

API Engine Oil Service Classifications

| Gasoline Engine Oils | | |
|----------------------|----------|---|
| Category | Status | Service |
| SL | Current | For all automotive engines presently in use. Introduced July 1, 2001. SL oils are designed to provide better high-temperature deposit control and lower oil consumption. Some of these oils may also meet the latest ILSAC specification and/or qualify as Energy Conserving. |
| SJ | Current | For 2001 and older automotive engines |
| SH | Obsolete | For 1996 and older engines. Valid when preceded by current C categories |
| SG | Obsolete | For 1993 and older engines. |
| SF | Obsolete | For 1988 and older engines. |
| SE | Obsolete | For 1979 and older engines. |
| SD | Obsolete | For 1971 and older engines. |
| SC | Obsolete | For 1967 and older engines. |
| SB | Obsolete | For older engines. Use only when specifically recommended by the manufacturer. |
| SA | Obsolete | For older engines; no performance requirement. Use only when specifically recommended by the manufacturer. |

Note : API Intentionally omitted SI and SK from the sequence of categories.

API Engine Oil Service Classifications

| Diesel Engine Oils | | |
|--------------------|----------|--|
| Category | Status | Service |
| CI-4 | Current | Introduced September 5, 2002. For high-speed, four-stroke engines designed to meet 2004 exhaust emission standards implemented in 2002. CI-4 oils are formulated to sustain engine durability where exhaust gas recirculation (EGR) is used and are intended for use with diesel fuels ranging in sulfur content up to 0.5% weight. Can be used in place of CD, CE, CF4, CG-4 and CH-4 oils. |
| CH-4 | Current | Introduced in 1998. For high-speed, four-stroke engines designed to meet 1998 exhaust emission standards. CH-4 oils are specifically compounded for use with diesel fuels ranging in sulfur content up to 0.5% weight. Can be used in place of CD, CE, CF-4 and CG-4 oils. |
| CG-4 | Current | Introduced in 1995. For severe duty high-speed, four-stroke engines using fuel with less than 0.5% weight sulfur. CG-4 oils are required for engines meeting 1994 emission standards. Can be used in place of CD, CE and CF-4 oils. |
| CF-4 | Current | Introduced in 1990. For high-speed, four-stroke, naturally aspirated and turbo-charged engines. Can be used in place of CD, CE oils. |
| CF-2 | Current | Introduced in 1994. For severe duty two-stroke-cycle engines. Can be used in place of CD-II oils. |
| CF | Current | Introduced in 1994. For off-road indirect-injected and other diesel engines including those using fuel with over 0.5% weight sulfur. Can be used in place of CD oils. |
| CE | Obsolete | Introduced in 1987. For high-speed, four-stroke, naturally aspirated and turbo-charged engines. Can be used in place of CC, CD oils. |
| CD-II | Obsolete | Introduced in 1987. For two-stroke-cycle engines. |
| CD | Obsolete | Introduced in 1955. For certain naturally aspirated and turbocharged engines. |
| CC | Obsolete | For engines introduced in 1961. |
| CB | Obsolete | For moderate duty engines from 1949 to 1960. |
| CA | Obsolete | For light duty engines (1940's and 1950's) |

Automotive Lubricants Viscosity Grades

Engine Oils – SAE J 300 , June J3002001 (dec.1999)

| SAE Viscosity Classes | Low temperature (°C) Cranking viscosity (ASTM D 5293) (mPa.s) Max. | Low temperature (°C) Pumping viscosity (ASTM D 4684) (mPa.s) With no yield stress Max. | Low shear rate Kinematic viscosity (ASTM D 445) (cSt) at 100 °C | | High shear rate viscosity (ASTM D 4683, CEC L-36-A-90 (ASTM D 4741) D 5481 (mPa.s) at 150 °C and 10 ⁶ s ⁻¹ min. |
|-----------------------|--|---|---|-------|---|
| | | | Min. | Max. | |
| 0W | 6200 at -35 | 60 000 at -40 | 3.8 | - | - |
| 5W | 6600 at -30 | 60 000 at -35 | 3.8 | - | - |
| 10W | 7000 at -25 | 60 000 at -30 | 4.1 | - | - |
| 15W | 7000 at -20 | 60 000 at -25 | 5.6 | - | - |
| 20W | 9500 at -15 | 60 000 at -20 | 5.6 | - | - |
| 25W | 13000 at -10 | 60 000 at -15 | 9.3 | - | - |
| 20 | | | 5.6 | < 9.3 | 2.6 |
| 30 | | | 9.3 | <12.5 | 2.9 |
| 40 | | | 12.5 | <16.3 | 2.9 (0W-40,5W-40,10W-40) |
| 40 | | | 12.5 | <16.3 | 3.7 (15W-40,20W-40,25W-40,40) |
| 50 | | | 16.3 | <21.9 | 3.7 |
| 60 | | | 21.9 | <26.1 | 3.7 |

Automotive Lubricants Viscosity Grades

Gear Oils – Except SAE J306 – 1998

Automotive Gear Lubricant Viscosity Classification

| SAE Viscosity Grade | Max. Temperature Viscosity of 150.000 cP (°C) Using ASTM D 2983 Additional Low temperature viscosity requirements may be appropriate for fluids intended for use in light-duty synchronized manual transmission | Kinematic viscosity at 100 °C (cSt) Using ASTM D 445 | |
|---------------------|--|---|-------------|
| | | Min. Limit must also be met after testing in CEC L-45-T-93. Method C(20 hours) | Max. |
| 70W | -55 the precision of ASTM D2983 has not been established for determinations made at temperature below -40C . This fact should be take into consideration in any producer-consumer relationship . | 4.1 | - |
| 75W | -40 | 4.1 | - |
| 80W | -26 | 7.0 | - |
| 85W | -12 | 11.0 | - |
| 80 | - | 7.0 | <11.0 |
| 85 | - | 11.0 | <13.5 |
| 90 | - | 13.5 | <24.0 |
| 140 | - | 24.0 | <41.0 |
| 250 | - | 41.0 | - |

ISO Viscosity Grads

| Viscosity System for Industrial Lubricants | | | |
|---|---|--------------------------------|----------------|
| ISO Grade | Mid-Point Viscosity cSt. @ 40 °C | Viscosity, cSt. @ 40 °C | |
| | | Minimum | Maximum |
| 2 | 2.2 | 1.98 | 2.42 |
| 3 | 3.2 | 2.88 | 3.52 |
| 5 | 4.6 | 4.14 | 5.06 |
| 7 | 6.8 | 6.12 | 7.48 |
| 10 | 10 | 9.00 | 11.0 |
| 15 | 15 | 13.5 | 16.5 |
| 22 | 22 | 19.8 | 24.2 |
| 32 | 32 | 28.8 | 35.2 |
| 46 | 46 | 41.4 | 50.6 |
| 68 | 68 | 61.2 | 74.8 |
| 100 | 100 | 90.0 | 110 |
| 150 | 150 | 135 | 165 |
| 220 | 220 | 198 | 242 |
| 320 | 320 | 288 | 352 |
| 460 | 460 | 414 | 506 |
| 680 | 680 | 612 | 748 |
| 1000 | 1000 | 900 | 1100 |
| 1500 | 1500 | 1350 | 1650 |

Approximate Comparison of different Viscosity Scales

The following table is for the conversion of viscosities in one system to those in another system at the same temperature

| Kinematic Viscosity cSt | Engler Degrees | Redwood No.1 seconds | Saybolt Universal seconds | Kinematic viscosity cSt | Engler Degrees | Redwood No.1 seconds | Saybolt Universal seconds |
|-------------------------|----------------|----------------------|---------------------------|-------------------------|----------------|----------------------|---------------------------|
| 1.0 | 1.0 | 28.5 | ** | 20.0 | 2.9 | 86 | 97.5 |
| 1.5 | 1.06 | 30 | ** | 20.5 | 2.95 | 88 | 99.6 |
| 2.0 | 1.12 | 31 | 32.6 | 21.0 | 3.0 | 90 | 101.7 |
| 2.5 | 1.17 | 32 | 34.4 | 21.5 | 3.05 | 92 | 103.9 |
| 3.0 | 1.22 | 33 | 36.0 | 22.0 | 3.1 | 93 | 106.0 |
| 3.5 | 1.16 | 34.5 | 37.6 | 22.5 | 3.15 | 95 | 108.2 |
| 4.0 | 1.30 | 35.5 | 39.1 | 23.0 | 3.2 | 97 | 110.3 |
| 4.5 | 1.35 | 37 | 40.7 | 23.5 | 3.3 | 99 | 112.4 |
| 5.0 | 1.40 | 38 | 42.3 | 24.0 | 3.35 | 101 | 114.6 |
| *5.5 | 1.44 | 39.5 | 43.9 | 24.5 | 3.4 | 103 | 116.8 |
| *6.0 | 1.48 | 41 | 45.5 | 25.0 | 3.45 | 105 | 118.9 |
| *6.5 | 1.52 | 42 | 47.1 | 26.0 | 3.6 | 109 | 123.2 |
| *7.0 | 1.56 | 43.5 | 48.7 | 27.0 | 3.7 | 113 | 127.7 |
| *7.5 | 1.60 | 45 | 50.3 | 28.0 | 3.85 | 117 | 132.1 |
| *8.0 | 1.65 | 46 | 52.0 | 29.0 | 3.95 | 121 | 136.5 |
| *8.5 | 1.70 | 47.5 | 53.7 | 30.0 | 4.1 | 125 | 140.9 |
| *9.0 | 1.75 | 49 | 55.4 | 31.0 | 4.2 | 129 | 145.3 |
| *9.5 | 1.79 | 50.5 | 57.1 | 32.0 | 4.35 | 133 | 149.7 |
| 10.0 | 1.83 | 52 | 58.8 | 33.0 | 4.45 | 136 | 154.2 |
| 10.2 | 1.85 | 52.5 | 59.5 | 34.0 | 4.6 | 140 | 158.7 |
| 10.4 | 1.87 | 53 | 60.2 | 35.0 | 4.7 | 144 | 163.2 |
| 10.6 | 1.89 | 53.5 | 60.9 | 36.0 | 4.85 | 148 | 167.7 |
| 10.8 | 1.91 | 54.5 | 61.6 | 37.0 | 4.95 | 152 | 172.2 |
| 11.0 | 1.93 | 55 | 62.3 | 38.0 | 5.1 | 156 | 176.7 |
| 11.4 | 1.97 | 56 | 63.7 | 39.0 | 5.2 | 160 | 181.2 |
| 11.8 | 2.00 | 57.5 | 65.2 | 40.0 | 5.35 | 164 | 185.7 |
| 12.2 | 2.04 | 59 | 66.6 | 41.0 | 5.45 | 168 | 190.2 |
| 12.6 | 2.08 | 60 | 68.1 | 42.0 | 5.6 | 172 | 194.7 |
| 13.0 | 2.12 | 61 | 69.6 | 43.0 | 5.75 | 177 | 199.2 |
| 13.5 | 2.17 | 63 | 71.5 | 44.0 | 5.85 | 181 | 203.8 |
| 14.0 | 2.22 | 64.5 | 73.4 | 45.0 | 6.0 | 185 | 208.4 |
| 14.5 | 2.27 | 66 | 75.3 | 46.0 | 6.1 | 189 | 213.0 |
| 15.0 | 2.32 | 68 | 77.2 | 47.0 | 6.25 | 193 | 217.6 |
| 15.5 | 2.38 | 70 | 79.2 | 48.0 | 6.45 | 197 | 222.2 |
| 16.0 | 2.43 | 71.5 | 81.1 | 49.0 | 6.5 | 201 | 226.8 |
| 16.5 | 2.5 | 73 | 83.1 | 50.0 | 6.65 | 205 | 231.4 |
| 17.0 | 2.55 | 75 | 85.1 | 52.0 | 6.9 | 213 | 240.6 |
| 17.5 | 2.6 | 77 | 87.1 | 54.0 | 7.1 | 221 | 249.6 |
| 18.0 | 2.65 | 78.5 | 89.2 | 56.0 | 7.4 | 229 | 259.0 |
| 18.5 | 2.7 | 80 | 91.2 | 58.0 | 7.65 | 237 | 268.2 |
| 19.0 | 2.75 | 82 | 93.3 | 60.0 | 7.9 | 245 | 277.4 |
| 19.5 | 2.8 | 84 | 95.4 | 70.0 | 9.2 | 285 | 323.4 |

For higher viscosities the following factors should be used.

| | |
|---------------------------|---------------------------|
| Kinematic = 0.247 Redwood | Saybolt = 35.11 Engler |
| Engler = 0.132 Kinematic | Engler = 0.0326 Redwood |
| Redwood = 4.05 Kinematic | Saybolt = 1.14 Redwood |
| Saybolt = 4.62 Kinematic | Kinematic = 0.216 Saybolt |
| Kinematic = 7.58 Engler | Engler = 0.0285 Saybolt |
| Redwood = 30.7 Engler | Redwood = 0.887 Saybolt |

Note : The first part of the table mark with on * should only be used for the conversion of Kinematic viscosities into Engler, Redwood or Saybolt viscosities, or for Engler, Redwood and Saybolt between themselves. They should not be used for conversion of Engler, Redwood or Saybolt into Kinematic viscosities.

The SI System of Units

Basic SI Units

| Quantity | Name of unit | Unit symbol |
|--|--------------|-------------|
| Length | meter | m |
| Mass | kilogram | Kg |
| Time | second | s |
| Electric current | ampere | A |
| Thermodynamic temperature* | Kelvin | K |
| Luminous intensity | candela | cd |
| Amount of substance | mole | mol |
| Plane angle | radian | rad |
| Solid angle | Steradian | sr |
| *Use is also made of Celsius temperature, °C Temperature °C = K -273.15 | | |

Same derived SI units

| Physical quantity | SI unit | Unit symbol |
|----------------------|---------|-------------------------|
| force | Newton | N = kg m/s ² |
| Pressure, stress | Pascal | Pa = N/m ² |
| Work, energy | Joule | J = Nm |
| power | Watt | W = J/s |
| electric charge | Coulomb | C = A/s |
| electric potential | Volt | V = J/C |
| electric capacitance | Farad | F = C/V |
| electric resistance | Ohm | Ω= V/A |
| frequency | Hertz | Hz = S ⁻¹ |
| electric conductance | Siemens | S = V ⁻¹ |
| magnetic flux | Weber | Wb = Vs |

Some preferred SI terms derived from basic units

| Physical quantity | SI unit | Unit symbol |
|------------------------|---------------------------|-------------------|
| area | square meter | m ² |
| volume | cubic meter | m ³ |
| Density(mass density) | kilogrampercubicmeter | kg/m ³ |
| velocity | meter per second | m/s |
| angular velocity | radian per second | rad/s |
| acceleration | meter per second squared | m/s ² |
| surface tension | Newton per meter | N/m |
| dynamic viscosity | Pascal second | Pa.s |
| kinematic viscosity | meter squared per second* | m ² /S |
| thermal conductivity | WattpermeterKelvin | W/(mk)v |

* formally stokes (1 centistoke=1 mm²/s = 10⁻⁶ m²/s

Conversion Factors

| Exact values are printed in bold type unit symbol | | |
|--|---------------------|-------------|
| To convert | to | multiply by |
| Length | | |
| Miles | Km(kilometer) | 1.609 |
| Yards | m (metre) | 0.9144 |
| Feet | m(metre) | 0.3048 |
| inches | cm(centimeter) | 2.540 |
| Area | | |
| Sq miles | km ² | 2.590 |
| Sq yards | m ² | 0.8361 |
| Sq feet | m ² | 0.0929 |
| Sq inches | cm ² | 6.4516 |
| Volume | | |
| Cubic yards | m ³ | 0.7646 |
| Cubic feet | m ³ | 0.02832 |
| Cubic inch | cm ³ | 16.387 |
| Barrel | litre | 158.99 |
| Gallon (imperial) | litre | 4.546 |
| Gallon (US) | litre | 3.785 |
| Mass | | |
| Ton (long) | tonne | 1.016 |
| Ton (short) | tonne | 0.9072 |
| l lb(pound) | kg (kilogram) | 0.4536 |
| oz (ounce) | g (gram) | 28.35 |
| Density | | |
| lb/ft ³ | kg/m ³ | 16.02 |
| lb/US gallon | kg/m ³ | 119.8 |
| Force | | |
| lbf(pound force) | N (Newton) | 4.448 |
| Pressure | | |
| atm | kPa(kilopascals) | 101.3 |
| bar | kPa | 100.0 |
| Ibf/inch ² | kpa | 6.895 |
| inches of H ₂ O(4 °C) | kpa | 0.249 |
| inches of Hg(0 °C) | kpa | 3.386 |
| mm of Hg (0 °C) | kpa | 0.1333 |
| lb/ft ² | Pa | 47.88 |
| Velocity | | |
| ft/s (feet/second) | m/s (metres/second) | 0.3048 |
| ft/minute | m/s | 0.00508 |
| Miles/hour (mph) | km/h | 1.609 |
| Knot (International) | km/h | 1.852 |

Conversion Factors (continued)

Exact values are printed in bold type unit symbol

| To convert | to | multiply by |
|------------------------|---------------------------------|-------------|
| Work, energy , heat | | |
| erg | J (Joule) (Nm) | 10^{-7} |
| ft lbf | J | 1.356 |
| hp h | MJ (megaJoules) | 2.685 |
| k Wh | MJ | 3.6 |
| therm | MJ | 105.5 |
| Btu | kJ | 1.055 |
| kcal | kJ | 4.184 |
| Power | | |
| hp (horsepower) | W (Watts) | 745.7 |
| hp (metric) | W | 735.5 |
| erg/s | W | 10^{-7} |
| ft. lbf/s | W | 1.356 |
| btu/h | W | 0.2931 |
| kcal/h | W | 1.163 |
| Calorific value | | |
| Btu/lb | kJ /kg (mass base) | 2.326 |
| Btu/gallon | kJ/m ³ (volume base) | 37.26 |
| cal/ml | J/cm ³ | 4.184 |
| Heat flow rate | | |
| kcal/h | W | 1.162 |
| Btu/h | W | 0.2931 |
| Thermal conductivity | | |
| Btu/ft.h. °F | W/mK | 1.731 |
| Viscosity (dynamic) | | |
| Centipoise (cP) | Pa.s(Pascal second) | 0.001 |
| Viscosity (kinematics) | | |
| Centistokes (cSt) | m ² /S | 10^{-6} |

API Gravities and Densities

| API Gravity° | Density Kg/L | API Gravity° | Density Kg/L |
|--------------|--------------|--------------|--------------|
| 0 | 1.074 | 21 | 0.926 |
| 1 | 1.066 | 22 | 0.920 |
| 2 | 1.058 | 23 | 0.914 |
| 3 | 1.050 | 24 | 0.908 |
| 4 | 1.042 | 25 | 0.902 |
| 5 | 1.034 | 26 | 0.896 |
| 6 | 1.027 | 27 | 0.891 |
| 7 | 1.020 | 28 | 0.885 |
| 8 | 1.012 | 29 | 0.880 |
| 9 | 1.005 | 30 | 0.874 |
| 10 | 0.998 | 31 | 0.869 |
| 11 | 0.991 | 32 | 0.864 |
| 12 | 0.984 | 33 | 0.858 |
| 13 | 0.977 | 34 | 0.853 |
| 14 | 0.970 | 35 | 0.848 |
| 15 | 0.964 | 36 | 0.843 |
| 16 | 0.957 | 37 | 0.838 |
| 17 | 0.951 | 38 | 0.833 |
| 18 | 0.944 | 39 | 0.828 |
| 19 | 0.938 | 40 | 0.823 |
| 20 | 0.932 | 41 | 0.818 |

Note : All conversions are at 15.6°C

Temperature Conversation Chart

| °C | °F | °C | °F | °C | °F | °C | °F |
|-----|-------|-----|-------|-----|------|----|------|
| -70 | -94.0 | -46 | -50.8 | -22 | -7.6 | 2 | 35.6 |
| -69 | -92.2 | -45 | -49.0 | -21 | -5.8 | 3 | 37.4 |
| -68 | -90.4 | -44 | -47.2 | -20 | -4.0 | 4 | 39.2 |
| -67 | -88.6 | -43 | -45.4 | -19 | -2.2 | 5 | 41.0 |
| -66 | -86.8 | -42 | -43.6 | -18 | -0.4 | 6 | 42.8 |
| -65 | -85.0 | -41 | -41.8 | -17 | 1.4 | 7 | 44.6 |
| -64 | -83.2 | -40 | -40.0 | -16 | 3.2 | 8 | 46.4 |
| -63 | -81.4 | -39 | -38.2 | -15 | 5.0 | 9 | 48.2 |
| -62 | -79.6 | -38 | -36.4 | -14 | 6.8 | 10 | 50.0 |
| -61 | -77.8 | -37 | -34.6 | -13 | 8.6 | 11 | 51.8 |
| -60 | -76.0 | -36 | -32.8 | -12 | 10.4 | 12 | 53.6 |
| -59 | -74.2 | -35 | -31.0 | -11 | 12.2 | 13 | 55.4 |
| -58 | -72.4 | -34 | -29.2 | -10 | 14.0 | 14 | 57.2 |
| -57 | -70.6 | -33 | -27.4 | -9 | 15.8 | 15 | 59.0 |
| -56 | -68.8 | -32 | -25.6 | -8 | 17.6 | 16 | 60.8 |
| -55 | -67.0 | -31 | -23.8 | -7 | 19.4 | 17 | 62.6 |
| -54 | -65.2 | -30 | -22.0 | -6 | 21.2 | 18 | 64.4 |
| -53 | -63.4 | -29 | -20.2 | -5 | 23.0 | 19 | 66.2 |
| -52 | -61.6 | -28 | -18.4 | -4 | 24.8 | 20 | 68.0 |
| -51 | -59.8 | -27 | -16.6 | -3 | 26.6 | 21 | 69.8 |
| -50 | -58.0 | -26 | -14.8 | -2 | 28.4 | 22 | 71.6 |
| -49 | -56.2 | -25 | -13.0 | -1 | 30.2 | 23 | 73.4 |
| -48 | -54.4 | -24 | -11.2 | 0 | 32.0 | 24 | 75.2 |
| -47 | -52.6 | -23 | -9.4 | 1 | 33.8 | 25 | 77.0 |

Temperature Conversation Chart

| °C | °F | °C | °F | °C | °F | °C | °F |
|----|-------|----|-------|----|-------|-----|-------|
| 26 | 78.8 | 50 | 122.0 | 74 | 165.2 | 98 | 208.4 |
| 27 | 80.6 | 51 | 123.8 | 75 | 167.0 | 99 | 210.2 |
| 28 | 82.4 | 52 | 125.6 | 76 | 168.8 | 100 | 212.0 |
| 29 | 84.2 | 53 | 127.4 | 77 | 170.6 | 101 | 213.8 |
| 30 | 86.0 | 54 | 129.2 | 78 | 172.4 | 102 | 215.6 |
| 31 | 87.8 | 55 | 131.0 | 79 | 174.2 | 103 | 217.4 |
| 32 | 89.6 | 56 | 132.8 | 80 | 176.0 | 104 | 219.2 |
| 33 | 91.4 | 57 | 134.6 | 81 | 177.8 | 105 | 221.0 |
| 34 | 93.2 | 58 | 136.4 | 82 | 179.6 | 106 | 222.8 |
| 35 | 95.0 | 59 | 138.2 | 83 | 181.4 | 107 | 224.6 |
| 36 | 96.8 | 60 | 140.0 | 84 | 183.2 | 108 | 226.4 |
| 37 | 98.6 | 61 | 141.8 | 85 | 185.0 | 109 | 228.2 |
| 38 | 100.4 | 62 | 143.6 | 86 | 186.8 | 110 | 230.0 |
| 39 | 102.2 | 63 | 145.4 | 87 | 188.6 | 111 | 231.8 |
| 40 | 104.0 | 64 | 147.2 | 88 | 190.4 | 112 | 233.6 |
| 41 | 105.8 | 65 | 149.0 | 89 | 192.2 | 113 | 235.4 |
| 42 | 107.6 | 66 | 150.8 | 90 | 194.0 | 114 | 237.2 |
| 43 | 109.4 | 67 | 152.6 | 91 | 195.8 | 115 | 239.0 |
| 44 | 111.2 | 68 | 154.4 | 92 | 197.6 | 116 | 240.8 |
| 45 | 113.0 | 69 | 156.2 | 93 | 199.4 | 117 | 242.6 |
| 46 | 114.8 | 70 | 158.0 | 94 | 201.2 | 118 | 244.4 |
| 47 | 116.6 | 71 | 159.8 | 95 | 203.0 | 119 | 246.2 |
| 48 | 118.4 | 72 | 161.6 | 96 | 204.8 | 120 | 248.0 |
| 49 | 120.2 | 73 | 163.4 | 97 | 206.6 | 121 | 249.8 |

Temperature Conversation Chart

| °C | °F | °C | °F | °C | °F | °C | °F |
|-----|-------|-----|-------|-----|-------|-----|-------|
| 122 | 251.6 | 146 | 294.8 | 170 | 338.0 | 194 | 381.2 |
| 123 | 253.4 | 147 | 296.6 | 171 | 339.8 | 195 | 383.0 |
| 124 | 255.2 | 148 | 298.4 | 172 | 341.6 | 196 | 384.8 |
| 125 | 257.0 | 149 | 300.2 | 173 | 343.4 | 197 | 386.6 |
| 126 | 258.8 | 150 | 302.0 | 174 | 345.2 | 198 | 388.4 |
| 127 | 260.6 | 151 | 303.8 | 175 | 347.0 | 199 | 390.2 |
| 128 | 262.4 | 152 | 305.6 | 176 | 348.8 | 200 | 392.0 |
| 129 | 264.2 | 153 | 307.4 | 177 | 350.6 | 201 | 393.8 |
| 130 | 266.0 | 154 | 309.2 | 178 | 352.4 | 202 | 395.6 |
| 131 | 267.8 | 155 | 311.0 | 179 | 354.2 | 203 | 397.4 |
| 132 | 269.6 | 156 | 312.8 | 180 | 356.0 | 204 | 399.2 |
| 133 | 271.4 | 157 | 314.6 | 181 | 357.8 | 205 | 401.0 |
| 134 | 273.2 | 158 | 316.4 | 182 | 359.6 | 206 | 402.8 |
| 135 | 275.0 | 159 | 318.2 | 183 | 361.4 | 207 | 404.6 |
| 136 | 276.8 | 160 | 320.0 | 184 | 363.2 | 208 | 406.4 |
| 137 | 278.6 | 161 | 321.8 | 185 | 365.0 | 209 | 408.2 |
| 138 | 280.4 | 162 | 323.6 | 186 | 366.8 | 210 | 410.0 |
| 139 | 282.2 | 163 | 325.4 | 187 | 368.6 | 211 | 411.8 |
| 140 | 284.0 | 164 | 327.2 | 188 | 370.4 | 212 | 413.6 |
| 141 | 285.8 | 165 | 329.0 | 189 | 372.2 | 213 | 415.4 |
| 142 | 287.6 | 166 | 330.8 | 190 | 374.0 | 214 | 417.2 |
| 143 | 289.4 | 167 | 332.6 | 191 | 375.8 | 215 | 419.0 |
| 144 | 291.2 | 168 | 334.4 | 192 | 377.6 | 216 | 420.8 |
| 145 | 293.0 | 169 | 336.2 | 193 | 379.4 | 217 | 422.6 |