SUMMARY

N-Chloroacetamide has been used as a redox reagent for the determination of some common reductants (arsenious oxide, potassium iodide, potassium thiocyanate, stannous chloride, thallous nitrate, ascorbic acid, sodium sulphite, hydroquinone or metol) and hydrazines (4-phenylsemicarbazide hydrochloride, p-methoxybenzal semicarbazone, benzal semicarbazone, phenyl-hydrazine hydrochloride, 3,4-dinitrophenylhydrazine, vanillin-semicarbazone, semicarbazide hydrochloride, hydrazine sulphate, benzalazine or β-acetylphenylhydrazine) in hydrochloric acid medium; and thioureas (thiourea, methyl thiourea, ethyl thiourea, iso-propyl thiourea, n-butyl thiourea, iso-butyl thiourea, n-amyl thiourea, o-tolyl thiourea, o-methoxy phenyl thiourea or ethoxy phenyl thiourea) in sulphuric acid medium.

In the visual titrations of common reductants and hydrazines, iodine monochloride has been used as a catalyst and indicator in the extraction end-point method using chloroform as the organic liquid. In the potentiometric titrations, platinum wire electrode is used as an oxidation-reduction electrode and this is coupled with a saturated calomel electrode. At the equivalence point, there is a sharp jump in potential in each titration. Hydrazine group in hydrazine and its organic derivatives is oxidised to nitrogen with a four-electron change.
Thiourea and its organic derivatives have also been determined in sulphuric acid medium in presence of potassium iodide by N-chloroacetamide. In visual titrations amylose is used as an indicator which turns blue at the end-point.

The thioureas are oxidised to their corresponding disulphides with a single-electron change with this oxidant.

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2 \text{RHN} \overset{\text{C-SH}}{\longrightarrow} \text{RHN} \overset{\text{C-S-S-C}}{\longrightarrow} \text{RHN} \overset{\text{NH}}{\longrightarrow} + 2H^+ + 3e
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\( R = \text{hydrogen atom, alkyl or aryl group} \)

N-Chloroacetamide as an oxidant can be favourably compared with chloramine-T which also contains (-N-Cl) group.

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