ColdBlock™ Technologies Inc.

APPLICATION NOTE

IARM-59A – Incoloy 825

SUMMARY

This application note is for the digestion of IARM 59A, Incoloy Alloy 825.

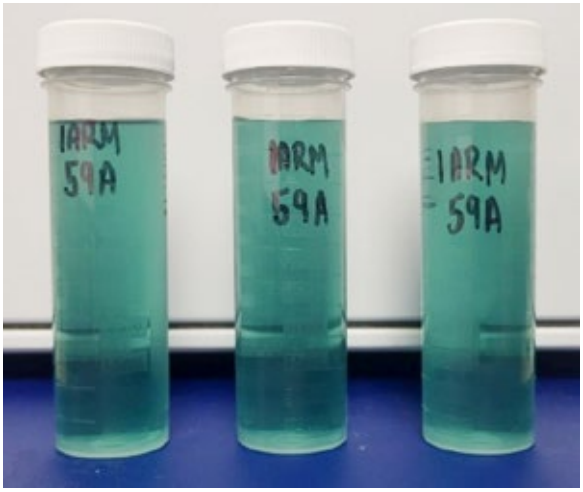
Instrument:	ColdBlock CBM, ICP-MS, ICP-OES
Published:	November 2023
Digestion Time:	15 Minutes
Acid Used:	Aqua Regia, HF
Average ColdBlock Recovery vs. CRM:	■ 101% Chromium ■ 100% Iron ■ 99% Molybdenum

METHODOLOGY

1. Chiller temperature was set to -5°C
2. 0.25g of IARM 59A was weighed and placed into a ColdBlock HF friendly test tube
3. 12mL of Aqua Regia + 1mL HF was added
4. Sample was digested at 90% power for 15 minutes
5. Sample was cooled and bulked to 50mL using 2% $HNO_{3\ v/v}$

DISCUSSION

- Samples were digested triplicate
- After 15 minute digestion, the samples are green and clear
- As a safer alternative to HF, you can add solid NH_4HF_2 (Ammonium Bi-fluoride) or NH_4F (Ammonium Fluoride)
- IARM 59A is in the form of chips



IARM 59A after topping up to 50mL

IARM 59A- Inco 825 is a certified reference material (CRM) sourced from LGC ARMI. LGC ARMI, Analytical Reference Materials International, Manchester, New Hampshire, USA (October 1992)

IARM-59A – Incoloy 825

Results

IARM 59A								
Analyte:	Certified Value (wt. %)	+/-	ColdBlock 1 (wt. %)	ColdBlock 2 (wt. %)	ColdBlock 3 (wt. %)	Average	% RSD	Recovery
Al	0.05	0.0063	0.05	0.045	0.047	**0.05**	**3.9**	**94%**
Co	0.25	0.0133	0.248	0.259	0.247	**0.25**	**2.2**	**101%**
Cr	22.12	0.054	22.26	22.39	22.68	**22.44**	**0.8**	**101%**
Cu	1.71	0.0216	1.73	1.7	1.71	**1.71**	**0.7**	**100%**
Fe	30.82	0.0439	30.67	30.76	30.91	**30.78**	**0.3**	**100%**
Mn	0.33	0.01	0.32	0.31	0.31	**0.31**	**1.5**	**95%**
Mo	2.68	0.02	2.65	2.57	2.73	**2.65**	**2.5**	**99%**
Ni	40.91	N/A	40.66	41.1	41.11	**40.96**	**0.5**	**100%**
Nb	0.02	0.004	0.0208	0.0209	0.0207	**0.02**	**0.4**	**104%**
Si	0.1	0.0112	0.12	0.1	0.11	**0.1**	**8.1**	**109%**
Ti	0.83	0.0111	0.82	0.82	0.83	**0.82**	**0.4**	**99%**
V	0.03	0.0096	0.029	0.028	0.029	**0.03**	**1.3**	**96%**
W	0.13	0.013	0.13	0.13	0.13	**0.13**	**0.3**	**101%**
Zr	<0.01	N/A	0.00032	0.00038	0.00027	**0.0003**	**13.9**	**N/A**

ColdBlock™ Technologies Inc.

info@coldblock.ca
coldblock.ca/contact-us