

# Caro's Acid Generators

## For Cyanide Destruction in Mining Operations

TECHNICAL DATA SHEET  
CYN-TDS-APT-07

### What It Does

Once the sodium cyanide molecules have done their important job and lixivated the gold or silver from the ore, some residual cyanide will remain in the effluent and tailings. Cyanco Caro's Acid Generators allow customers to apply Caro's Acid – or peroxymonosulfuric acid,  $H_2SO_5$  – to efficiently and effectively detoxify any cyanide-containing effluents.

### How It Works

Cyanco will custom design a generator based on our High-Yield 'Cold' Caro's Acid Generator. Our 'Cold' technology provides a high purity  $H_2SO_5$  yield from the reactants by controlling the temperature during and after the reaction.



### Features:

- » The units are controlled by a PLC with the ability to interface with the facility's own control system.
- » Generators can be operated in any weather condition.
- » All generators meet or exceed all applicable approvals such as UL or CSA and electrical components comply with NEMA 4X.
- » Allows Caro's Acid to be delivered to multiple locations if more than one treatment point is required.

### CUSTOMER BENEFITS



**COST SAVINGS** The reaction between cyanide and  $H_2SO_5$  is typically very rapid, which eliminates the need for large, costly reaction vessels

**PROCESS EFFICIENCY** Caro's Acid works extremely well for destroying cyanide in slurries, typically with no additional catalyst required. With a Cyanco Caro's Acid Generator, virtually any Caro's Acid production rate can be accommodated.

**READILY AVAILABLE RESOURCES** Both feedstocks, sulfuric acid and peroxide, are readily available worldwide.

**EASE OF USE** Cyanco Caro's Acid Generators and storage tanks are skid-mounted for easy transport and installation.

Cyanco Caro's Acid generator is designed to safely and efficiently combine 70% hydrogen peroxide and 93% sulfuric acid to produce a high yield of Caro's acid to detoxify cyanide-containing slurries.

HIGH YIELD "COLD" H <sub>2</sub> SO <sub>5</sub> GENERATOR	
Mixing Temperature	20 – 25 °C
Product Stability	<ul style="list-style-type: none"> <li>Stable due to reduced temperatures</li> <li>Low decomposition rate</li> </ul>
Product Handling	<ul style="list-style-type: none"> <li>Can be stored then used</li> <li>Can be pumped into multiple locations</li> </ul>
Product Yield	<ul style="list-style-type: none"> <li>Yields can be analyzed and verified</li> <li>&gt; 75%</li> </ul>

MAIN EQUIPMENT	
Control method	Local PLC/HMI with optional remote monitoring
Installed pumps	Duplicate in-line pumps installed for each section of the system – hydrogen peroxide, sulfuric acid, chill water, and Caro's acid.
Piping & Control valves	Stainless steel, and various compatible alloys and materials.

HARDWARE				
PLC	Modicon based technology, proven field reliability			
Communication capabilities	4 - 20 mA signal and Modbus-TCP/IP communication method			
Chill Water Source	Chill water unit provided with Caro's Acid system			
DIMENSIONS: (APPROXIMATE)	HEIGHT	LENGTH	WIDTH	WEIGHT
Caro's Acid Unit	8 feet	26 feet	8 feet	16,000 lbs
Chill Water Unit	6 feet	6 feet	8 feet	4,100 lbs

SERVICES REQUIRED FROM CUSTOMER AT THE TIME OF INSTALLATION	
Services of an I&E technician for unit power and signal wire installation; ethernet installation is optional	Unit installed on solid foundation with access to all side of the unit.
Power to Caro's Acid Unit: 600 VAC, 50Amp, 60Hz, 3 Phase	<ul style="list-style-type: none"> <li>Access to fully functioning eye wash and safety showers.</li> <li>Water under pressure is a required resource to ensure safety.</li> </ul>
Power to Water Chill Unit: 600VAC, 150Amp, 60Hz, 3 Phase	Availability of proper safety equipment including PPE with full protective chemical resistant suit, face shield and chemical goggles

REQUIRED REAGENTS
Hydrogen Peroxide (H <sub>2</sub> O <sub>2</sub> ) – 70%
Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> ) – 93%
Water source for chill water unit

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