Module 5b

NaCl ionic conductivity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Temp.°c** | **Resistance Ω** | **Resistivity ρ** | **Conductivity ϭ** | **ln(ϭ)** | **1000/T(K-1)** |
| 690 | 57.162 | 4.4459 | 0.225 | -1.4916 | 1.0384 |
| 680 | 65.011 | 5.056 | 0.1977 | -1.621 | 1.0493 |
| 670 | 75.915 | 5.9045 | 0.16936 | -1.775 | 1.06 |
| 660 | 89.836 | 6.9872 | 0.14311 | -1.944 | 1.0718 |
| 650 | 105.72 | 8.222 | 0.1216 | -2.106 | 1.834 |
| 640 | 125.46 | 9.758 | 0.1025 | -2.277 | 1.0953 |
| 630 | 148.76 | 11.57 | 0.0864 | -2.448 | 1.1074 |
| 620 | 168.64 | 13.116 | 0.0762 | -2.574 | 1.1198 |
| 610 | 197.65 | 15.372 | 0.065 | -2.73 | 1.1325 |
| 600 | 228.85 | 17.733 | 0.0564 | -2.875 | 1.1454 |
| 590 | 270.03 | 21 | 0.0476 | -3.045 | 1.1587 |
| 580 | 308.52 | 23.996 | 0.04167 | -3.177 | 1.1723 |
| 570 | 353.83 | 27.52 | 0.0363 | -3.316 | 1.1862 |
| 560 | 409.12 | 31.82 | 0.03142 | -3.46 | 1.2 |
| 550 | 468.34 | 36.426 | 0.02745 | -3.595 | 1.215 |
| 540 | 540.7 | 42.054 | 0.02377 | -3.739 | 1.23 |
| 530 | 622.97 | 48.453 | 0.02064 | -3.88 | 1.245 |
| 520 | 721.85 | 56.144 | 0.01781 | -4.028 | 1.261 |
| 510 | 836.69 | 65.076 | 0.01536 | -4.176 | 1.277 |
| 500 | 967.67 | 75.257 | 0.0133 | -4.319 | 1.2936 |
| 490 | 1120.11 | 87.119 | 0.01148 | -4.4671 | 1.3106 |
| 480 | 1309.3 | 101.834 | 0.00982 | -4.6233 | 1.328 |
| 470 | 1542.7 | 119.987 | 0.00833 | -4.7878 | 1.3459 |
| 460 | 1873.7 | 145.732 | 0.00686 | -4.985 | 13642 |
| 450 | 2281.4 | 177.442 | 0.00563 | -5.1786 | 1.3831 |

Zirconia ionic conductivity

|  |  |  |  |
| --- | --- | --- | --- |
| Temperature °C | Current (Pico ampere) | temperature in (k) | Resistivity ρ ( ῼ/m) |
| 40 | 83 | 313 | 2.817\*1010 |
| 60 | 156 | 333 | 1.498\*1010 |
| 80 | 506 | 353 | 4.6183\*109 |
| 100 | 2830 | 373 | 8.257\*108 |
| 120 | 9080 | 393 | 2.5735\*108 |