Tracking Oxygen in a Copper Pigment Model

Scoring guide · one credit per question · review written work against each rubric

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Question 1

The coefficients are 2, 1, and 4. Two Cu_2O units supply two oxygen atoms and one O_2 supplies two more. The four CuO units contain four oxygen atoms. Copper also balances at four atoms.

Question 2

Choice (2)

Oxygen has oxidation number −2 in both oxides. The average copper oxidation number is +1 in Cu_2O and +2 in CuO.

Question 3

The mass increase is 7.55 g − 7.15 g = 0.40 g. Under the model only oxygen entered the solid.

Question 4

Complete conversion would add 7.95 − 7.15 = 0.80 g oxygen. The actual increase of 0.40 g is half of that. Because the equation gives a fixed oxygen requirement per amount of Cu_2O, one-half reacted.