ColdBlock™ Technologies Inc.

APPLICATION NOTE

IARM-153C – Stainless Steel, Grade 317L

SUMMARY

This application note is for the digestion of IARM 153C, a grade 317L stainless steel.

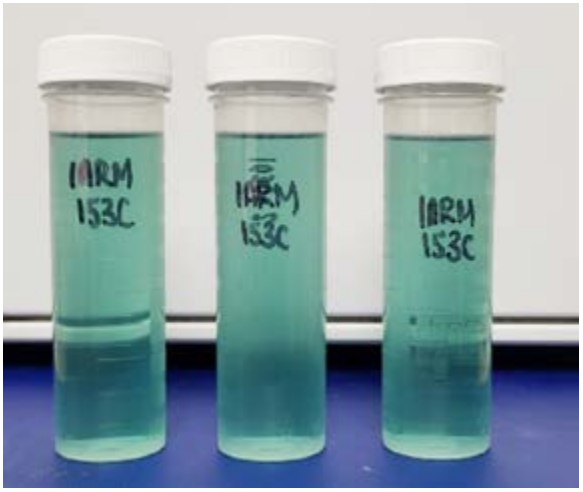
Instrument:	ColdBlock CBM, ICP-MS, ICP-OES
Published:	November 2023
Digestion Time:	15 Minutes
Acid Used:	Aqua Regia, HF
Average ColdBlock Recovery vs. CRM:	■ 99% Chromium ■ 98% Nickel ■ 99% Molybdenum

METHODOLOGY

1. Chiller temperature was set to -5°C
2. 0.25g of IARM 153C 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 153C is in the form of chips



IARM 153C after topping up to 50mL

IARM 153C- AISI 317L – UNS S31703 is a certified reference material (CRM) sourced from LGC ARMI. LGC ARMI, Analytical Reference Materials International, Manchester, New Hampshire, USA (October 2017)

IARM-153C – Stainless Steel, Grade 317L

Results

IARM 153C								
Analyte:	Certified Value (wt. %)	+/-	ColdBlock 1 (wt. %)	ColdBlock 2 (wt. %)	ColdBlock 3 (wt. %)	Average	% RSD	Recovery
Al	0.003	0.001	0.00294	0.00292	0.00299	**0.0029**	**1.0**	**98%**
As	0.0061	0.0009	0.0059	0.0059	0.0058	**0.01**	**0.8**	**96%**
Co	0.251	0.003	0.261	0.262	0.26	**0.261**	**0.3**	**104%**
Cr	18.22	0.04	17.99	18.14	18.03	**18.05**	**0.4**	**99%**
Cu	0.442	0.005	0.45	0.442	0.439	**0.444**	**1.0**	**100%**
Mn	1.6	0.01	1.67	1.73	1.66	**1.687**	**1.8**	**105%**
Mo	3	0.04	2.96	2.97	2.97	**2.97**	**0.2**	**99%**
Nb	0.015	0.002	0.014	0.014	0.015	**0.014**	**3.3**	**96%**
Ni	11.1	0.05	10.88	11.02	10.85	**10.92**	**0.7**	**98%**
S	0.0288	0.0008	0.0261	0.0279	0.0256	**0.03**	**3.7**	**92%**
Si	0.349	0.009	0.365	0.345	0.377	**0.362**	**3.6**	**104%**
Sn	0.01	0.001	0.01	0.01	0.009	**0.0097**	**4.9**	**97%**
Ti	0.004	0.001	0.004	0.0038	0.0038	**0.0037**	**3.8**	**93%**
V	0.058	0.003	0.056	0.059	0.054	**0.0563**	**3.6**	**97%**
W	0.043	0.003	0.046	0.041	0.044	**0.0437**	**4.7**	**102%**
Zr	0.004	0.002	0.0035	0.0053	0.0040	**0.0043**	**17.8**	**107%**

ColdBlock™ Technologies Inc.

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