ColdBlock™ Technologies Inc.

APPLICATION NOTE

CDN-ME-1805 – Multi-Element

SUMMARY

The application note summarizes the digestion of CDN-ME-1805, a multi-element Reference Material using ColdBlock™ Digestion Pro Series Technology.

Instrument:	ColdBlock CBM sample digester, chiller, HF compatible liners, ICP-MS & ICP-OES
Published:	January 2023
Digestion Time:	30 Minutes
Acid Used:	Reverse Aqua Regia, HF & H_3BO_3
Average ColdBlock Recovery vs. CRM:	■ 98% Copper ■ 100% Lead ■ 101% Zinc

METHODOLOGY

1. Chiller temperature was set to -5°C
2. 0.25g of each sample was weighed and placed into a ColdBlock™ Digestion vessel
3. 20 mL of reverse Aqua Regia + 3 mL HF
4. Sample was digested at 80% power for 20 minutes
5. 20mL of 4%$_{w/v}$ Boric acid was added
6. Samples were digested again at 80% power for 10 minutes
7. Samples were cooled and bulked to 50mL using 2% HNO_3 + 0.5% HCl $_{v/v}$

DISCUSSION

- The addition of Boric acid will help re-solubilize any insoluble fluorides and will help neutralize any remaining HF in solution
- If Silver precipitates out of solution as AgCl, bulk up with >20% HCl$_{v/v}$
- If the Sulfide content of your sample is > 10 wt.% – reverse the ratios of Aqua Regia and use 1:3, HCl:HNO_3 – always add the Nitric acid first (reddish brown NO_2 fumes might form)

Standard CDN-ME-1805 was prepared from ore received from Hecla Mining's Greens Creek deposit.

The Greens Creek deposit is a polymetallic, stratiform, massive sulfide deposit. The host rock consists of predominantly marine sedimentary, and mafic to ultramafic volcanic and plutonic rocks, which have been subjected to multiple periods of deformation.

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CDN-ME-1805; Multi-Element; CDN Resource Laboratories Ltd; Langley, British Columbia (June, 2018)

CDN-ME-1805 – Multi-Element

Results

CDN-ME-1709										
Method:	0.25g	20mL Reverse Aqua Regia + 3 mL HF digested at 80% for 20 minutes, add 20mL of 4% Boric Acid – and digest again at 80% for another 10 minutes								
Element	CDN Labs Certified 4-acid Value (ppm)	CDN Labs 95% Confidence Limits		Sample A	Sample B	Sample C	Average (ppm)	Stdev	% RSD	% Recovery vs 4-acid value
		Low	High							
Ag	2288	2172	2404	2399	2316	2439	2385	51.23	2.1%	104%
Cu	8730	8450	9010	8874	8024	8697	8532	366.34	4.3%	98%
Fe	53000	50000	56000	54647	49618	53375	52547	2134.93	4.1%	99%
Pb	55000	51900	58100	57153	52093	56480	55242	2243.39	4.1%	100%
Zn	105400	102600	108200	109985	100274	109123	106461	4389.02	4.1%	101%

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