

3.72

$$2 \text{Al(OH)}_3 + 3 \text{H}_2\text{SO}_4 \rightarrow \text{Al}_2(\text{SO}_4)_3 + 6 \text{H}_2\text{O}$$

0.5 mole 0.5 mole 0.167 mole 3 mole excess

LR

0.5 mole Al(OH)_3	1 mole $\text{Al}_2(\text{SO}_4)_3$	= 0.25 mole $\text{Al}_2(\text{SO}_4)_3$
2 mole Al(OH)_3	2 mole $\text{Al}_2(\text{SO}_4)_3$	

0.5 mole H_2SO_4	1 mole $\text{Al}_2(\text{SO}_4)_3$	= 0.167 mole $\text{Al}_2(\text{SO}_4)_3$
3 mole H_2SO_4	3 mole $\text{Al}_2(\text{SO}_4)_3$	

LR → used up!

How much of Al(OH)_3 is left over after the (LR) H_2SO_4 is used up?

Used up... LR	0.5 mole H_2SO_4	2 mole Al(OH)_3	= 0.333 mole Al(OH)_3 Used.
have	0.5	3 mole H_2SO_4	

0.5 - 0.333 → 0.167 mole Al(OH)_3 left over.

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Theoretical yield → Calculate (Math) what we should get in a perfect situation

Actual yield → Actual in LAB results.

Theo % H_2O in $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

Math P.T.

$$\frac{5(18)}{64 + 32 + 4(16) + 5(18)} = \frac{90}{250} = 36\%$$

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Theo = 36% LAB 34.5%
 Math. Actual

$\% \text{ Error} = \frac{|\text{Act} - \text{Theo}|}{\text{Theo}} \times 100 = \frac{|34.5 - 36|}{36} \times 100 = 4.17\%$

← Absolute value always ⊕

$\% \text{ Yield} = \frac{\text{Act}}{\text{Theo}} \times 100$

$= \frac{34.5}{36} \times 100 = 95.83\%$

4.17% error

100%

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$\% \text{ yield} + \% \text{ error} = 100\%$

"right" "wrong"

HW PS 3-1 1995 PS changes

S.A.W.

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