



# **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 : API gravity, Aniline point, Carbon residue, Copper strip corrosion**



# API GRAVITY



- API gravity is a measure of how heavy or light a petroleum liquid is compared to water.
- API stands for American Petroleum Institute gravity.

$$\text{API} = (141.5 / \text{Specific Gravity}) - 131.5$$

- The API Gravity of a product is very important in determining the characteristics of the petroleum product.
- A crude oil will typically have an API between 15 and 45 degrees.
- Higher API indicates a lighter (lower density) crude. Lower API indicates a heavier (more dense) crude.



# ANILINE POINT



- The aniline point of an oil is defined as the minimum temperature at which equal volumes of aniline and lubricant oil are miscible.
- It is the point at which the oil becomes miscible in aniline.
- The aniline point is called the "aniline point temperature," which is **the lowest temperature at which equal volumes of aniline ( $C_6H_5NH_2$ )** and the oil form a single phase.



# TEST FOR ANILINE POINT





# CARBON RESIDUE



- The carbon residue of a fuel is the tendency to form carbon deposits under high-temperature conditions in an inert atmosphere.
- The carbon residue value of fuel depends on the refinery processes employed in its manufacture.
- Carbon residue is an indication of **the fuel to decompose and form carbonaceous material** that can plug diesel fuel injection nozzles.



# RAMSBOTTOM CARBON RESIDUE APPARATUS





# COPPER STRIP CORROSION TEST



- This is a qualitative method that is used to determine the level of corrosion of petroleum products.
- In this test, a polished copper strip is suspended in the product and its effect observed.
- A copper corrosion test is performed to ensure that a grease will protect the metal surfaces it comes in contact with over time.



# COPPER STRIP CORROSION TEST







## REFERENCE



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



THANK YOU !!!