

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 HNO₃, the evolution of reddish brown (NO₂) fumes occurred
- The evolution of NO₂ 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



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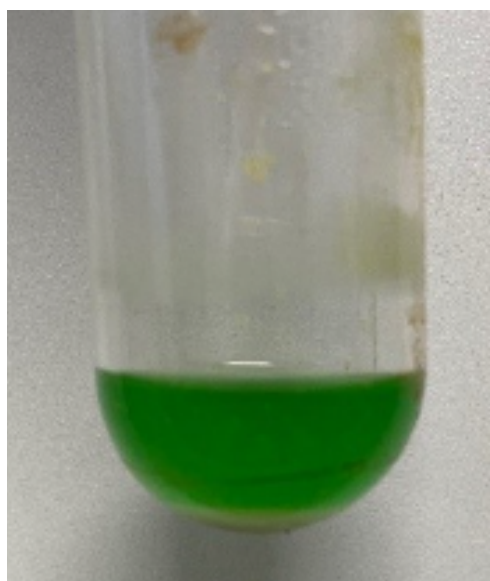
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RESULTS

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