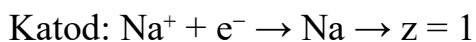


NAMUNAVIY MASALALAR

1-masala. Suyuqlanma elektrolizi (NaCl)

Suyuqlanma NaCl elektrolizida 193 kC zaryad o'tkazildi. Katodda qancha natriy ajraladi?

Yechim:



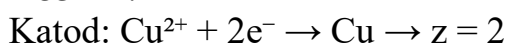
$$m = (M \cdot Q) / (z \cdot F)$$

$$m = (23 \cdot 193000) / (1 \cdot 96500) \approx 46.0 \text{ g}$$

2-masala. Eritma elektrolizi (CuSO₄, inert elektrod)

CuSO₄ eritmasidan 30 minut davomida 2.0 A tok o'tkazildi. Katodda qancha mis ajraladi?

Yechim:



$$t = 30 \text{ min} = 1800 \text{ s}$$

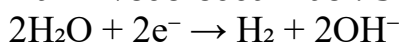
$$m = (63.5 \cdot 2.0 \cdot 1800) / (2 \cdot 96500) \approx 1.18 \text{ g}$$

3-masala. Eritmada katod mahsulotini aniqlash

NaCl suvli eritmasi elektrolizida katodda qaysi modda ajraladi? Sababini ayting.

Yechim:

Na — vodoroddan faol. Shuning uchun katodda suv qaytariladi:



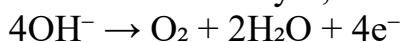
H₂ gazi ajraladi.

4-masala. Anod mahsuloti (eritma)

Na₂SO₄ eritmasi elektrolizida anodda qaysi gaz ajraladi?

Yechim:

SO₄²⁻ oksidlanmaydi, suv oksidlanadi:



O₂ gazi ajraladi.

5-masala. Gaz hajmini hisoblash (H₂)

Eritma elektrolizida 9650 C zaryad o'tkazildi. Normal sharoitda katodda ajralgan vodorod hajmini toping.

Yechim:



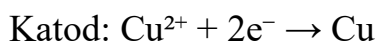
$$n = Q/(z \cdot F) = 9650/(2 \cdot 96500) = 0.050 \text{ mol}$$

$$V = n \cdot 22.4 = 0.050 \cdot 22.4 = 1.12 \text{ L}$$

6-masala. Anod va katod bog'lanishi

CuSO_4 eritmasi elektrolizida katodda 3.18 g Cu ajraldi. Anodda (inert elektrod) qancha O_2 ajraladi? (mol hisobida)

Yechim:



$$n(\text{Cu}) = 3.18 / 63.5 = 0.050 \text{ mol}$$

$$\text{Elektronlar: } 0.050 \cdot 2 = 0.10 \text{ mol e}^-$$



$$n(\text{O}_2) = 0.10 / 4 = 0.025 \text{ mol}$$

7-masala. Faradeyning ikkinchi qonuni

Bir xil zaryadda Cu va Ag ajraldi. Agar 1.08 g Ag ajralgan bo'lsa, Cu massasi qancha?

Yechim:

$$E(\text{Ag}) = 108 / 1 = 108$$

$$E(\text{Cu}) = 63.5 / 2 = 31.75$$

$$m(\text{Cu}) / 1.08 = 31.75 / 108$$

$$m(\text{Cu}) = 1.08 \cdot 31.75 / 108 \approx 0.32 \text{ g}$$

8-masala. Tok kuchini aniqlash

CuSO_4 eritmasida 2.54 g Cu 40 minutda ajraldi. Tok kuchini toping.

Yechim:

$$n(\text{Cu}) = 2.54 / 63.5 = 0.040 \text{ mol}$$

$$\text{Elektronlar: } 0.040 \cdot 2 = 0.080 \text{ mol e}^-$$

$$Q = n(\text{e}^-) \cdot F = 0.080 \cdot 96500 = 7720 \text{ C}$$

$$t = 40 \text{ min} = 2400 \text{ s}$$

$$I = Q/t = 7720 / 2400 \approx 3.22 \text{ A}$$

9-masala. Suyuqlanma va eritma farqi

Suyuqlanma CaCl_2 va uning suvli eritmasi elektroliz qilindi. Katod mahsulotlarini taqqoslang.

Yechim:

- Suyuqlanma: $\text{Ca}^{2+} + 2\text{e}^- \rightarrow \text{Ca} \rightarrow \text{Ca metall}$
- Eritma: $\text{Ca faol} \rightarrow \text{suv qaytariladi} \rightarrow \text{H}_2 \text{ gazi}$

10-masala. O_2 hajmi (elektroliz)

Shart:

Elektrolizda anodda 0.20 mol O_2 ajraldi. O'tgan zaryadni toping.

Yechim:

Anod: $4\text{e}^- \rightarrow \text{O}_2$

$$n(\text{e}^-) = 0.20 \cdot 4 = 0.80 \text{ mol}$$

$$Q = n \cdot F = 0.80 \cdot 96500 = 77200 \text{ C}$$