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Potassium dichromate and potassium permanganate

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
n-factor of MnO4^- (acid)	Mn +7 to +2: n = 5 Valid when: MnO4- reduced to Mn2+ in acidic solution	equivalents per mole
n-factor of MnO4^- (neutral)	Mn +7 to +4 (MnO2): n = 3 Valid when: MnO4- reduced to MnO2 in neutral or weakly alkaline solution	equivalents per mole
n-factor of MnO4^- (strong alkali)	Mn +7 to +6 (MnO4^2-): n = 1 Valid when: MnO4- reduced to MnO4^2- in strongly alkaline solution	equivalents per mole
n-factor of Cr2O7^2- (acid)	two Cr, +6 to +3: n = 6 Valid when: Cr2O7^2- reduced to Cr3+ in acidic solution	equivalents per mole
Equivalent mass	molar mass / n-factor (KMnO4 158, K2Cr2O7 294 g per mol) Valid when: Redox titration; n-factor is electrons gained or lost per formula unit	g per equivalent
End point	M1 V1 n1 = M2 V2 n2 Valid when: Redox titration at the end point; n is the n-factor of each species	milliequivalents
Dichromate in acid	Cr2O7^2- + 14H+ + 6e- gives 2Cr3+ + 7H2O Valid when: Acidic solution; gives Cr3+ as the product	n/a (half-reaction)
Permanganate in acid	MnO4^- + 8H+ + 5e- gives Mn2+ + 4H2O Valid when: Acidic solution; gives Mn2+ as the product	n/a (half-reaction)
Preparation sequences	FeCr2O4, Na2CrO4, Na2Cr2O7, K2Cr2O7; MnO2, K2MnO4, KMnO4	sequence

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/chemistry/d-and-f-block-elements/potassium-dichromate-and-potassium-perman

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