EXPERIMENTAL PROCESS

- The leach liquor containing HNO₃ was initially extracted using TBP as an extractant.
- Various process parameters such as time, concentration of extractant, O/A ratio were studied.
- The leach liquor of PCBs composed of 22.97% Cu, 0.15% Pb, Ni 1.08% Pb, 0.58% Al, 0.31% Sn, 0.42% Fe after extraction of Nitric Acid.
- Then suitable solvent extraction reagent was used for separation & recovery of Copper.
- Then systematic study of Copper extraction was carried using LIX 84IC.

Maximum 41.3% nitric acid extracted with 100% TBP at O/A = 1.

• In two contacts, TBP got saturated & loading capacity was found to be 3.6 M acid
• Three counter current stages required for complete extraction of acid at O/A = 3, equilibrium time = 15 minutes with multilayer TBP.
• Iron from the solution was removed by pH adjustment and air sparging.
• Concentration of LIX 84IC was varied from 5% (0.37 M) to 30% (1.07 M) maintaining O/A=1, equilibrium time = 5 minutes, and in this concentration rage negligible amount of other metals were extracted along with Cu.
• With increase in pH from 2.07 to 2.48, Cu extraction increased from 37.2% to 95% at O/A = 1 & equilibrium time 5 minutes.
• In 3 contacts, 30% LIX 84IC got saturated & loading capacity of the solvent was found to be 22.97.
• Mc-Cabe-Thiele Plot for Cu extraction shows that O/A = 1.27, equilibrium pH=2 and equilibrium time 5 minutes, two counter current stages were required for complete extraction of Cu from acid free leach liquor of PCBs.

REFERENCES

4. Int (2013). The complete extraction of Nitric Acid was accomplished in three counter current stages using 100% TBP at O/A=3 and equilibrium time 15 minutes.
5. Iron concentration was removed by pH adjustment and air sparging as extraction with D2EHPA needed high acid concentration during stripping.
6. The complete extraction of Cu was feasible in two counter current stages using 30% LIX 84IC at O/A=1.2, equilibrium pH=2 and equilibrium time 5 minutes.