

**Rock Kleen Benefits:**

- Targets 100% Beneficial Use
- Recovers Residual Metals
- Recovers Mineral Nutrients
- Recovers Industrial Minerals
- Recovers Nitrogen
- Neutralizes Cyanide
- Cleans the Environment
- Maximizes Sustainability

ROCK KLEEN = ZERO WASTE

Rock Kleen is a revolutionary, disruptive 'tailings recovery' technology. Rock Kleen recovers residual precious metals, base and ferrous metals, nutrient materials, and industrial minerals from what are considered spent mine tailings. Tailings are the crushed rock and clays left-over after separating silver, gold, copper, or other primary metals from the mined product. Tailings may contain residual contaminants, which can potentially damage the environment; silver/gold tailings are contaminated with residual cyanide, while copper tailings are contaminated with residual sulfuric acid. Some tailings are piled onto large pads, while some are stored and managed in over 18,000 tailings dams around the world. Either way you store them, tailings have long been a global problem, that is, until now.

Rock Kleen is a new addition to the Itronics Cleantech Materials Portfolio and was developed to turn tailings into recoverable resources, instead of long-term liabilities; that is, the ability to make a profit while simultaneously cleaning the environment. When Rock Kleen is implemented, the goal is to utilize the whole resource, so nothing is wasted; in many cases 100 percent beneficial use can be realized. Rock Kleen goes even further and neutralizes residual cyanide in gold or silver leaching, or sulfuric acid used in copper leaching, or blasting nitrates, thereby rendering tailings clean, just as nature intended.

Rock Kleen recovers residual gold, silver, and copper, lead, nitrogen, sulfur, iron, nickel, potassium and four U.S. critical minerals, copper, zinc, magnesium, and manganese. After recovery efforts are complete, the remaining clean rock can then be sized and sold as industrial minerals; in the end, nothing is left, all is recovered, profits are made, and the environment improves.

Rock Kleen recovers tailings (heap leach or mill tailings), it can plug into existing projects processing flow sheets, and it can be used to recover historic tailings, in a current operation or in a new mine design.



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