

HAVE A MINING WATER CHALLENGE? PROBLEM SOLVED.

Cat® Water Treatment Advanced Water Treatment for Mining

Mining requires a substantial amount of water to crush and grind ore, extract minerals, transport waste (in slurries and suspensions), cool equipment, and for dust suppression. In addition to burdening water tables, these processes generate wastewater that must be managed. Heap leach piles and tailings ponds can spill or leak. Pit lakes can become a permanent water draw. Runoff from acid mine drainage can damage the environment and threaten animal and plant life.

When it comes to water management, current methods for the treatment, recycling and disposal of mining process water and wet tailings are not always cost-effective and sustainable alternatives. As such, Caterpillar brings an innovative offering that sets a new benchmark for cost-effective treatment, removal of harmful contaminants and the extraction of valuable minerals to meet the most complex regulations the growing processing and remediation requirements of the mining industry.

Integrating several treatment processes into a single technology, our mobile water treatment services enable customers to streamline mining processes, recover more valuable minerals and reduce environmental risk. Our high-capacity, small operating footprint and low-cost treatment capabilities reduce capex and opex. **BUILT FOR IT.™**



Cat® Water Treatment Model WT55



Benefits:

- Containerized and mobile (on trailer or ground)
- Scalable to meet all operational needs
- Up to 7,000 Bbls/day (+200 gpm) per unit
- Reduces/eliminates need to purchase fresh water
- Reduces cost of water transportation
- Reduces chemical usage and produced water storage
- Treats water on-site at customer's location (or nearby, if preferred)
- Meets or exceeds environmental compliance obligations
- Automated Safety Management and EHS shutdown procedures
- 24/7 operations availability
- Turnkey water treatment services
- Flexible service contracts
- Customized e-reporting

Cat Water Treatment technology solution removes specific water constituents, which enables mining customers to address their unique water-treatment challenges. This treatment process also removes suspended solids and bacteria, and reduces metal ion species, rendering mining effluent water suitable for re-use or safe environmental discharge.

Typical Removal Rates of Contaminants

Name	Element	HTX Removal Rate %*	Name	Element	HTX Removal Rate %*	Name	Element	HTX Removal Rate %*
Metallic Cations			Metallic Cations - continued			Suspended Solids		
Silver	Ag ⁺	93	Tin	Sn	91	Silicon Dioxide	SiO ₂	95 - 99
Aluminum	Al ³⁺	99	Uranium	U	95	Biological		
Arsenic	As	97	Vanadium	V	99	BOD		85 - 95
Gold	Au	76	Zinc	Zn ²⁺	99	Bacteria		99.9
Boron	B	75 - 85	Calcium	Ca ²⁺	98	Viruses		99.9
Barium	Ba	93 - 99	Potassium	K ⁺	Minimal	Polar Compounds		
Beryllium	Be	90	Magnesium	Mg ²⁺	95 - 99	Ammonium Ion	NH ₄ ⁺	25 - 99
Cadmium	Cd	97	Sodium	Na ⁺	Minimal	Cyanide		99
Chromium	Cr	99	Anions and Salts			Oils		
Cobalt	Co	83	Fluoride	F ⁻	62 - 95	Petroleum / Oils / Grease		99
Copper	Cu ²⁺	99	Chloride	Cl ⁻	Minimal	Benzene	C ₆ H ₆	99
Iron	Fe ²⁺ / Fe ³⁺	99	Chlorine Gas	Cl ₂ =ClO=ClOH	99	Ethyl Benzene		99
Mercury	Hg	98	Bromide	Br ⁻	Minimal	M&P Xylene		99
Manganese	Mn	98	Iodide	I ⁻	Minimal	O-Xylene		99
Molybdenum	Mo	92	Carbonate/Bicarbonate	CO ₃ ²⁻ =HCO ₃ ⁻	95 - 99	Toluene		99
Nickel	Ni ²⁺	99	Nitrite	NO ₂ ⁻	43	MTBE		99
Lead	Pb ²⁺	99	Nitrate	NO ₃ ⁻	78	PCB	Aroclor 1248	86
Platinum	Pt	85	Phosphate	PO ₄ ³⁻	90 - 99	Water Properties		
Antimony	Sb	95	Sulfates	SO ₄ ²⁻	95 - 98	Total Dissolved Solids	TDS	5 - 90
Selenium	Se	44	Calcium Carbonate	CaCO ₃	95 - 99	Conductivity	EC	5 - 90
Strontium	Sr	75 - 95	Hardness	MgCa(CO ₃) ₂	95 - 99	Total Suspended Solids	TSS	99
* - All removal rates are indicative only, and are subject to water matrix / interference effects and require lab testing for final confirmation.						Suspended Solids	Turbidity	99
						COD		85 - 95



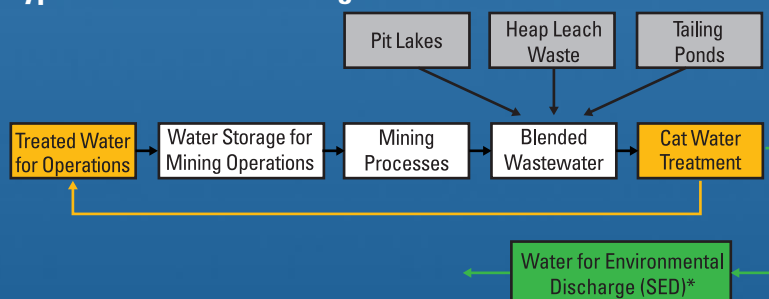
Before

After



Dried solid waste after Cat Water Treatment

Typical Process Flow Diagram



* Dependent on constituents, solid waste may be non-hazardous, TCLP land-fillable waste

For more information, email us at: Water@cat.com

www.cat.com/water treatment

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