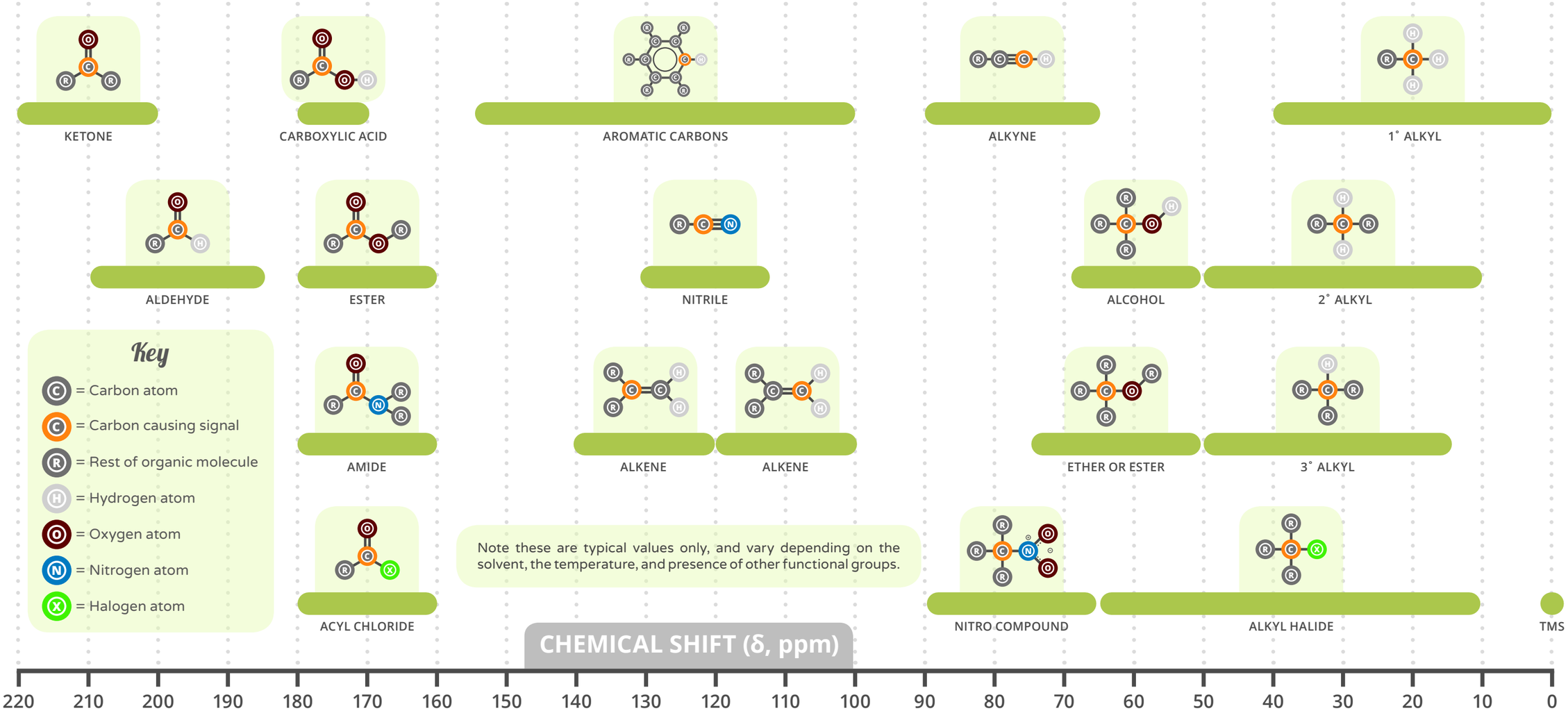
A GUIDE TO ^{13}C NMR CHEMICAL SHIFT VALUES

Nuclear Magnetic Resonance (NMR) is a commonly used technique for organic compound structure determination. In ^{13}C NMR, applying an external magnetic field causes the nuclei spin to flip. The environment of the carbon atom in the molecule affects where the signal is seen on the resultant spectrum.



^{12}C 99% **^{13}C 1%**

Only 1% of carbon atoms are carbon-13, atoms which have one more neutron than carbon-12. NMR doesn't work for carbon-12, as its nucleus doesn't have a 'spin'. The frequency required to 'flip' a carbon-13 nucleus is around a quarter of that required to flip an hydrogen nucleus in H-NMR. As the probability of two adjacent carbons in a single molecule being carbon-13 atoms is very low, no splitting of peaks is seen, unlike in H-NMR.