



## OCTANE RATING



- ✚ The tendency to detonate depends on composition of fuel.
- ✚ Fuel differ widely in their ability to resist knock.
- ✚ The property of fuel that describes how fuel will or will not self-ignite is called the Octane Number.
- ✚ It is defined as the percentage of Isooctane by volume in a mixture of Isooctane and n-heptane, which exactly matches the knocking tendency of a given fuel, in a standard fuel under given standard operating conditions.
- ✚ The rating of a particular SI fuel is done by comparing its antiknock performance with that of standard reference fuel that is usually combination of Isooctane and n-heptane.
- ✚ Isooctane ( $C_8H_{18}$ ) which has a very high resistance to knock and therefore it is arbitrarily assigned a rating of (100 octane number).
- ✚ N-heptane ( $C_7H_{16}$ ) which is very prone to knock and therefore given a zero value.
- ✚ For example: Octane number 80 means that the fuel has same knocking tendency as mixture of 80% isooctane and 20% n-heptane (by volume basis).
- ✚ A fuel having an octane number of 110 means fuel has the same tendency to resist as a mixture of 10 cc of Tetra ethyl lead (TEL) in one U.S gallon of Isooctane.