— University of Mosul —
College of Petroleum & Mining Engineering

Petroleum Chemistry

Lecture 4

Dr. Semaa I. Khaleel

Petroleum and Refining Engineering Department

Email: semaaibraheem@uomosul.edu.iq

IV- Metallic components:

Disadvantages:

1- Affected on catalyst activity.

2-Coke formation.

3- Reduced the yield of the gasoline

4- Form ash deposits-power generation plants.

5- Corrosion .

Types of metallic components in the petroleum:

1- Organic metallic (Iron Fe, Nickel Ni, Vanadium V, Cadmium Cd,..).

2- Soap metallic (Magnesium Mg, Calcium Ca,…).

3- Salt metallic (Na^{+2}, Ba^{+2} ,….).

VI- Brine water:

Water molecules are suspension in crude oil with extremely high concentrations of dissolved salt ions nearly 300-300,000 ppm . The ions are divided to types:

1- Positive ions (Na^{+} , Ba^{+2} ,Mg^{+2} , Al^{+3} ,....).

2- Negative ions (Cl^{-}, Br^{-}, SO_4^{-2} , I^{-},.....).

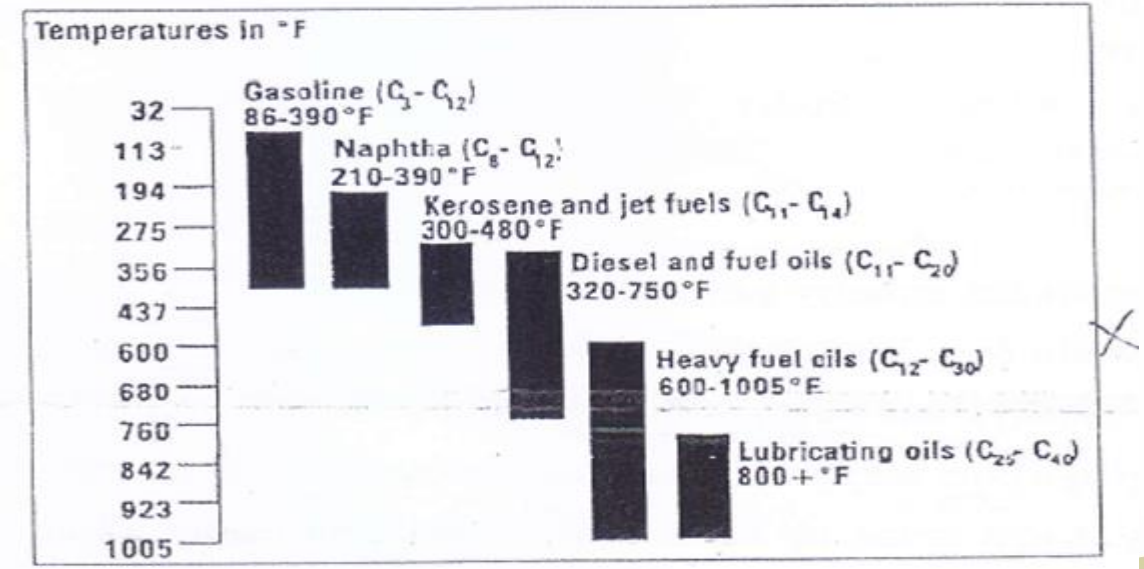

Fig. A-1 Hydrocarbon composition and boiling ranges for maior refined products

7- Classification of crude oil:

The first crude oil classification is by the types of hydrocarbon (paraffins, naphthenes, and aromatics)' This rating is important to the refinery since the value of the crude oil decreases from classification 1to6.

Crude Classifications (in order of decreasing value):

1)Paraffinic Crudes

Paraffins + naphthenes > 50%

paraffins > naphthenes paraffins> 40%

2) Naphthenic Crudes

Paraffins + naphthenes >50%

naphthenes > paraffins

naphthenes >40%

4) Aromatic - Naphthenic Crudes

aromatics > 50%

5) Aromatic - Intermediate Crudes

aromatics > 50%

paraffins >10%

6) Aromatic - Asphaltic Crudes

naphthenes> 25%

paraffins < 10%

The petroleum industry generally classifies crude oil by the geographic location it is produced in (e.g. West Texas, Brent, or Oman), is API gravity (an oil industry measure of density), and by its sulfur content.