aqueous Solutions.*

Solution.	Specific Heat.	Authority.
Hydrogen chloride.		
H Cl + 6.25 aq.	.6687.	Marignac. 42.
« « 12.50 «	.7881.	
« « 25 «	.8787.	
« « 50 «	.9336.	
« « 100 «	.9650.	
« « 200 «	.9835.	
« « 10 «	.749.	Thomsen. P. A. 142. 337.
« « 20 «	.855.	
« « 50 «	.932.	
« « 100 «	.946.	
« « 200 «	.979.	
Sodium chloride.		
5 per cent solution.	.9306.	Schüller. 37.
10 « «	.8909.	
15 « «	.8606.	
20 « «	.8690.	
25 « «	.8079.	
30 « «	.7897.	
33.6 « «	.7752.	
35 « «	.7713.	

* For the specific heat of solutions of *mixed* salts, see Winkelmann, P. A. 149. 492.

Solution.	Specific Heat.	Authority.
Na Cl + 12.5 aq.	.8100.	Marignac. 42.
" " 25 "	.8760.	
" " 50 "	.9280.	
" "100 "	.9596.	
" "200 "	.9782.	
" " 10 "	.791.	Thomsen. P.A. 142. 337.
" " 29 "	.863.	
" " 30 "	.895.	
" " 50 "	.931.	
" "100 "	.962.	
" "200 "	.978.	
100 parts water to 29.215 salt.	.8018.	Andrews. P. M. (3). 36. 515.
" " " 14.607 "	.8671.	
3.09 per cent. solution.	.9638.	Winkelmann. P.A. 149. 1.
5.15 " "	.9449.	
11.05 " "	.8925.	
17.12 " "	.8526.	
26.03 " "	.8072.	
Potassium chloride.		
4 per cent. solution.	.9558.	Schüller. 37.
8 " "	.9140.	
12 " "	.8876.	
16 " "	.8503.	
20 " "	.8195.	
24 " "	.7935.	
28 " "	.7680.	
32 " "	.7486.	
K Cl + 15 aq.	.761.	Thomsen. P. A. 142. 337.
" " 30 "	.850.	
" " 50 "	.904.	
" "100 "	.948.	
" "200 "	.970.	
3.04 per cent. solution.	.9625.	Winkelmann. P. A. 149. 1.
4.22 " "	.9500.	
5.58 " "	.9341.	
8.77 " "	.9041.	
11.60 " "	.8773.	
15.60 " "	.8448.	
20.20 " "	.8078.	
25.20 " "	.7760.	
29.40 " "	.7529.	

Solution.	Specific Heat.	Authority.
Ammonium chloride.		
10 per cent. solution.	.9100.	Schüller. 37.
20 « «	.8403.	
30 « «	.7946.	
37 « «	.7644.	
NH_4 Cl + 7.5 aq.	.760.	Thomsen. P. A. 142. 337.
« « 10 «	.778.	
« « 25 «	.881.	
« « 50 «	.937.	
« « 100 «	.966.	
« « 200 «	.982.	
3.03 per cent. solution.	.9645.	Winkelmann. P. A. 149. 1.
5.71 « «	.9341.	
9.98 « «	.8997.	
14.99 « «	.8574.	
25.00 « «	.8003.	
Calcium chloride.		
Ca Cl_2 + 200 aq.	.957.	Thomsen. P. A. 142. 337.
Barium chloride.		
Ba Cl_2 + 200 aq.	.932.	Thomsen. P. A. 142. 337.
Potassium bromide.		
K Br + 200 aq.	.962.	Thomsen. P. A. 142. 337.
Ammonium bromide.		
NH_4 Br + 200 aq.	.968.	Thomsen. P. A. 142. 337.
Sodium iodide.		
10 per cent. solution.	.9135.	Schüller. 37.
20 « «	.8408.	
30 « «	.7811.	
40 « «	.7343.	
Na I + 200 aq.	.954.	Thomsen. P. A. 142. 337.
Potassium iodide.		
KI + 200 aq.	.950.	Thomsen. P. A. 142. 337.
Ammonium iodide.		
NH_4 I + 200 aq.	.963.	Thomsen. P. A. 142. 337.
Sodium hydrate.		
Na HO + 7.5 aq.	.847.	Thomsen. P. A. 142. 337.
« « 15 «	.878.	
« « 30 «	.919.	
« « 50 «	.942.	
« « 100 «	.968.	
« « 200 «	.983.	

Solution.	Specific Heat.	Authority.
Potassium hydrate.		
KHO + 30 aq.	.876.	Thomsen. P.A. 142. 337.
" " 50 "	.916.	
" "100 "	.954.	
" "200 "	.975.	
Ammonium hydrate.		
$NH_4.HO$ + 30 aq.	.997.	Thomsen. P. A. 142. 337.
" " 50 "	.999.	
" "100 "	.999.	
Sulphuric acid.*		
H_2SO_4 + 4 aq.	.545.	Thomsen. P.A. 142. 337.
" " 9 "	.700.	
" " " "	.701.	
" " 19 "	.821.	
" " 49 "	.918.	
" " " "	.919.	
" " 99 "	.956.	
" "199 "	.977.	
Nitric acid.		
HNO_3 + 10 aq.	.768.	Thomsen. P.A. 142. 337.
" " 20 "	.849.	
" " 50 "	.930.	
" "100 "	.963.	
" "200 "	.982.	
Sodium sulphate.		
10 per cent. solution.	.9253.	Schüller. 37.
15 " "	.8959.	
20 " "	.8704.	
25 " "	.8523.	
30 " "	.8320.	
40 " "	.8074.	
Na_2SO_4 + 50 aq.	.8890.	Marignac. 42.
" "100 "	.9345.	
" "200 "	.9625.	
" "400 "	.9815.	
Na_2SO_4 + 65 aq.	.892.	Thomsen. P.A. 142. 337.
" "100 "	.920.	
" "200 "	.955.	

* Compare in Table number V.

Solution.	Specific Heat.	Authority.
Sodium hydrogen sulphate.		
$Na\ H\ SO_4$ + 25 aq.	.8683.	Marignac. 42.
" " 50 "	.9146.	
" " 100 "	.9497.	
" " 200 "	.9719.	
Potassium sulphate.		
$K_2\ SO_4$ + 200 aq.	.940.	Thomsen. P. A. 142. 337.
Ammonium sulphate.		
$(NH_4)_2\ SO_4$ + 30 aq.	.820.	Thomsen. P.A. 142. 337.
" " 50 "	.871.	
" " 100 "	.924.	
" " 200 "	.959.	
Ferrous sulphate.		
$Fe\ SO_4$ + 200 aq.	.951.	Thomsen. P. A. 142. 337.
Copper sulphate.		
$Cu\ SO_4$ + 200 aq.	.953.	Thomsen. P. A. 142. 337.
Zinc sulphate.		
$Zn\ SO_4$ + 200 aq.	.947.	Thomsen. P. A. 142. 337.
Magnesium sulphate.		
$Mg\ SO_4$ + 20 aq.	.744—.745.	Thomsen. P.A. 142. 337.
" " 50 "	.855—.859.	
" " 100 "	.917.	
" " 200 "	.952.	
Sodium nitrate.		
10 per cent. solution.	.9320.	Schüller. 37.
20 " "	.8768.	
30 " "	.8341.	
40 " "	.7998.	
50 " "	.7673.	
100 parts water to 42.49 of salt.	.7838.	Andrews. P. M. (3). 36. 514.
" " " 21.245 "	.8585.	
" " " 10.622 "	.9131.	
$Na\ NO_3$ + 10 aq.	.769.	Thomsen. P.A. 142. 337.
" " 25 "	.863.	
" " 50 "	.918.	
" " 100 "	.950.	
" " 200 "	.975.	

At about 18°

Solution.	Specific Heat.	Authority.
3.03 per cent. solution.	.9707.	Winkelmann. P. A. 149. 1.
3.73 " "	.9658.	
4.81 " "	.9523.	
5.62 " "	.9442.	
8.40 " "	.9234.	
11.36 " "	.9025.	
16.64 " "	.8700.	
19.19 " "	.8559.	
25.03 " "	.8417.	
31.29 " "	.8153.	
40.06 " "	.7820.	
49.98 " "	.7576.	
57.97 " "	.7376.	
70.09 " "	.7121.	
Potassium nitrate.		
10 per cent. solution.	.9182.	Schüller. 37.
20 " "	.8589.	
30 " "	.8090.	
KNO_3 + 25 aq.	.832.	Thomsen. P.A. 142. 337.
" " 50 "	.901.	
" " 100 "	.942.	
" " 200 "	.966.	
100 parts water to 25.29 of salt.	.8135.	Andrews. P.M.(3).36.514
" " " 12.645 "	.8915.	
" " " 6.322 "	.9369.	
	At about 18°	
3.05 per cent. solution.	.9673.	Winkelmann. P.A.149.1
4.15 " "	.9575.	
5.62 " "	.9458.	
8.40 " "	.9206.	
11.11 " "	.8997.	
15.31 " "	.8721.	
19.80 " "	.8484.	
Ammonium nitrate.		
NH_4NO_3 + 5 aq.	.696—.699.	Thomsen. P.A. 142. 337.
" " 20 "	.859.	
" " 50 "	.929.	
" " 100 "	.962.	
3.04 per cent. solution.	.9654.	Winkelmann. P.A.149.1.
10.01 " "	.9208.	
20.00 " "	.8606.	
30.00 " "	.8774.	
40.00 " "	.7227.	
Barium nitrate.		
$Ba N_2O_6$ + 200 aq.	.933.	Thomsen. P. A. 142. 337.

Solution.	Specific Heat.	Authority.
Lead nitrate.		
$Pb\ N_2O_6$ + 200 aq.	.919.	Thomsen. P.A. 142. 337.
" " " "	.920.	
Sodium carbonate.		
$Na_2\ CO_3$ + 50 aq.	.896.	Thomsen. P.A. 142. 337.
" " 100 "	.933.	
" " 200 "	.958.	
Sodium acetate.		
$Na\ C_2\ H_3\ O_2$ + 20 aq.	.884.	Thomsen. P.A. 142. 337.
" " 50 "	.938.	
" " 100 "	.965.	
" " 200 "	.983.	
Cane sugar.		
$C_{12}\ H_{22}\ O_{11}$ + 25 aq.	.7558.	Marignac. 42.
" " 50 "	.8425.	
" " 100 "	.9091.	
" " 200 "	.9500.	
" " 400 "	.9742.	
Tartaric acid.		
$C_4\ H_6\ O_6$ + 10 aq.	.745.	Thomsen. P. A. 142. 337.
" " 25 "	.856.	
" " 50 "	.911.	
" " 100 "	.952.	
" " 200 "	.975.	

XXII. Solutions in Carbon Disulphide.

Solution.	Specific Heat.	Authority.
Bromine.		
Br + $C\ S_2$.	.174.	Marignac. 42.
Iodine.		
I + 10 $C\ S_2$.	.219.	Marignac. 42.
" " 20 "	.228.	
Sulphur.		
S + $C\ S_2$.	.229.	Marignac. 42.
" " 2 $C\ S_2$.	.232.	
" " 4 "	.232.	
" " 10 "	.235.	

Solution.	Specific Heat.	Authority.
Phosphorus.		
P + ¼ C S_2.	.219.	Marignac. 42.
" " ½ "	.222.	
" " 1 "	.225.	
" " 2 "	.229.	
" " 4 "	.2295.	

XXIII. Liquid Mixtures.

Mixture.	Specific Heat.	Authority.
Methyl alcohol and water.		
10 per cent. of C H_4 O.	.98582.	Dupré. P. A. 148. 236.
20 " " "	.95914.	
30 " " "	.92658.	
40 " " "	.89219.	
50 " " "	.84645.	
60 " " "	.80177.	
70 " " "	.75500.	
80 " " "	.69999.	
90 " " "	.64282.	
Ethyl alcohol and water.		
1 volume alcohol + 9 vol. aq.	.9897.	Schnidaritsch. Wien Ak. 38. 39.
2 " " " 8 " "	.9835.	
3 " " " 7 " "	.9732.	
4 " " " 6 " "	.9482.	
5 " " " 5 " "	.9230.	
6 " " " 4 " "	.8456.	
7 " " " 3 " "	.8198.	
8 " " " 2 " "	.7784.	
9 " " " 1 " "	.7178.	
8.4 per cent. of C_2 H_6 O.	1.060.	Jamin & Amaury. C. R. 70. 1237.
17 " " "	1.065.	
25 " " "	1.055.	
34 " " "	1.030.	
50 " " "	.940.	
67 " " "	.840.	
84 " " "	.720.	

0°.

Mixture.	Specific Heat.		Authority.
5 per cent. of alcohol.	1.01502.		Dupré and Page. 38.
10 " "	1.03576.		
20 " "	1.04362.		
30 " "	1.02602.		
36 " "	.99900.		
40 " "	.96805.		
45 " "	.94192.		
50 " "	.90633.		
60 " "	.84332.		
70 " "	.78445.		
80 " "	.71690.		
90 " "	.65764.		
14.90 " "	1.0391.	25°.	Schüller. See 39.
20.00 " "	1.0456.		
22.56 " "	1.0436.		
28.56 " "	1.0354.		
35.32 " "	1.0076.		
44.45 " "	.9610.		
49.46 " "	.9162.		
49.93 " "	.9096.		
54.09 " "	.8826.		
54.45 " "	.8793.		
58.17 " "	.8590.		
73.90 " "	.7771.		
83.00 " "	.7168.		
10 per cent. of alcohol.	1.0268.	0°.	Winkelmann. 44.
20 " "	1.0401.		
30 " "	1.0106.		
40 " "	.9726.		
50 " "	.9061.		
60 " "	.8446.		
70 " "	.7813.		
80 " "	.7116.		
90 " "	.6448.		
Alcohol and benzol.			
20.43 per cent. of alcohol.	.5022.		Schüller. See 39.
24.45 " "	.5112.		
32.54 " "	.5268.		
48.74 " "	.5465.		
57.85 " "	.5565.		
66.89 " "	.5668.		
80.15 " "	.5862.		

Mixture.	Specific Heat.		Authority.
10 per cent. of alcohol.	.5502.		
20 " "	.5572.		
30 " "	.5594.		
40 " "	.5630.	0°.	Winkelmann. 44.
60 " "	.5654.		
70 " "	.5643.		
80 " "	.5660.		
90 " "	.5700.		
Alcohol and carbon disulphide.			
16.04 per cent. of alcohol.	.3371.		
20.06 " " "	.3560.		
30.06 " " "	.3989.		
35.00 " " "	.4133.		
40.53 " " "	.4237.	25°.	Schüller. See 39.
48.64 " " "	.4471.		
59.30 " " "	.4808.		
70.90 " " "	.5138.		
20 " " "	.3474.		
30 " " "	.3662.		
40 " " "	.4058.		
50 " " "	.4340.		
60 " " "	.4558.	0°.	Winkelmann. 44.
70 " " "	.4833.		
80 " " "	.5164.		
90 " " "	.5460.		
Alcohol and chloroform.			
16.75 per cent. of alcohol.	.3348.		
28.77 " " "	.3999.		
33.92 " " "	.4130.		
39.78 " " "	.4315.		Schüller. See 39.
47.00 " " "	.4539.		
56.46 " " "	.4841.		
72.80 " " "	.5331.		
Benzol and carbon disulphide.			
10 per cent. of benzol.	.2858.		
20 " " "	.3098.		
30 " " "	.3347.		
50 " " "	.3871.		
60 " " "	.4146.	0°.	Winkelmann. 44.
70 " " "	.4424.		
80 " " "	.4702.		
90 " " "	.4973.		

ALPHABETICAL INDEX TO SUBSTANCES.

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