Teck

METALS TO MEDALS BACKGROUNDER

Sourcing the Metal

Teck Resources Limited (Teck) is the exclusive supplier of the metals used in the production of the over 1,000 medals to be awarded at the Vancouver 2010 Olympic and Paralympic Winter Games. The diversified resource company, headquartered in Vancouver, BC, is providing 2.05 kilograms (kg) of gold, 1,950 kg of silver and 903 kg of copper sourced from its operations around the world.

Thanks to Teck, the 2010 medals are making Olympic and Paralympic metal history as the medals will be the first to contain metals recovered from processing the circuit boards from end-of-life electronics (e-waste) otherwise destined for the landfill.

After mining or production through a variety of smelting and recovery processes, each metal has been refined to enhance the metal purity.

In addition to providing the metals, Teck also worked with VANOC and the Royal Canadian Mint in the development and production of the medals.

Gold Metal

The gold in the 2010 Winter Games medals was supplied by three of Teck's North American operations: the Pogo mine near Fairbanks, Alaska, USA; the Hemlo mine near Marathon, Ontario, Canada; and the Trail smelter in British Columbia, Canada. At the Trail smelter, gold produced from smelting ore from various sources, was combined with gold recovered from e-waste to produce gold doré bars. Smelting is a process where ores are heated to separate the metallic components.

The gold doré bars (approximately 87.5 per cent "pure") were chemically refined into gold grains at 99.99 per cent purity — the highest purity of gold. The grains were then transformed into an electrolyte solution for gold plating, which places a layer of gold over a silver base (Olympic gold medals are approximately 92.5 per cent silver).

The electrolyte solution was sent to the Royal Canadian Mint for medal production. In total, 65.78 Troy ounces, or approximately 2.05 kg of 99.99 per cent pure gold will be used for the medal production.

Silver Metal

The silver was sourced from Teck's operations in Trail, BC. The silver was produced through the smelting process — specifically, from lead concentrates containing silver. Silver recovered from the e-waste was also included in the production.

After smelting, the purity of the silver is 99.99 per cent, but it is too soft to be used for medal production. For this reason, the silver is combined with copper to produce sterling silver (sterling silver is made up of 92.5 per cent silver and 7.5 per cent copper). In total, approximately 1,950 kg of pure silver was used to produce the sterling silver used for the production of the silver medals and as the base for the gold medals.

Copper Metal
The copper for the bronze medals was produced at a number of locations and through a variety of processes. Pure copper metal, known as copper cathode, came from Teck's Carmen de Andacollo and Quebrada Blanca operations in Chile. Teck's Duck Pond Operation, Newfoundland, Highland Valley Copper Mine in BC and Antamina Mine in Peru produce a copper concentrate.

At Teck's CESL facility in Richmond, BC, copper concentrates undergo a patented hydrometallurgical process to produce copper metal. Copper metal from all these sources was combined with metal recovered from end-of-life electronics at the facilities in Trail.

The copper was "annealed" in a process to strengthen it at the Royal Canadian Mint. In total, approximately 903 kg of copper will be used for the 2010 Winter Games' medal production.

Innovation
Historically, metal for the medals has been sourced only from mineral deposits that are mined from the earth and refined for commercial use. Teck has created a recycling process to recover metal from end-of-life electronics (e-waste) such as TVs, computers and keyboards. This process provides a practical solution to the challenge of reducing the amount of e-waste material destined for landfills and is part of the company's pursuit of sustainability—a core value that drives its approach to business.

Metal can be sourced from many manufactured metal products, including household appliances, electronics or cables. Teck's process involves recovering metals contained in cathode ray tube glass, computer parts and circuit boards through smelting. The process involves shredding, separating, and heating of the various electronic components to recover a variety of metals.

The gold, silver and copper used in the medals was recovered from end-of-life electronics circuit boards collected and processed at Trail and the Umicore facilities in Belgium which was then combined with the metal from other sources for the medal production.

The content of recovered metal from the e-waste material in the specific metals is:
Gold: 1.52%; Silver: 0.122%; Copper: 1.11%.

Final production of the medals
All of the medals will be produced at the Royal Canadian Mint between July and November, 2009.

Metals Provided by Teck for the Medals

Metal	Production			Metal Purity	Metal Weight
	Mined	Smelting and Recovered	Refining and Processing		
Gold Provided for the Gold Medals	Hemlo (Ontario, Canada) Pogo (Alaska, United States)	Trail Operations (BC, Canada) Umicore	Johnson Matthey Technic	99.99% purity	65.78 Troy ounces 2.05 kg
Silver Provided for the Silver Medals		Trail Operations (BC, Canada) Umicore	Royal Canadian Mint	99.99% purity	1,950 kg
Copper Provided for the Bronze Medals	Andacollo (Chile) Antamina (Peru) Duck Pond (Newfoundland, Canada) Highland Valley Copper (BC, Canada) Quebrada Blanca (Chile	CESL (BC, Canada) Trail Operations (BC, Canada) Umicore	KP Bronze	99.95% purity	903 kg