

### 3. Reference Electrodes

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**REFERENCE ELECTRODES** (known potential; other electrode potentials determined w.r.t. these electrodes)

Primary R.E.

Failed

Secondary R.E.

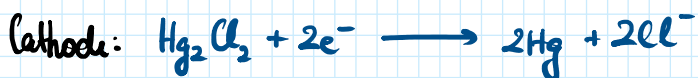
Calomel electrode  
Silver-silver chloride electrode

#### **CALOMEL ELECTRODE**

- Cell representation:  $\text{Hg} | \text{Hg}_2\text{Cl}_2 | \text{Cl}^-$
- Metal-metal salt ion electrode
- Secondary reference electrode
- Calomel:  $\text{Hg} + \text{HgCl}_2$

DIAGRAM: add

Salt solution	E
Saturated KCl	0.2422
1N KCl	0.281
Decinormal (0.1N)	0.334



$$E = E^\circ - \frac{0.0591}{2} \log [\text{Cl}^-]^2$$

[or]

$$E = E^\circ - 0.0591 \log [\text{Cl}^-]$$