

Periodic Table of the Elements

1	H Hydrogen 1.008															2		
	IA	IIA	IIIB	IVB	VB	VIB	VII B	VIII B			IB	IIB	IIIA	IVA	VA	VIA	VIIA	VIIIA
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2	3 Li Lithium 6.94	4 Be Beryllium 9.012	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> ■ Alkali metals ■ Alkaline earth metals ■ Transition metals ■ Other metals ■ Noble gases </div> <div style="text-align: center;"> ■ Halogens ■ Other non-metals ■ Lanthanides ■ Actinides </div> </div>										5 B Boron 10.81	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 19.00	10 Ne Neon 20.18
3	11 Na Sodium 22.99	12 Mg Magnesium 24.31											13 Al Aluminum 26.98	14 Si Silicon 28.085	15 P Phosphorus 30.97	16 S Sulfur 32.06	17 Cl Chlorine 35.45	18 Ar Argon 39.95
4	19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.38	31 Ga Gallium 69.72	32 Ge Germanium 72.63	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80
5	37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.96	43 Tc Technetium (98)	44 Ru Ruthenium 101.1	45 Rh Rhodium 102.9	46 Pd Palladium 106.4	47 Ag Silver 107.9	48 Cd Cadmium 112.4	49 In Indium 114.8	50 Sn Tin 118.7	51 Sb Antimony 121.8	52 Te Tellurium 127.6	53 I Iodine 126.90	54 Xe Xenon 131.3
6	55 Cs Cesium 132.9	56 Ba Barium 137.3	57-71 La-Lu ★	72 Hf Hafnium 178.5	73 Ta Tantalum 180.9	74 W Tungsten 183.8	75 Re Rhenium 186.2	76 Os Osmium 190.2	77 Ir Iridium 192.2	78 Pt Platinum 195.1	79 Au Gold 197.0	80 Hg Mercury 200.6	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 209.0	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
7	87 Fr Francium (223)	88 Ra Radium (226)	89-103 Ac-Lr #	104 Rf Rutherfordium (267)	105 Db Dubnium (268)	106 Sg Seaborgium (271)	107 Bh Bohrium (272)	108 Hs Hassium (270)	109 Mt Meitnerium (276)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (280)	112 Cn Copernicium (285)	113 Uut Ununtrium (284)	114 Fl Flerovium (289)	115 Uup Ununpentium (288)	116 Lv Livermorium (293)	117 Uus Ununseptium (294)	118 Uuo Ununoctium (294)

Atomic Number → 3
 Symbol → **Li**
 Name → Lithium
 Average Atomic Mass → 6.94

★	57 La Lanthanum 138.9	58 Ce Cerium 140.1	59 Pr Praseodymium 140.9	60 Nd Neodymium 144.2	61 Pm Promethium 146.92	62 Sm Samarium 150.4	63 Eu Europium 152.00	64 Gd Gadolinium 157.3	65 Tb Terbium 158.91	66 Dy Dysprosium 162.5	67 Ho Holmium 164.9	68 Er Erbium 167.3	69 Tm Thulium 168.9	70 Yb Ytterbium 173.1	71 Lu Lutetium 175.0
#	89 Ac Actinium (227)	90 Th Thorium 232.0	91 Pa Protactinium 231.0	92 U Uranium 238.0	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)

BENDING GLASS TUBING



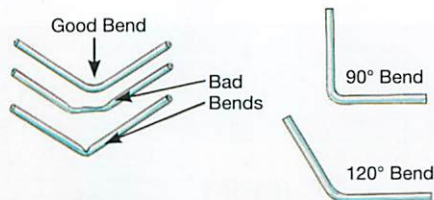
Use a wing top on the burner. Rotate tubing in the flame until the glass becomes soft and the flame becomes yellow.



Remove from flame and hold for two seconds to distribute heat evenly.



Bend ends upward with a smooth, even motion.



CUTTING AND FIRE POLISHING GLASS TUBING



Wear eye protection. Score the glass tubing once with a triangular file.



To protect your hands, wrap a cloth around the glass tubing. Place your thumbs opposite the scratch.

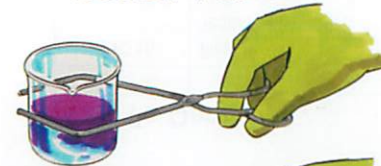


Apply pressure and quickly snap the tubing away from you.



Rotate the tubing in a burner flame until the edges are smooth and rounded.

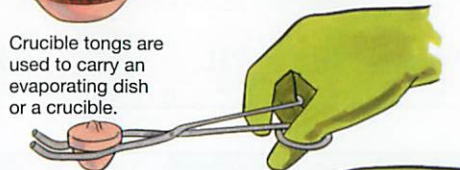
USING TONGS



The proper way to use beaker tongs.

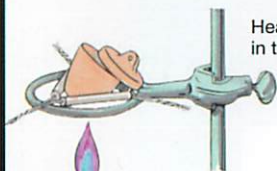


Crucible tongs are used to carry an evaporating dish or a crucible.

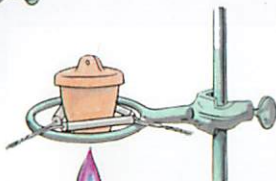


Crucible tongs may be used to hold a piece of magnesium when igniting it.

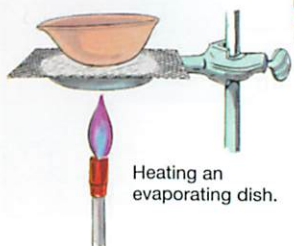
HEATING A CRUCIBLE AND EVAPORATING DISH



Heating a crucible in the presence of air.



Heating a crucible in the absence of air.



Heating an evaporating dish.

Heat Gently to Avoid Spattering

PIPETING

Never Pipet by Mouth



1. Fill pipet past the graduation mark using a pipet bulb.



2.



3. Release finger slowly until the bottom of the meniscus is on the graduation mark.



4.

4. Allow the liquid to drain into the receiving vessel. Touch tip of the pipet to the side of the receiving vessel for 10 seconds. Do not blow out the liquid remaining in the tip of the pipet.

FILTERING AND DECANTING



Fold and crease lightly



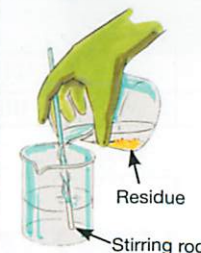
Fold again and tear off one corner



Open into funnel shape

Decanting a liquid from a precipitate.

Place filter paper in funnel and wet slightly. Pour solution slowly with the aid of a stirring rod.



Residue

Stirring rod

