

Question 14

A side reaction in the manufacture of rayon from wood pulp is



How many grams of Na_2CS_3 are produced in the reaction between 92.5 mL of liquid CS_2 and 2.78 mol NaOH ?

(Given *density of CS_2* = 1.26 g/mL)

$$\text{Density} = \frac{\text{Mass solution, g}}{\text{Volume solution, mL}}$$

Mass of CS_2 = Density x Vol solution

= _____ g

Mol of CS_2 = _____ g
g/mole

= _____ mole

Ar of Na = 23

Ar of O = 16

Ar of H = 1

Ar of C = 12

Ar of S = 32

Mol of NaOH = 2.78mole

Mole of product formed
based on **LR!!**

There are **3 methods** to determine the
LR:

- 1) Compare mole ratios of the reactants
- 2) Compare the amount of products
based on different reactants**
- 3) Compare the mole needed vs mole
required



Lets say we
use **mole
ratio of the
reactants** to
determine
the LR

Compare the mole ratio of the reactants



$$\text{Mole ratio of CS}_2 = \frac{\text{mol of CS}_2}{\text{S. Coefficient CS}_2} = \underline{\hspace{2cm}} =$$

$$\text{Mole ratio of NaOH} = \frac{\text{mol of NaOH}}{\text{S. Coefficient NaOH}} = \underline{\hspace{2cm}} =$$

Mole ratio of CS₂ _____ mole ratio of NaOH

Limiting reactant is _____

From balanced equation

6 moles of NaOH produces 2 moles Na₂CS₃

6 moles NaOH = 2 moles Na₂CS₃

_____ mol NaOH = ____ x _____ mol Na₂CS₃

= _____ moles Na₂CS₃

$$\text{Mole Na}_2\text{CS}_3 = \frac{\text{mass Na}_2\text{CS}_3}{\text{molecular mass Na}_2\text{CS}_3}$$

mass Na₂CS₃ = _____ g