

6. Percentage yield (yield means product):

Unit: grams/kilograms

Percentage yield tells us how much percent product was formed.

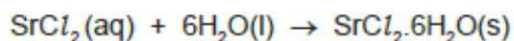
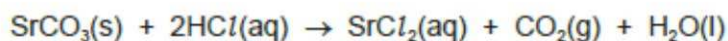
% Yield = Actual yield ÷ Predicted yield.

Note: Actual yield is the yield (Product) we get through our experiment and Predicted yield is the yield(product) that we get via calculations.

Example

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- (b) Strontium chloride-6-water can be made from the insoluble compound, strontium carbonate, by the following reactions.



- (c) In the above experiment, 50.0 cm³ of hydrochloric acid of concentration 2.0 mol/dm³ was used. 6.4 g of SrCl₂·6H₂O was made. Calculate the percentage yield.

number of moles of HCl used =

number of moles of SrCl₂·6H₂O which could be formed =

mass of one mole of SrCl₂·6H₂O is 267 g

theoretical yield of SrCl₂·6H₂O =g

percentage yield =%

[4]

Solution:

No. of moles of HCl formed = conc of HCl × Vol of HCl = 2 × 0.050 = 0.1

Ideal mole ratio is

| | | |
|-----|---|--------------------------------------|
| HCl | : | SrCl ₂ ·6H ₂ O |
| 2 | : | 1 |

Experimental mole ratio

| | | |
|-----|---|----------------------------|
| 0.1 | : | (half of HCl moles) =0.05 |
|-----|---|----------------------------|

Hence: No. of moles of SrCl₂·6H₂O that could be formed = 0.05

Theoretical yield(calculated mass) of SrCl₂·6H₂O

$$= \text{Moles} \times M_r = 0.05 \times 267 = 13.35\text{g}$$

Percentage yield = Actual yield ÷ Predicted yield

$$= (6.4 \div 13.35) \times 100 = 47.94\% = 47.9\%$$
