ПРИЛОЖЕНИЕ

Таблица №1.Скорость звука в воде [см/с]

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 7.3 | 10 | 20 | 30 | 40 | 50 | 60 | 80 | 90 | 96.5 |
| 0 | 1.4024 | 1.4466 | 1.4478 | 1.4832 | 1.5100 | 1.5296 | 1.5430 | 1.5511 | 1.5545 | 1.5516 | 1.5488 |
| 1 | 1.5964 | 1.6236 | 1.6294 | 1.6554 | 1.6776 | 1.6969 | 1.7126 | 1.7239 | 1.7284 | 1.7222 | 1.7166 |
| 2 | 1.7641 | 1.7890 | 1.7957 | 1.8151 | 1.8331 | 1.8521 | 1.8700 | 1.8823 | 1.8798 | 1.8717 | 1.8723 |
| 3 | 1.9217 | 1.9432 | 1.9483 | 1.9628 | 1.9780 | 1.9970 | 2.0163 | 2.0295 | 2.0237 | 2.9136 | 2.0157 |
| 4 | 2.0670 | 2.0861 | 2.0900 | 2.1001 | 2.1130 | 2.1319 | 2.1523 | 2.1666 | 2.1583 | 2.1459 | 2.1481 |
| 5 | 2.2013 | 2.2182 | 2.2210 | 3.3373 | 2.2382 | 2.25722 | 2.2789 | 2.2940 | 2.2824 | 2.2679 | 2.2711 |
| 6 | 2.3249 | 2.3403 | 2.3422 | 2.3454 | 2.3539 | 2.3716 | 2.3929 | 2.4081 | 2.3964 | 2.3818 | 2.3855 |
| 7 |  | 2.4477 | 2.4475 | 2.4474 | 2.4560 | 2.4757 | 2.4993 | 2.5156 | 2.5010 | 2.4852 | 2.4905 |
| 8 |  |  |  | 2.5444 | 2.5517 | 2.5714 | 2.5957 | 2.6125 | 2.5965 | 2.5796 | 2.5855 |
| 9 |  |  |  |  | 2.6471 | 2.6569 | 2.6818 | 2.6991 | 2.6817 | 2.6640 | 2.6704 |

Таблица №2.Изобарический коэффициент теплового расширения воды [град-1]

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 50 | 60 | 80 | 96.5 | 100 |
| 0 | -0.68 | 1.9450 | 4 | 4.8138 | 5.4850 | 6.4 | 6.7258 | 6.7450 |
| 1 | 2.065 | 3.068 | 4 | 4.439 | 4.86 | 5.65 | 6.2476 | 6.3681 |
| 2 | 3.2 | 3.562 | 4 | 4.2475 | 4.514 | 5.104 | 5.648 | 5.77 |
| 3 | 3.5 | 3.7238 | 4 | 4.1578 | 4.3288 | 4.71 | 5.062 | 5.1437 |
| 4 | 3.6 | 3.7963 | 4 | 4.1047 | 4.2113 | 4.43 | 4.616 | 4.6563 |
| 5 | 3.4 | 3.7481 | 4 | 4.0898 | 4.1556 | 4.215 | 4.1915 | 4.1781 |
| 6 | 2.8 | 3.5464 | 4 | 4.1170 | 4.1609 | 4.029 | 3.6998 | 3.6044 |
| 7 |  | 3.175 | 4 | 4.1875 | 4.225 | 3.85 | 3.089 | 2.875 |
| 8 |  | 2.9169 | 4 | 4.2294 | 4.2507 | 3.6688 | 2.562 | 2.2545 |
| 9 |  |  | 4 | 4.25 | 4.25 | 3.5 | 2.128 | 1.75 |

Таблица №3. Объем  моля воды [см3]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | 18.0224 | 18.0470 | 18.1563 | 18.3311 | 18.5520 | 18.7550 |
| 1 | 17.2455 | 17.3345 | 17.4576 | 17.6132 | 17.7995 | 17.9752 |
| 2 | 16.6751 | 16.7880 | 16.9153 | 17.0597 | 17.2243 | 17.3677 |
| 3 | 16.2325 | 16.3502 | 16.4767 | 16.6143 | 16.7650 | 16.9007 |
| 4 | 15.8678 | 15.9856 | 16.1107 | 16.2435 | 16.3889 | 16.5072 |
| 5 | 15.5636 | 15.6755 | 15.7977 | 15.9273 | 16.0614 | 16.1733 |
| 6 | 15.3087 | 15.4069 | 15.5243 | 15.6523 | 15.7818 | 15.8832 |
| 7 |  | 15.1705 | 15.2813 | 15.4090 | 15.5355 | 15.6256 |
| 8 |  | 14.9559 | 15.0618 | 15.1887 | 15.3115 | 15.3917 |
| 9 |  |  | 14.8611 | 14.9867 | 15.1058 | 15.1775 |

Таблица № 4 Величины [см3/кбар]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | 0.9173 | 0.8266 | 0.8041 | 0.8202 | 0.8565 | 0.8902 |
| 1 | 0.6527 | 0.6295 | 0.6091 | 0.6135 | 0.6376 | 0.6722 |
| 2 | 0.5073 | 0.4903 | 0.4840 | 0.4844 | 0.5046 | 0.5286 |
| 3 | 0.4093 | 0.4016 | 0.4050 | 0.3974 | 0.4127 | 0.4288 |
| 4 | 0.3407 | 0.3383 | 0.3369 | 0.3364 | 0.3473 | 0.3589 |
| 5 | 0.2894 | 0.2907 | 0.2914 | 0.2898 | 0.2986 | 0.3062 |
| 6 | 0.2487 | 0.2533 | 0.2569 | 0.2560 | 0.2615 | 0.2644 |
| 7 |  | 0.2244 | 0.2305 | 0.2302 | 0.2321 | 0.2302 |
| 8 |  | 0.2014 | 0.2096 | 0.2093 | 0.2082 | 0.2040 |
| 9 |  |  | 0.1930 | 0.1922 | 0.1889 | 0.1821 |

Таблица № 4. Величины [см3/кбар]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | 0.9173 | 0.8266 | 0.8041 | 0.8202 | 0.8565 | 0.8902 |
| 1 | 0.6527 | 0.6295 | 0.6091 | 0.6135 | 0.6376 | 0.6722 |
| 2 | 0.5073 | 0.4903 | 0.4840 | 0.4844 | 0.5046 | 0.5286 |
| 3 | 0.4093 | 0.4016 | 0.4050 | 0.3974 | 0.4127 | 0.4288 |
| 4 | 0.3407 | 0.3383 | 0.3369 | 0.3364 | 0.3473 | 0.3589 |
| 5 | 0.2894 | 0.2907 | 0.2914 | 0.2898 | 0.2986 | 0.3062 |
| 6 | 0.2487 | 0.2533 | 0.2569 | 0.2560 | 0.2615 | 0.2644 |
| 7 |  | 0.2244 | 0.2305 | 0.2302 | 0.2321 | 0.2302 |
| 8 |  | 0.2014 | 0.2096 | 0.2093 | 0.2082 | 0.2040 |
| 9 |  |  | 0.1930 | 0.1922 | 0.1889 | 0.1821 |

Таблица №5.Внутренняя энергия моля воды [кдж]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | -1.8022 | 1.5097 | 3.0157 | 4.5217 | 6.0332 | 7.2795 |
| 1 | 6.9024 | 1.4332. | 2.8263 | 4.2473 | 5.6832 | 6.8766 |
| 2 | -0.0412 | 1.3259 | 2.6915 | 4.0589 | 5.4370 | 6.5476 |
| 3 | -0.0827 | 1.2574 | 2.5914 | 3.9231 | 5.2572 | 6.3550 |
| 4 | -0.1120 | 1.2060 | 2.5150 | 3.8190 | 5.1214 | 6.1942 |
| 5 | -0.1270 | 1.1696 | 2.4557 | 3.7371 | 5.0209 | 6.0779 |
| 6 | -0.1198 | 1.1501 | 2.4096 | 3.6696 | 4.9416 | 6.0027 |
| 7 |  | 1.1520 | 2.3745 | 3.6106 | 4.8845 | 5.9723 |
| 8 |  | 1.1785 | 2.3490 | 3.5589 | 4.8468 | 5.9866 |
| 9 |  |  | 2.3320 | 3.5173 | 4.8284 | 6.0372 |

Таблица №6. Удельная теплоемкость [кДж/кг\*град]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | 4.2176 | 4.1819 | 4.1786 | 4.1848 | 4.1960 | 4.2117 |
| 1 | 3.9529 | 3.9445 | 3.9709 | 4.0085 | 4.0576 | 4.1151 |
| 2 | 3.8761 | 3.8554 | 3.8680 | 3.8921 | 3.9275 | 3.9798 |
| 3 | 3.8397 | 3.8101 | 3.8079 | 3.8166 | 3.8312 | 3.8515 |
| 4 | 3.8222 | 3.7761 | 3.7693 | 3.7660 | 3.7700 | 3.8022 |
| 5 | 3.7787 | 3.7444 | 3.7359 | 3.7400 | 3.7494 | 3.7601 |
| 6 | 3.7042 | 3.6871 | 3.6982 | 3.7259 | 3.7633 | 3.8004 |
| 7 |  | 3.5807 | 3.6395 | 3.7244 | 4.8316 | 3.9315 |
| 8 |  | 3.4179 | 3.5548 | 3.7343 | 3.9575 | 4.1663 |
| 9 |  |  | 3.4885 | 3.7540 | 4.1220 | 4.4702 |

Таблица № 7. Удельная теплоемкость [кДж/кг\*град]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | 4.2151 | 4.1577 | 4.0647 | 3.9568 | 3.8733 | 3.8449 |
| 1 | 3.9235 | 3.8704 | 3.8317 | 3.7876 | 3.7467 | 3.7996 |
| 2 | 3.7910 | 3.7467 | 3.7036 | 3.6657 | 3.6272 | 4.6064 |
| 3 | 3.7201 | 3.6699 | 3.6214 | 3.5759 | 3.5351 | 3.5013 |
| 4 | 3.6770 | 3.5989 | 3.5550 | 3.5087 | 3.4724 | 3.4763 |
| 5 | 3.6320 | 3.5511 | 3.4977 | 3.4605 | 3.4486 | 3.4521 |
| 6 | 3.592 | 3.4953 | 3.4374 | 3.4195 | 3.4602 | 3.5324 |
| 7 |  | 3.4124 | 3.3577 | 3.8340 | 3.5295 | 3.7275 |
| 8 |  | 3.2641 | 3.2537 | 3.3659 | 3.6604 | 4.0099 |
| 9 |  |  | 3.1504 | 3.3636 | 3.8320 | 4.3526 |

Таблица № 8. Отношение 

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | 1.0006 | 1.0058 | 1.0281 | 1.0576 | 1.0833 | 1.0954 |
| 1 | 1.0075 | 1.0192 | 1.0363 | 1.0583 | 1.0830 | 1.1034 |
| 2 | 1.0224 | 1.0318 | 1.0444 | 1.0618 | 1.0828 | 1.1036 |
| 3 | 1.0321 | 1.0410 | 1.0515 | 1.0673 | 1.0856 | 1.1000 |
| 4 | 1.0395 | 1.0492 | 1.0603 | 1.0733 | 1.0857 | 1.0955 |
| 5 | 1.0404 | 1.0544 | 1.0681 | 1.0808 | 1.0872 | 1.0892 |
| 6 | 1.0312 | 1.0549 | 1.0759 | 1.0896 | 1.0876 | 1.0759 |
| 7 |  | 1.0493 | 1.0839 | 1.1006 | 1.0856 | 1.0557 |
| 8 |  | 1.0471 | 1.0925 | 1.1094 | 1.0812 | 1.0390 |
| 9 |  |  | 1.1010 | 1.1161 | 1.0757 | 1.0270 |

Таблица № 9. Энтропия  моля воды[дж/град]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | -0.0018 | 5.3394 | 10.3079 | 14.9714 | 19.3717 | 22.8295 |
| 1 | -0.1287 | 4.8922 | 9.5958 | 14.0446 | 18.2787 | 21.6387 |
| 2 | -0.5967 | 4.2554 | 8.9274 | 13.3200 | 17.3969 | 20.6552 |
| 3 | -1.1512 | 3.6524 | 8.2573 | 12.5988 | 16.5660 | 19.7447 |
| 4 | -1.7237 | 3.1056 | 7.5898 | 11.7922 | 15.7477 | 18.8611 |
| 5 | -2.2775 | 2.5064 | 6.9520 | 11.1198 | 15.0561 | 18.1505 |
| 6 | -2.7888 | 1.9430 | 6.3304 | 10.4692 | 14.4012 | 17.5118 |
| 7 |  | 1.4396 | 5.7286 | 9.8325 | 13.7981 | 16.9914 |
| 8 |  | 1.0239 | 5.1644 | 9.2239 | 13.2586 | 16.5983 |
| 9 |  |  | 4.6766 | 8.6954 | 12.8227 | 16.3541 |

Таблица №10. Изотермическая сжимаемость 

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | 50.898 | 45.803 | 44.287 | 44.746 | 46.165 | 47.463 |
| 1 | 37.845 | 35.794 | 34.892 | 34.829 | 35.821 | 37.342 |
| 2 | 30.424 | 29.207 | 28.613 | 28394 | 29.295 | 30.438 |
| 3 | 25.213 | 24.563 | 24.579 | 23.920 | 24.620 | 25.371 |
| 4 | 21.474 | 21.161 | 20.912 | 20.711 | 21.190 | 21.743 |
| 5 | 18.596 | 18.546 | 18.443 | 18.196 | 18.593 | 18.931 |
| 6 | 16.249 | 16.438 | 16.551 | 16.359 | 16.567 | 16.646 |
| 7 |  | 14.789 | 15.084 | 14.940 | 14.940 | 14.733 |
| 8 |  | 13.427 | 13.915 | 13.785 | 13.599 | 13.257 |
| 9 |  |  | 12.987 | 12.822 | 12.506 | 12.001 |

Таблица №11. Внутреннее давление [кбар]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 20 | 40 | 60 | 80 | 96.5 |
| 0 | -0.3659 | 1.2438 | 2.8274 | 4.0828 | 4.8948 | 5.2512 |
| 1 | 0.4894 | 1.5127 | 2.5889 | 3.6477 | 7.5692 | 5.1836 |
| 2 | 0.8720 | 1.5741 | 2.3768 | 3.2953 | 4.1519 | 4.8582 |
| 3 | 0.7908 | 1.4432 | 2.0953 | 3.0278 | 3.7552 | 4.3743 |
| 4 | 0.5783 | 1.2580 | 1.9889 | 2.7739 | 3.3819 | 3.8465 |
| 5 | -0.0069 | 0.9237 | 1.7906 | 2.6976 | 3.0051 | 3.1901 |
| 6 | -0.2940 | 0.3234 | 1.5672 | 2.4738 | 2.5875 | 2.2152 |
| 7 |  | -0.7076 | 1.3029 | 2.4391 | 2.0994 | 0.7500 |
| 8 |  | -0.6499 | 1.0009 | 2.2770 | 1.5262 | -0.9572 |
| 9 |  |  | 0.6439 | 2.0414 | 0.8824 | -0.4461 |