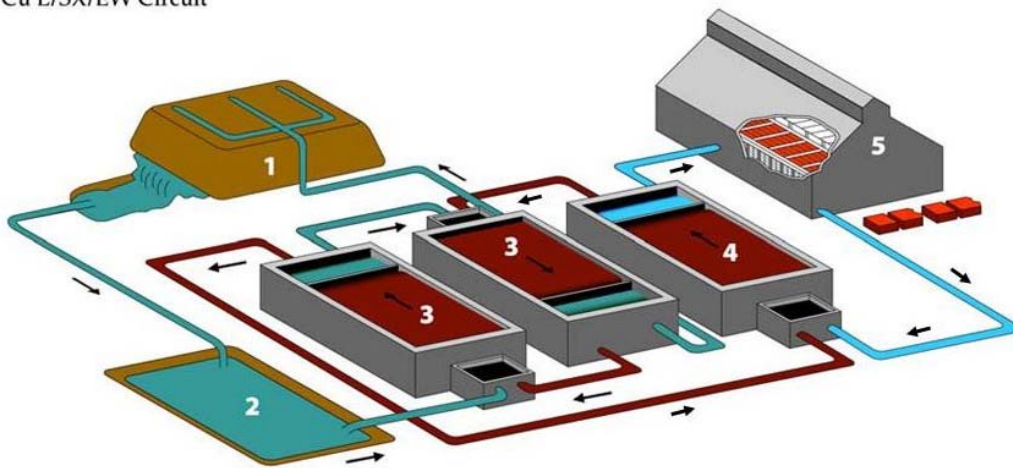




The Copper Solvent Extraction Process

Copper solvent extraction is the lowest cost, most environmentally friendly method available for producing copper metal that is over 99.99% pure. Cytec's ACORGA® solvent extraction reagents lead the market in quality and performance for copper solvent extraction.

Cu L/SX/EW Circuit



1. Copper-bearing ore is sprayed with dilute sulfuric acid. The acid percolates through, dissolving the copper while on its way to step 2.

2. The copper-bearing liquor is collected and stored here prior to feeding to step 3.

3. The extraction mixer-settler equipment, where the copper bearing liquor is contacted with the appropriate Cytec extraction reagent to form an organic soluble complex, typically in two or more extract stages. The copper-loaded organic solution is then advanced to step 4.

4. The stripping mixer-settler equipment, where the copper-loaded organic solution is contacted with acidic electrolyte in one or more stages. This allows re-extraction of the copper by sulfuric acid to form a concentrated, purified electrolyte solution. This solution is then passed on to step 5.

5. The electrowinning tank house, where 99.99% pure copper is deposited from the electrolyte at the cathode.

The acid generated is returned in copper-depleted electrolyte to step 4 to strip more copper from the circulating loaded organic solution. The organic reagent is regenerated during the stripping process (step 4) and is returned to the extraction section (step 3) to extract more copper.