

APPLICATION NOTE

OREAS 999 Spodumene Concentrate

SUMMARY

The application note summarizes the digestion of OREAS 999, a Spodumene Concentrate Certified Reference Material using ColdBlock™ Digestion CBM Technology.

Instrument: ColdBlock CBM sample digester, chiller, ICP-OES

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Digestion Time: 30 Minutes

Acid Used: Aqua Regia, HF & H₃BO₃

Average ColdBlock Recovery vs. CRM:

- 99% Lithium
- 97% Calcium
- 105% Magnesium

METHODOLOGY

1. Chiller temperature was set to -5 °C
2. 0.25g of each sample was weighed in triplicate and placed into ColdBlock™ Digestion HF compatible liners
3. 20 mL Aqua Regia + 3mL Hydrofluoric Acid was added
4. Sample was digested at 80% power for 20 minutes
5. 20mL of 10% Boric Acid was added, and sample was digested again at 80% power for 10 minutes
6. Sample was cooled and bulked to 50mL using 2% HNO₃ v/v

DISCUSSION

- The addition of Boric Acid will help re-solubilize any Fluoride precipitates that form such as Ca, Mg & Al
- Tetra-Fluoroboric Acid may be used in lieu of H₃BO₃
- After 30 minutes the samples appear clear, and no visible material remains



OREAS 999 after bulk-up

OREAS 999 is a spodumene concentrate derived from the processing of lithium pegmatite ores sourced from the Greenbushes area of Southwestern Australia

OREAS 999 Spodumene Concentrate

Results

OREAS 999								
20mL AR + 3mL HF - 80% 20 minutes + 20mL 10% H3BO3 80% 10 minutes								
Element	Certified 4-Acid (ppm)	ColdBlock Result A	ColdBlock Result B	ColdBlock Result C	Average (ppm)	Stdev	% RSD	% Recovery
Al	107700	111155	112839	115408	113134	1748.7	1.5%	105%
Ca	4500	4313	4307	4407	4343	45.82393	1.1%	97%
Fe	16200	16043	16231	16638	16304	248.3609	1.5%	101%
K	5000	4941	4593	4795	4777	142.6183	3.0%	96%
Mg	4100	4359	4395	4134	4296	115.372	2.7%	105%
Na	6930	6555	6653	6781	6663	92.4586	1.4%	96%
Li	26500	25858	26199	26855	26304	414.0041	1.6%	99%