



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.



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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUB301 – AUTOMOTIVE FUELS AND LUBRICANTS

III YEAR / V SEMESTER

Unit 4 – Properties and Testing of Fuels

Topic : Relative density, Calorific value, Flash point, Fire point



RELATIVE DENSITY



- Relative density is **the ratio of the density (mass of a unit volume) of a substance to the density of a given reference material (i.e., water).**
- It is also called as specific gravity
- It is usually measured at room temperature (20 Celsius degrees) and standard atmosphere (101.325kPa).
- The specific gravity of diesel is **2.3**

$$\text{Specific gravity} = \frac{\text{Density of the object}}{\text{Density of water}} = \frac{\rho_{\text{object}}}{\rho_{\text{H}_2\text{O}}}$$



TESTING OF RELATIVE DENSITY



PYCNOMETER





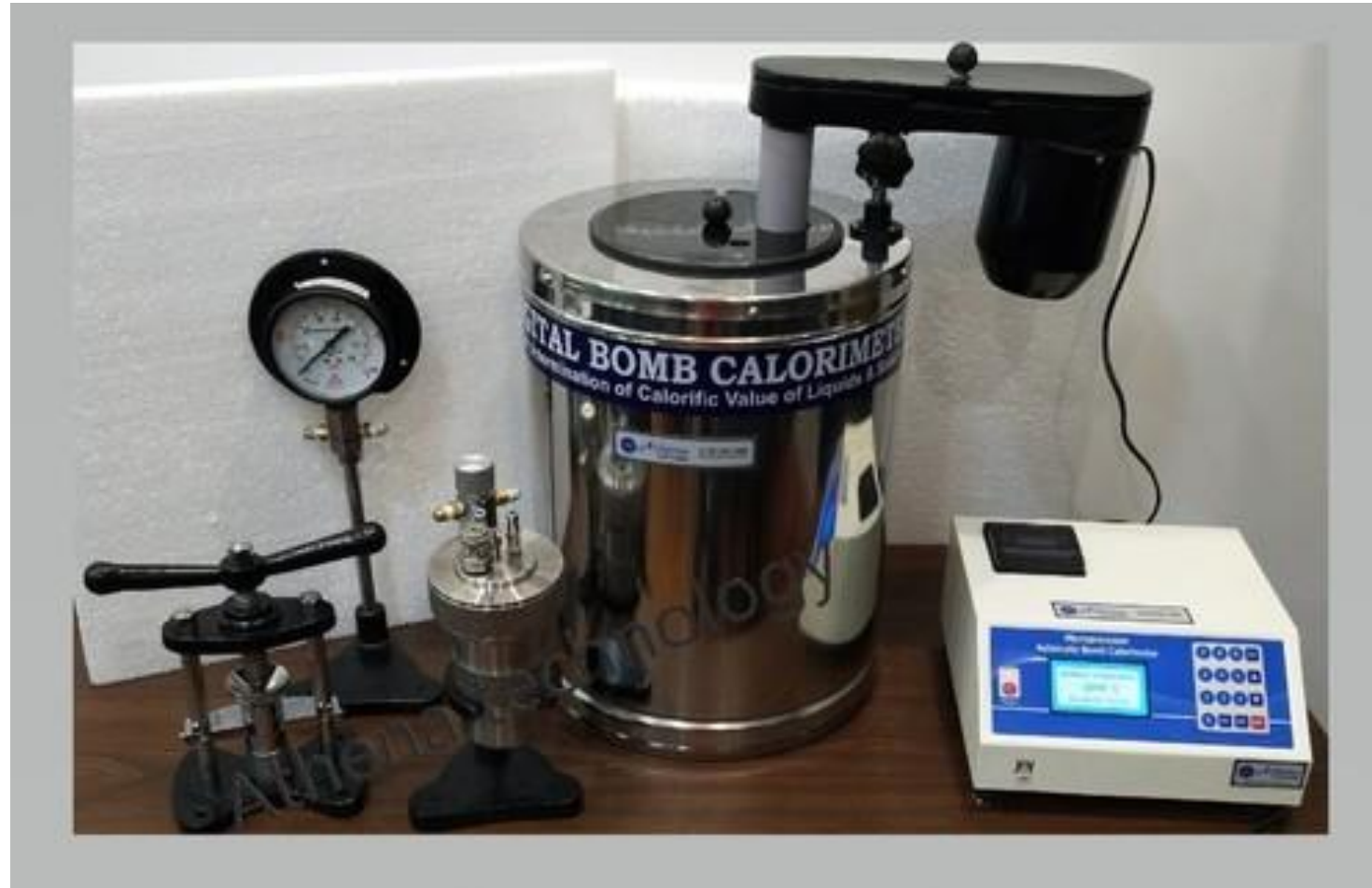
CALORIFIC VALUE



- Calorific value refers to the amount of heat produced when 1 kg of a fuel undergoes complete combustion with oxygen.
- Its SI unit is kJ/kg.
- It is also called as heating value.



TESTING OF CALORIFIC VALUE





FLASH POINT



- Flash point is the lowest temperature at which a liquid can give off vapor to form an ignitable mixture in air near the surface of the liquid.
- The lower the flash point, the easier it is to ignite the material.



FIRE POINT



- Fire point refers to the temperature at or above which a flammable liquid produces enough vapor to ignite by spark or flame and burn for at least five seconds.
- The fire point is usually 10°C more than the flash point of a liquid.



TESTING OF FLASH AND FIRE POINT





REFERENCE



- <http://chemcases.com/fuels/fuels-a.htm>



THANK YOU !!!