

# APPLICATION NOTE

## OREAS-991

### COPPER-GOLD CONCENTRATE



## SUMMARY

This application note is for the digestion of OREAS-991, a copper-gold concentrate using ColdBlock™ digestion technology.

**Instrument:** ColdBlock CB12 sample digester technology, chiller.

**Published:** by Lorie-Anne Doig and Erick Helmeczi, June 2021

**Digestion Time:** 15 Minutes

**Acid Used:** Reverse Aqua Regia

**Average ColdBlock Recovery vs. CRM:**

- 96% Copper
- 102% Gold
- 104% Silver

## METHODOLOGY

1. Chiller temperature was set to -5°C
2. 0.25g sample was weighed and placed into a ColdBlock™ Digestion vessel
3. 12 mL Reverse Aqua Regia was added
4. Sample was digested at 65% power for 15 minutes
5. Sample was cooled and bulked to 50mL using 20% HCl v/v

## DISCUSSION

- Upon addition of HNO<sub>3</sub>, the evolution of reddish brown (NO<sub>2</sub>) fumes occurred
- The evolution of NO<sub>2</sub> fumes subsided near completion of the digestion, and the fumes turned white
- After 15 minutes, the sample is green in color and a minor amount of solid material remains
- Sample size can be scaled up to 10g, using 100mL of reverse Aqua Regia
- Hydrofluoric acid can be added for a total digestion



[info@coldblock.ca](mailto:info@coldblock.ca)



[coldblock.ca/contact-us](http://coldblock.ca/contact-us)



[linkedin.com/company/coldblock-technologies](https://www.linkedin.com/company/coldblock-technologies)

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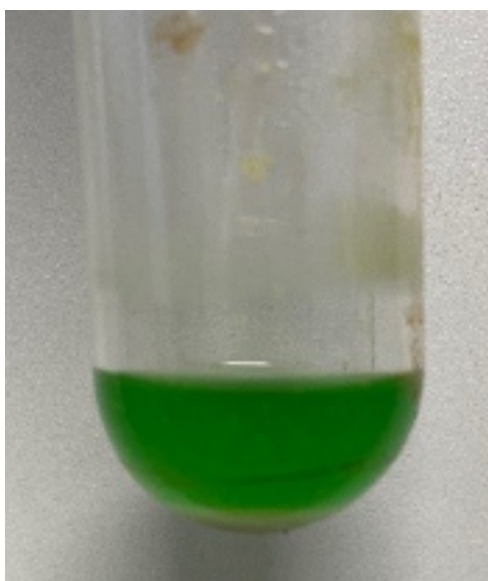


ColdBlock™  
Technologies Inc.

## RESULTS

Table 2: ColdBlock™ Digestion CB12L (%)  
Recoveries of Large Sample Size (0.25) OREAS-991

| Elements                 | Copper (wt.%) | Gold (ppm) | Silver (ppm) |
|--------------------------|---------------|------------|--------------|
| Expected CRM Value       | 20.66%        | 47.04ppm   | 48.1ppm      |
| ColdBlock Value 1        | 19.81         | 48.3       | 50.74        |
| ColdBlock Value 2        | 20            | 47.7       | 50.54        |
| ColdBlock Value 3        | 19.92         | 47.66      | 50.69        |
| Average ColdBlock Values | 19.91         | 47.89      | 50.02        |
| % Recovery               | 96%           | 102%       | 104%         |
| RSD                      | 0.4%          | 0.6%       | 0.2%         |



OREAS 991 is a matrix-matched certified reference material (MMCRM) prepared from copper-gold-silver concentrate samples supplied by Newcrest Mining Limited's Cadia Valley Operations near Orange, New South Wales, Australia.

Copper-Cold Concentrate OREAS-991  
After Digestion