ColdBlock™ Technologies Inc.

APPLICATION NOTE

IARM 311A – Titanium, CP Grade 2

SUMMARY

The application note summarizes the digestion of IARM 311A, a Grade 2, Titanium certified reference material using ColdBlock™ Digestion Pro Series Technology..

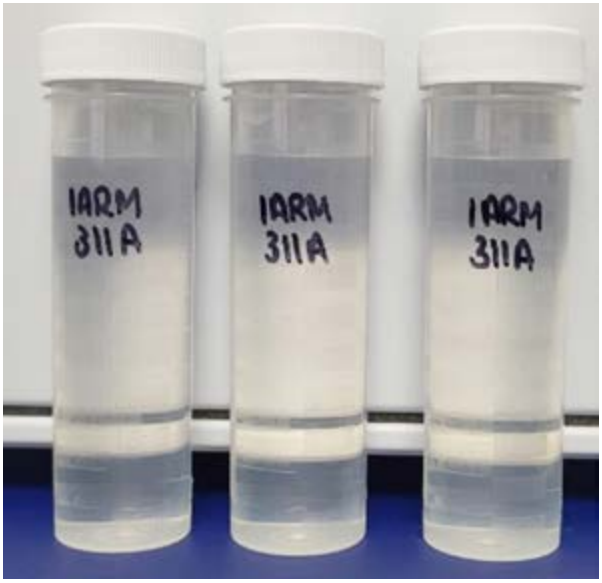
Instrument:	Equipment: ColdBlock CBM sample digester, chiller, HF compatible liners, ICP-OES
Published:	September 2024
Digestion Time:	10 Minutes
Acid Used:	Aqua Regia & HF
Average ColdBlock Recovery vs. CRM:	■ 98% Aluminum ■ 99% Chromium ■ 101% Titanium

METHODOLOGY

1. Chiller temperature was set to -5°C
2. 0.2g of each sample was weighed and placed into a ColdBlock™ Digestion vessel
3. 12 mL Aqua Regia + 1mL HF was added
4. Sample was digested at 90% power for 10 minutes
5. Samples were cooled and bulked to 50mL using 2% $HNO_{3\ v/v}$

DISCUSSION

- Samples were digested in triplicate
- After 10-minute digestion, the samples are clear and colorless
- As a safer alternative to HF, you can add solid NH_4F (ammonium fluoride)



IARM 311A after bulk up

IARM 311A CR Grade 2 Titanium is a certified reference material sourced from LGC ARMI. LGC ARMI, Analytical Reference Material International, Manchester, New Hampshire, USA (September 2009)

IARM 311A – Titanium, CP Grade 2

Results

IARM 311A – CP, Grade 2 Titanium									
Method:	0.2g	12mL Aqua Regia + 1mL HF, digested at 90% power for 10 minutes							
Analyte	Certified Value (ppm)	95% Confidence Limits	Sample A	Sample B	Sample C	Average	Stdev	% RSD	% Recovery
Al	3200	100	3140	3200	3020	3120	74.83	1.8	98%
Cr	130	10	130	131	125	128.7	6.62	2.0	99%
Cu	13	5	14	12	13	13	0.82	6.3	100%
Fe	600	20	590	550	550	563	18.86	3.3	94%
Mn	13	2	13	13	13	13.1	0.29	2.2	101%
Mo	12	2	13	13	10	12	1.45	12.1	100%
Ni	140	10	133	133	132	133	0.47	0.4	95%
Si	50	10	46	42	54	47	4.99	11	95%
Sn	20	4	19	19	18	19	0.47	2.5	93%
Ti	994000	N/A	998700	1011500	1002100	1004100	5413	0.5	101%
V	40	10	39	39	38	39	0.47	1.2	97%
Zr	120	10	115	112	115	114	1.41	1.2	95%

ColdBlock™ Technologies Inc.

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