Removing Magnesium from Ceramic Rinsewater

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

Removing Magnesium from Ceramic Rinsewater

Question 1

Choice (1)

Chloride remains in solution. The net equation shows magnesium ions and hydroxide ions forming the solid.

Question 2

There are 2 mol OH^- per 1 mol Mg^{2+}. Therefore (0.0040 mol Mg^{2+})(2 mol OH^-/1 mol Mg^{2+}) = 0.0080 mol OH^-.

Question 3

One Mg^{2+} contributes +2 and two OH^- ions contribute 2 × (−1) = −2. The total charge is zero, consistent with the neutral solid.

Question 4

Choice (2)

Trial Q leaves 3.0 mg/L of dissolved magnesium and has a pH of 10.3. P leaves too much dissolved magnesium. R exceeds the pH limit.

Question 5

Multiply the concentration, 3.0 mg/L, by 0.500 L. The portion contains 1.5 mg of dissolved magnesium.

Question 6

R has the lowest dissolved magnesium reading, 0.04 mg/L. Its pH of 11.3 exceeds the allowed 10.5. Q meets both limits with 3.0 mg/L and a pH of 10.3.