

Primary Lead Processing*

Sintering
 Input: Pb Concentrate + iron, silica, limestone fluxes, coke etc.
 Reaction: $2PbS + 3O_2 \Rightarrow 2PbO + 2SO_2$

Secondary Lead Processing

Input: Lead scrap, battery waste + slag, scrap iron, limestone, coke, oxides, dross, and reverberatory slag

Lead acid battery Processing

Slimes & sludges, battery scrap antimony & lead-rich

Indirect processing
 Slimes and sludges battery scrap antimony and lead rich are made by aqueous alkaline leaching of the majority of the sulphate from the lead-containing material recovered from recycled lead-acid batteries. The lead is mainly present as carbonates.

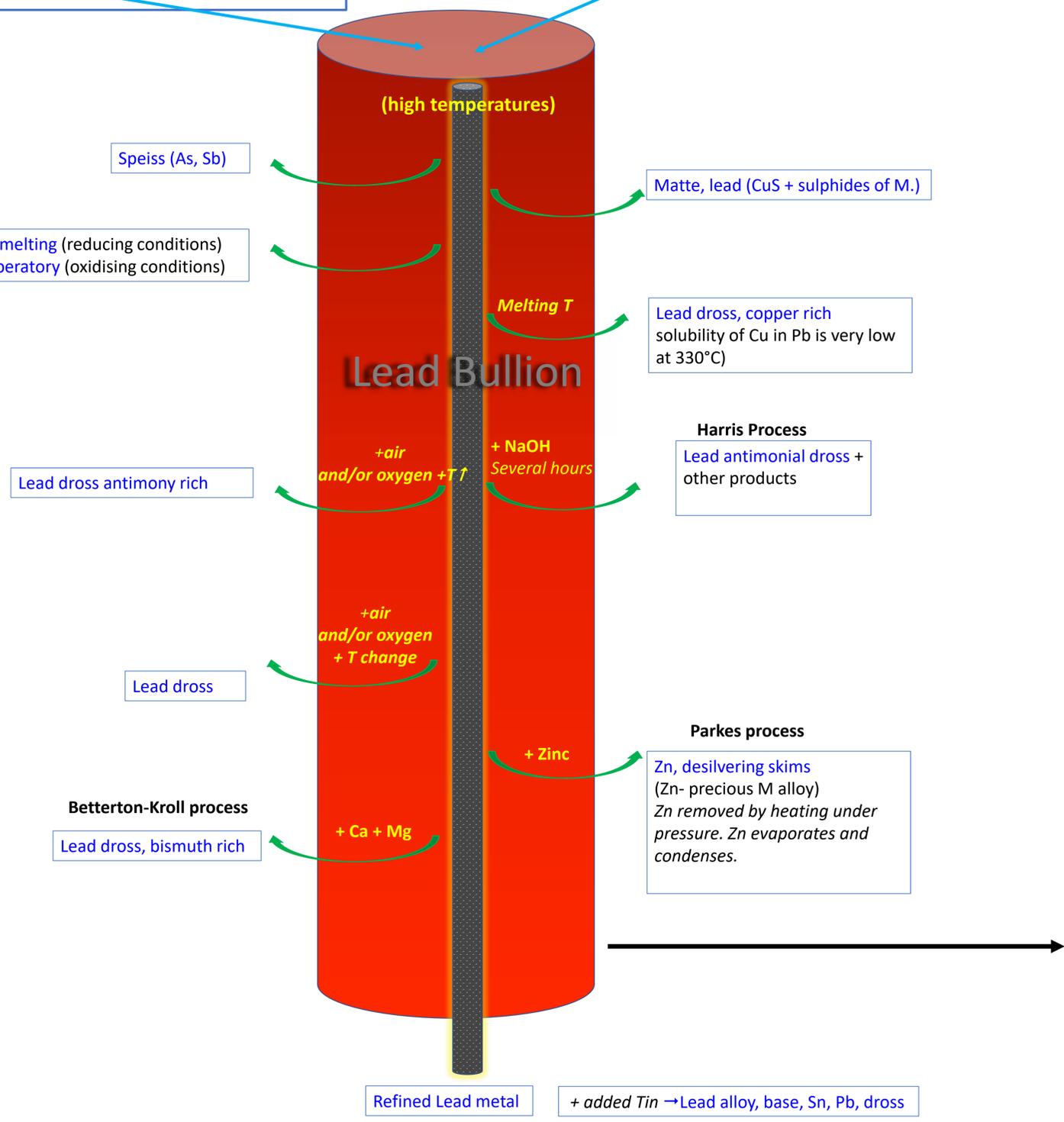
$PbSO_4$ (paste) + 2 NaOH (aq) → PbO (paste) + Na₂SO₄(aq) + H₂O
 $PbSO_4$ (paste) + Na₂CO₃ (aq) → PbCO₃ (paste) + Na₂SO₄(aq)

Waste, battery reprocessing

Direct processing:
 Wastes, lead battery reprocessing is made by recovering the lead compounds from exhausted lead-acid batteries and converting it into a prepared solid feed suitable for lead smelting. Lead is mainly present as oxides, sulphates and in metallic form

- $PbSO_4 + Na_2CO_3 \rightarrow PbO + Na_2SO_4 + CO_2$
- $PbO_2 + Fe \rightarrow PbO + FeO$
- $2PbO_2 + 2Fe + C \rightarrow 2Pb + 2FeO + CO_2$

Enriching Pb



Flue dust, lead refining
 Flue dust lead refining is formed as a by-product from refining and smelting of lead containing materials

*Please note: Not all reactions and products are shown. The focus of this schematic is to show the conditions under which the individual Lead UVCBs are isolated. UVCBs indicated in blue font.