| Average Weighting When These Are The Two Main Elements In a Tie Particle |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Ag | Al | Au | Ba | Bi | $\underline{\mathrm{Br}}$ | Ca | Cd | Ce |
| Silver | Ag |  |  |  |  |  |  |  |  |  |
| Aluminum | Al | Ag 67\%, Al 15\% |  |  |  |  |  |  |  |  |
| Gold | Au | Au 86\%, Ag 12\% | Au 59\%, Al 32\% |  |  |  |  |  |  |  |
| Barium | Ba | Ag 82\%, Ba 9\% | Ba 44\%, Al 28\% |  |  |  |  |  |  |  |
| Bismuth | Bi | Bi 61\%, Ag 19\% | Bi 73\%, Al 14\% |  | Ba 63\%, Bi 15\% |  |  |  |  |  |
| Bromine | Br | Ag 59\%, Br 17\% | Br 49\%, Al 25\% | Au 100\%, Br 0\% |  |  |  |  |  |  |
| Calcium | Ca | Ag 39\%, Ca 33\% | Ca 84\%, Al 9\% | Au 47\%, Ca 25\% | Ca 62\%, Ba 19\% | Bi 49\%, Ca 31\% | Ca 97\%, Br 2\% |  |  |  |
| Cadmium | Cd |  | Cd 73\%, Al 11\% |  |  |  |  | Cd 72\%, Ca 22\% |  |  |
| Cerium | Ce |  | Ce 50\%, Al 22\% |  |  |  |  | Ca 45\%, Ce 22\% |  |  |
| Chlorine | Cl | Ag 84\%, Cl 8\% | Al 58\%, Cl 25\% | Cl 31\%, Au 23\% | Cl 49\%, Ba 21\% | Bi 86\%, Cl 9\% |  | Ca 54\%, Cl $21 \%$ | Cd 57\%, Cl $24 \%$ | Cl 53\%, Ce 10\% |
| Cobalt | Co |  |  |  |  |  |  | Ca 67\%, Co 21\% |  |  |
| Chromium | Cr |  | Cr 62\%, Al 31\% |  | Cr 30\%, Ba 29\% |  | Cr 99\%, Br 1\% | Ca 73\%, Cr 20\% |  |  |
| Copper | Cu | Ag 48\%, Cu 32\% | Al 54\%, Cu 38\% | Au 45\%, Cu 35\% | Ba 37\%, Cu 28\% |  | Cu 99\%, Br 1\% | Ca 61\%, Cu 23\% | Cu 71\%, Cd 17\% |  |
| Fluorine | F |  |  |  |  |  |  | Ca 85\%, F 7\% |  |  |
| Iron | Fe | Fe 48\%, Ag 32\% | Fe 71\%, Al 18\% | Au 47\%, Fe 37\% | Fe 70\%, Ba 11\% | Bi 41\%, Fe 36\% | Fe 99\%, Br 1\% | Fe 47\%, Ca 34\% | Cd 49\%, Fe 43\% | Fe 43\%, Ce 42\% |
| Mercury | Hg | Ag 48\%, $\mathrm{Hg} 33 \%$ |  |  |  |  |  | Hg 70\%, Ca 12\% |  |  |
| Potassium | K |  | Al 36\%, K 24\% |  | K 36\%, Ba 27\% | Bi 69\%, K 17\% | Br 68\%, K 26\% | Ca 60\%, K 18\% | Cd 99\%, K 1\% |  |
| Lanthanum | La |  |  |  |  |  |  |  |  | Ce 60\%, La 29\% |
| Magnesium | Mg | Ag 37\%, Mg 16\% | Al 80\%, Mg 14\% |  |  | Bi 100\%, Mg 0\% |  | Ca 75\%, Mg 18\% |  |  |
| Manganese | Mn |  |  |  | Mn 50\%, Ba 13\% |  |  | Ca 70\%, Mn 23\% |  |  |
| Molybdenum | Mo |  | Mo 91\%, Al 4\% |  |  |  |  | Mo 61\%, Ca 14\% |  |  |
| Sodium | Na |  | Al 49\%, Na 33\% |  |  |  |  | Ca 91\%, Na 8\% |  |  |
| Nickel | Ni | Ag 89\%, Ni 5\% | Al 74\%, Ni 20\% | Au 92\%, Ni 5\% | Ba 54\%, Ni 19\% | Bi 84\%, Ni 7\% | Ni 99\%, Br 1\% | Ca 92\%, Ni 5\% | Cd 95\%, Ni 3\% | Ce 61\%, Ni 19\% |
| Phosphorus | P |  | P 70\%, Al 16\% |  | Ba 40\%, P 28\% |  |  | Ca 59\%, P 30\% | Cd 52\%, P 30\% | Ce 41\%, P 19\% |
| Lead | Pb | Ag 28\%, Pb 24\% | Pb 64\%, Al 16\% |  | Pb 32\%, Ba 30\% | Bi 71\%, Pb 12\% | Pb 69\%, Br 15\% | Pb 40\%, Ca 28\% |  |  |
| Palladium | Pd | Ag 80\%, Pd 9\% | Al 77\%, Pd 11\% | Au 79\%, Pd 16\% |  | Bi $86 \%$, Pd 7\% |  | Ca 87\%, Pd 8\% | Cd 73\%, Pd 8\% |  |
| Sulfur | S | Ag 81\%, S 11\% | Al 63\%, S 16\% | Au 88\%, S 3\% | Ba 72\%, S 17\% | Bi 45\%, S 12\% |  | Ca 58\%, S 31\% | Cd 78\%, S 13\% | Ce 21\%, S 14\% |
| Antimony | Sb |  | Sb 94\%, Al 5\% |  | Ba 35\%, Sb 30\% |  | Sb 98\%, Br 2\% | Sb 67\%, Ca 23\% |  |  |
| Silicon | Si | Ag 49\%, Si 20\% | Si 54\%, Al 24\% | Au 48\%, Si 30\% | Si 43\%, Ba 23\% | Bi 49\%, Si 25\% | Si 99\%, Br 1\% | Ca 62\%, Si 22\% | Cd 65\%, Si 14\% | Si 34\%, Ce 25\% |
| Tin | Sn |  | Sn 85\%, Al 7\% |  | Sn 78\%, Ba 7\% |  |  | Sn 65\%, Ca 22\% | Cd 98\%, Sn 2\% |  |
| Strontium | Sr |  | Sr 45\%, Al 27\% |  | Ba 41\%, Sr 27\% |  |  | Ca 66\%, Sr 26\% |  |  |
| Titanium | Ti | Ag 46\%, Ti 27\% | Ti 88\%, Al 8\% | Ti 94\%, Au 4\% | Ti 48\%, Ba 31\% | Bi 43\%, Ti 15\% |  | Ca 52\%, Ti 31\% |  | Ce 28\%, Ti 16\% |
| Vanadium | V |  |  |  |  |  |  | V 33\%, Ca 19\% |  | Ce 45\%, V 27\% |
| Tungsten | W |  |  |  | W 56\%, Ba 15\% |  |  |  |  |  |
| Yttrium | Y |  | Y 96\%, Al 4\% |  |  |  |  | Ca 90\%, Y 8\% |  |  |
| Zinc | Zn | Zn 41\%, Ag 36\% | Zn 68\%, Al 18\% |  | Ba 38\%, Zn 29\% | Zn 35\%, Bi 27\% |  | Ca 49\%, Zn 33\% | Cd 50\%, Zn 27\% |  |
| Zirconium | Zr |  | Al 56\%, Zr 29\% | Au 92\%, Zr 5\% |  |  |  |  |  | Ce 53\%, Zr 27\% |

