

Title of Technology to be offered	A process for production of tungstic acid from hard and soft tungsten-copper (W-Cu) alloy scraps by hydrometallurgical processes.
Type of Technology	Know-how process
Area of Technology	Waste recycling
Details of Collaborating Agency	Client: Mr. G. L. Modi, Managing Director, Modison Metals Limited, 33 – Nariman Bhavan, 227 – Nariman Point, Mumbai – 400 021, India. And other (W-Cu) alloy scraps generating industries.
Uses	Recovery of tungsten as tungstic acid. It can be used in die industry. The same tungstic acid could be used for the production of tungsten powder by hydrogen reduction. The copper powder may also produced by the known electro-winning process.
Salient Features	For hard alloy scrap: Abstract: The present invention related to a process for producing tungstic acid from hard tungsten copper (W-Cu) alloy scrap employing electrolysis, solvent extraction and precipitation processes. The electrolysis process was used to dissolve the hard W-Cu alloy scrap in alkaline solution with the additive 'A'. The invention is useful for dissolving hard W-Cu alloy scrap housed in the anode support system. The copper dissolved in the electrolyte solution was separated by precipitation/solvent extraction process. The tungsten left behind in the electrolyte solution was recovered as tungstic acid by the solvent extraction and/or precipitation process. For soft alloy scrap: Abstract: The present invention is related to a process for producing tungstic acid from soft tungsten copper (W-Cu) alloy scrap employing leaching, solvent extraction and precipitation processes. The leaching process was used to dissolve the soft W-Cu alloy scrap in alkali solution. The invention is useful for dissolving soft W-Cu alloy scrap in the special reactor to the extent of more than 70%. The copper dissolved solution was separated by precipitation/solvent extraction process. The tungsten left behind in the mother liquor was recovered as tungstic acid by the solvent extraction and/or precipitation process.
Scale of Development	For hard tungsten-copper alloy scrap: 1.5 kg For soft tungsten alloy scrap: 25 g
Major Raw Materials	Hard tungsten-copper alloy scrap and soft tungsten-copper alloy scrap

Major Plant Equipment/Machinery	Rectifier, Electrolysis cell, Rotary evaporator , Leaching reactor etc.
Details of specification application	Purity of Tungstic acid: 99.80% tungsten
Status of Development	a. The know-how process could be demonstrated on 1.5 kg scale b. The know-how process could be demonstrated on 50 g scale
Ecological/Environmental Impact (if any, specify briefly)	No harmful environmental impact
Patenting details	<ol style="list-style-type: none"> 1. A process for the preparation of tungstic acid from hard tungsten-copper alloy scrap by hydrometallurgical process. (Appl. No.: 0566 Del. 2009) 2. A process for the production of tungstic acid from soft tungsten-copper alloy scrap by hydrometallurgical processes. (Appl. No.: 0564 Del. 2009)
Commercialisation Status	Ready for commercialisation
Techno-Economics	ROI: For hard W-Cu alloy scrap: 75% For soft W-Cu alloy scrap: 80%
Key words	Hard and soft tungsten-copper(W-Cu) alloy scrap, electro-leaching of W-Cu alloy scrap, tungstic acid, tungsten powder