Ion-Lab® for IC and ISE

The Ion-Lab® products also includes a wide range of Single-Component and Multi-Component anion and cation solutions for ion chromatography (IC) and ion-selective electrode (ISE) analysis applications.

Ion	Code	Description	Conc.	Pack.	Source
F^-	CRMFW	Fluoride in H_2O	M-Y	●	NH_4F
Cl^-	CRMCLW	Chloride in H_2O	M-Y	●	NH_4Cl
Br^-	CRMBRW	Bromide in H_2O	M-Y	●	NH_4Br
I^-	CRMIW	Iodide in H_2O	M-Y	●	NH_4I
NO_3^-	CRMNO3W	Nitrate in H_2O	M-Y	●	$NaNO_3$
NO_2^-	CRMNO2W	Nitrite in H_2O	M-Y	●	$NaNO_2$
PO_4^{3-}	CRMPO4W	Phosphate in H_2O	M-Y	●	$NH_4H_2PO_4$
SO_4^{2-}	CRMSO4W	Sulphate in H_2O	M-Y	●	Na_2SO_4
BrO_3^-	CRMBRO3W	Bromate in H_2O	M	●	$KBrO_3$
ClO^-	CRMCLOW	Hypochlorite in H_2O	M	●	NaClO
ClO_2^-	CRMCLO2W	Chlorite in H_2O	M	●	$NaClO_2$
ClO_3^-	CRMCLO3W	Chlorate in H_2O	M	●	$NaClO_3$
ClO_4^-	CRMCLO4W	Perchlorate in H_2O	M	●	$KClO_4$
IO_3^-	CRMIO3W	Iodate in H_2O	M	●	KIO_3
NH_4^+	CRMNH4W	Ammonium in H_2O	M	●	NH_4Cl
CN^-	CRMCNW	Cyanide in H_2O	M	●	NaCN
CO_3^{2-}	CRMCO3W	Carbonate in H_2O	M	●	Na_2CO_3
CrO_4^{2-}	CRMCRO4W	Chromate in H_2O	M	●	K_2CrO_4
$Cr_2O_7^{2-}$	CRMCR2O7W	Dichromate in H_2O	M	●	$K_2Cr_2O_7$
SCN^-	CRMSCNW	Thiocyanate in H_2O	M	●	KSCN
SiO_3^{2-}	CRMSIO3W	Silicate in H_2O	M	●	Na_2SiO_3
$S_2O_3^{2-}$	CRMS2O3W	Thiosulphate in H_2O	M	●	$Na_2S_2O_3$

Single-component solutions are available in two nominal concentration (1000 and 10000 mg/L), and Mix solutions are available in multiple concentrations. They are packaged in five sizes: 25-50-125-250-500 ml. The product code is similar to that of CRMs for ICP.

Ion-Lab® CRM Mixtures for IC

The Ion-Lab® catalog includes a large number of CRM mixtures of cations and anions for Ion Chromatography analysis, which we formulate at different concentrations.

E.g.: Ion-Lab® MIXN08 (8 anions) Lgs.D. 18/2023 (ITA) (Drinking Water): BrO_3^- at 0.1 mg/l; NO_2^- at 0.5 mg/l; ClO_2^-, ClO_3^- at 2.5 mg/l; F^- at 15 mg/l; NO_3^- at 500 mg/l; Cl^-, SO_4^{2-} at 2500 mg/l in HP-Water, 125 ml in LDPE Bottle&STCBag®. Code: **CRMN08WZ-125**.

E.g.: Ion-Lab® MIXT07 (7 anions): NO_2^- at 50 mg/l; F^- at 100 mg/L; Br^-, PO_4^{3-} at 500 mg/L; Cl^-, NO_3^-, SO_4^{2-} at 1000 mg/L in HP-Water, 125 ml in LDPE Bottle&STCBag®. Code: **CRMT07WZ-125**.

Ion-Lab® Mixes are designed to meet the Official Methods for anion analysis: **EPA 300.0/300.1, ASTM D4327, Legislative Decree 18/2023 (ITA), ISO 17294:2024** in drinking and environmental waters; **ASTM D8234-19** in high salinity waters; **EPA 9056A** in liquid and solid wastes; **ISO 20702:2017** in fertilizers and soils; ISO 20702:2017 in fertilizers/soils; **USP 〈1065〉** in Pharmaceuticals, etc.

Ion-Lab® CRM Chemical-Physical Properties

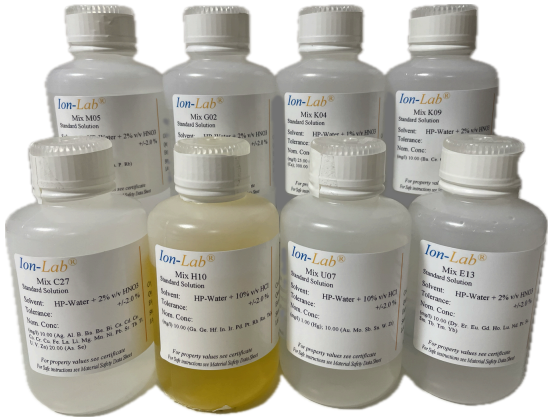
The catalog provides also a large number of CRM products for the validation of chemical-physical methods such as: Conductivity, pH, Refractive Index, etc.

"Custom" Mixtures and Products

We are specialized in the design and production of CRMs that are released to the market only after at least two batches that have been studied for the entire assigned shelf-life. However, we are able to satisfy every request by creating "CUSTOM" inorganic and organic solutions for applications with techniques such as ICP-OES, ICP-MS, IC, GC-MS, LC-MS, etc. They are prepared with Production and Quality Control Procedures similar to those used for CRMs, but without LTS (Long-Term Stability) Studies. "CUSTOM" products are made with NIST-traceable CRM raw materials, but, as they lack LTS studies, they will not be accompanied by a Reference Material Certificate, but rather with a Product Data Sheet showing the certified property value of each component and the associated uncertainty (U%), lacking only the contribution of u% of LTS study. "Custom" mixtures can be created by choosing the concentration of each analyte, the packaging, and the matrix.

The application form for requesting "Custom" products and mixtures is available online at the following website: www.crmlabstandard.com or, the customes can send the request by email to offerte2@labinstruments.it with the product list and CAS.

Ion-Lab® Explorer Kits



Ion-Lab® Explorer Kit 64 (64 components)
EN ISO 17294-2:2024 (Water Quality)

- **Calibration Mix 1**: As and Se at 20 mg/L; Ag, Al, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cu, Fe, La, Li, Mg, Mn, Ni, Pb, Sr, Th, Tl, U, V, Zn at 10 mg/L in HP-Water + 2% HNO_3. 125 ml in LDPE Bottle&STCBag®. Code: **CRMC27NZ-125**
- **Calibration Mix 2**: Ga, Ge, Hf, In, Ir, Pd, Pt, Rh, Ru, Te at 10 mg/L in HP-Water + 10% HCl. 125 ml in LDPE Bottle&STCBag®. Code: **CRMH10HX-125**
- **Calibration Mix 3**: Dy, Er, Eu, Gd, Ho, Lu, Nd, Pr, Sc, Sm, Tb, Tm, Yb at 10 mg/L in HP-Water + 2% HNO_3. 125 ml in LDPE Bottle&STCBag®. Code: **CRME13NX-125**
- **Calibration Mix 4**: Hg a conc. 1 mg/L; Au, Mo, Sb, Sn, W, Zr a conc. 10 mg/L in HP-Water + 10% HCl. 125 ml in LDPE Bottle&STCBag®. Code: **CRMU07HZ-125**
- **Calibration Mix 5**: Cs, K, Na, P, Rb. at 1000 mg/L in HP-Water + 2% HNO_3. 125 ml in LDPE Bottle&STCBag®. Code: **CRMM05NM-125**
- **Internal Reference Standard Solution**: Re and Y at 5 mg/L in HP-Water + 2% HNO_3. 125 ml in LDPE Bottle&STCBag®. Code: **CRMG02NV-125**
- **Optimization Solution**: Ba, Ce, Cu, In, La, Mg, Pb, Rh, U at 10 mg/L in HP-Water + 2% HNO_3. 125 ml in LDPE Bottle&STCBag®. Code: **CRMK09NX-125**
- **Matrix Solution**: PO_4^{3-} at 25 mg/L; SO_4^{2-} at 100 mg/L; Ca at 200 mg/L; Cl^- at 300 mg/L in HP-Water + 1% HNO_3. 125 ml in LDPE Bottle&STCBag®. Code: **CRMK04NZ-125**

Certificates and Accreditations

- ISO 17034:2016
- ISO/IEC 17025:2017
- UNI EN ISO 14001:2015
- UNI EN ISO 9001:2015
- UNI/PdR 125:2022
- Synesgy ESG 2025

Certificates downloads

- www.accredia.it
- www.pjlabs.com
- www.crmlabstandard.com/it/downloads

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LSB 01 E 5/25

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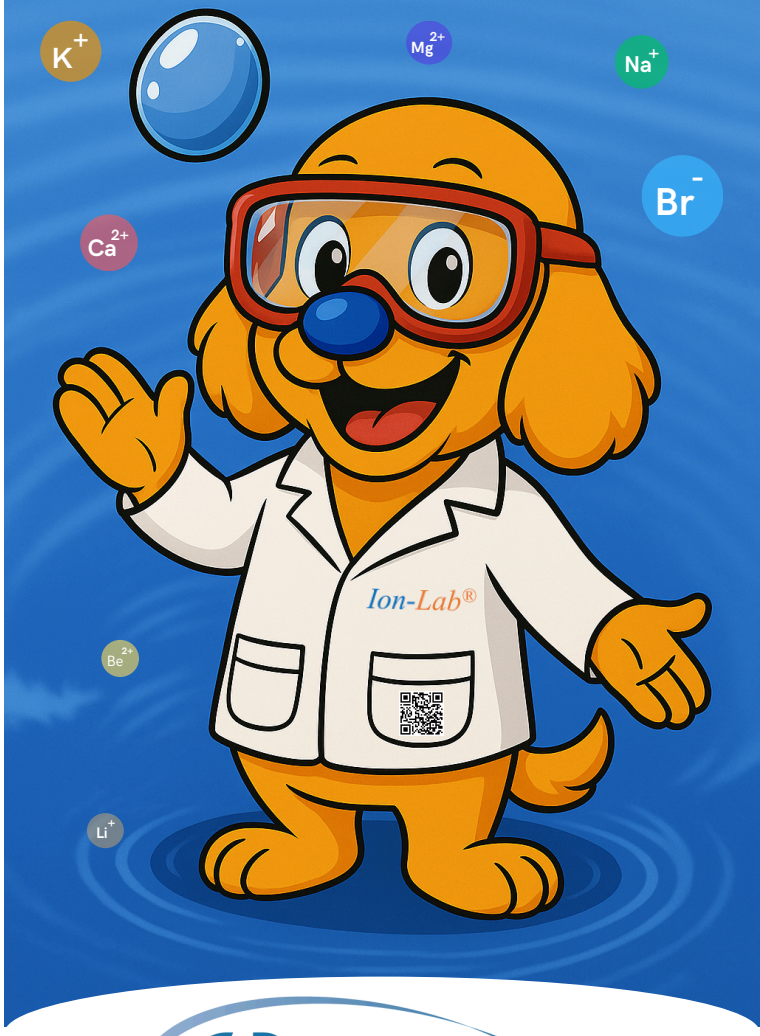


Lab Instruments
high pure standards & chemicals division

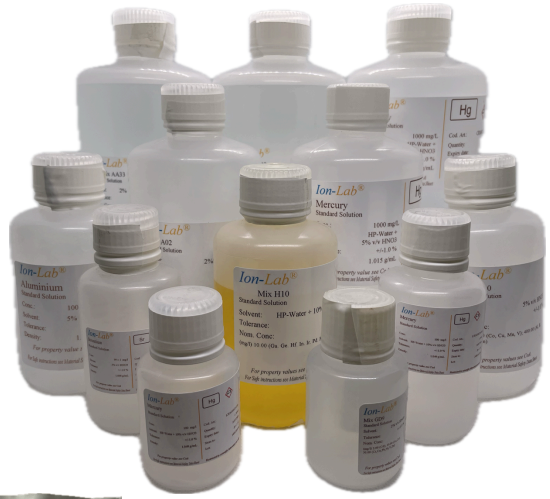
www.crmlabstandard.com

Our solution is your solution

Ion-Lab® Overview

The **Ion-Lab®** products offers high-quality, competitively priced **UNI CEI EN ISO 17034:2017** CRM solutions for AA, ICPOES, ICPMS, ICPMSMS, and IC analysis.
Designed and manufactured under the ISO 17034:2017 accredited procedure, Ion-Lab® CRMs are included in the accreditation scope as part of Table A1 of UNI CEI ISO/TR10989:2019.
They are suitable for all method validation, uncertainty determination, and declaration of metrological traceability to units of the International System of Measurement (ISM) as required by **ISO/IEC 17025:2018** (Chapters 6.4 and 6.5).

The accuracy of all Ion-Lab® CRM standards is verified against NIST Primary Standards, where available, or ISO 17034 CRM from other sources.



The production cycle is carried out in an ISO6 Clean Room and uses Type I Ultra-Pure Water at 18.2 MΩ·cm (0.055 µS/cm), Ultra Pure Acids and calibrated scales with weight sets certified by ISO/IEC 17025:2018 calibration centers. Ion-Lab® CRMs are packaged in High Quality LDPE containers of various capacities and they are characterized by an interesting technological innovation in the packaging that extends the shelf-life, which is 24/48 months when stored closed in the secondary packaging (STCBag®) and at least 12 months after opening the primary packaging (LDPE bottle).

Ion-Lab® CRMs are accompanied by:

1. Certificate of Reference Materials compliant with ISO 33401:2024 with declared metrological traceability to the SI measurement. They state the certified property value (analytical concentration) and its uncertainty, the density of the solution, and the certified amount of High-Pure Acid in solution;
2. Safety data sheet compliant with REACH Regulation (EC) 2020/878 in English or the language of the destination country.

CRM Products Portfolio for AA, ICP-OES, ICP-MS

The Ion-Lab® CRM products for AA, ICP-OES, ICP-MS consists of Single Component solutions of over 80 different elements (including speciation elements, As, Cr, etc.), some isotopes (6Li, etc.) and many Multi-Element Mixes containing up to over 50 elements appropriately selected to meet the main standards or methodologies released by EPA, ASTM, EU, etc. (e.g. **EPA 200.7, EPA 200.8, EPA6020, EU 10/2011, Italian Legislative Decree 18/2023, ISO 17294:2024**, etc.).

Element	Code	Description	Conc.	Pack.	Source
Ag	CRMAGN	Silver in HNO_3 2-2-2-5 %	X-C-M-Y	●	$AgNO_3$
Al	CRMALN	Aluminium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Al(NO_3)_3$
As	CRMASN	Arsenic in HNO_3 2-2-2-2 %	X-C-M-Y	●	As Semimetal
As (III)	CRMAS3H	Arsenic (III) in HCl 0.5 %	M	●	As_2O_3
As (V)	CRMAS5W	Arsenic (V) in H_2O	M	●	As_2O_5
Au	CRMAUH	Gold in HCl 2-5-7-10 %	X-C-M-Y	●	$HAuCl_4$
B	CRMBW	Boron in H_2O	M-Y	●	H_3BO_3
Ba	CRMBAN	Barium in HNO_3 0.5-0.5-0.5-2 %	X-C-M-Y	●	$Ba(NO_3)_2$
Be	CRMBEN	Beryllium in HNO_3 1-1-2-5 %	X-C-M-Y	●	$Be_4O(C_2H_3O_2)_6$
Bi	CRMBIN	Bismuth in HNO_3 5-5-5-5 %	X-C-M-Y	●	$Bi(NO_3)_3$
C	CRMCW	Carbon in H_2O	M-Y	●	$C_6H_8O_7$ (Citric Acid)
Ca	CRMCAN	Calcium in HNO_3 0.5-0.5-0.5-2 %	X-C-M-Y	●	$Ca(NO_3)_2$
Cd	CRMCDN	Cadmium in HNO_3 2-2-2-3 %	X-C-M-Y	●	$Cd(NO_3)_2$
Ce	CRMCEN	Cerium in HNO_3 5-5-5-5 %	X-C-M-Y	●	$Ce(NO_3)_3$
Co	CRMCON	Cobalt in HNO_3 2-2-2-3 %	X-C-M-Y	●	$Co(NO_3)_2$
Cr	CRMCRN	Chromium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Cr(NO_3)_3$
Cr (VI)	CRMCR6W	Chromium (VI) in H_2O	X-C-M	●	$(NH_4)_2Cr_2O_7$
Cs	CRMCSN	Caesium in HNO_3 0.1-0.1-0.1-0.5 %	X-C-M-Y	●	$CsNO_3$
Cu	CRMCUN	Copper in HNO_3 2-2-2-3 %	X-C-M-Y	●	$Cu(NO_3)_2$
Dy	CRMDYN	Dysprosium in HNO_3 2-5 %	M-Y	●	$Dy(NO_3)_3$
Er	CRMERN	Erbium in HNO_3 2-5 %	M-Y	●	$Er(NO_3)_3$
Eu	CRMEUN	Europium in HNO_3 2-5 %	M-Y	●	$Eu(NO_3)_3$
Fe	CRMFEN	Iron in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Fe(NO_3)_2$
Ga	CRMGAN	Gallium in HNO_3 5-5-5 %	C-M-Y	●	$Ga(NO_3)_3$
Ge	CRMGEW	Germanium in H_2O	X-C-M-Y	●	$(NH_4)_2GeF_6$
Gd	CRMGDN	Gadolinium in HNO_3 2-5 %	M-Y	●	$Gd(NO_3)_3$
Hf	CRMHFF	Hafnium in HF tr-0.01-0.1-1 %	X-C-M-Y	●	HfO_2
Ho	CRMHON	Holmium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Ho(NO_3)_3$
Hg	CRMHGN	Mercury in HNO_3 5-5-5-5-5 %	I-X-C-M-Y	●	$Hg(NO_3)_2$
In	CRMINN	Indium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$In(NO_3)_3$
Ir	CRMIRH	Iridium in HCl 2-5-7-10 %	X-C-M-Y	●	H_2IrCl_6
K	CRMKN	Potassium in HNO_3 0.5-0.5-0.5-2 %	X-C-M-Y	●	KNO_3
La	CRMLAN	Lanthanum in HNO_3 2-5 %	M-Y	●	$La(NO_3)_3$
^{6}Li	CRM6LIN	6-Lithium in HNO_3 2-2-2 %	X-C-M	●	$^6LiNO_3$
Li	CRMLIN	Lithium in HNO_3 0.5-0.5-0.5-2 %	X-C-M-Y	●	$LiNO_3$
Lu	CRMLUN	Lutetium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Lu(NO_3)_3$
Mn	CRMMNN	Manganese in HNO_3 2-2-2-3 %	X-C-M-Y	●	$Mn(NO_3)_2$
Mo	CRMMOW	Molibdenum in H_2O	X-C-M-Y	●	$(NH_4)_2MoO_4$

Element	Code	Description	Conc.	Pack.	Source
N	CRMNHW	Nitrogen in H_2O	M-Y	●	NH_4Cl
N	CRMN3N	Nitrogen in H_2O	M-Y	●	$NaNO_2$
N	CRMN5W	Nitrogen in H_2O	M-Y	●	$NaNO_3$
Na	CRMNAN	Sodium in HNO_3 0.5-0.5-0.5-2 %	X-C-M-Y	●	$NaNO_3$
Ni	CRMNIN	Nickel in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Ni(NO_3)_2$
Nb	CRMNBF	Niobium in HF 0.1-2 %	M-Y	●	$(NH_4)NbF_6$
Os	CRMOSH	Osmium in HCl 7-7-7 %	X-C-M	●	$(NH_4)_2OsCl_6$
P	CRMPW	Phosphorus in H_2O	X-C-M-Y	●	H_3PO_4
Pb	CRMPBN	Lead in HNO_3 0.5-0.5-0.5-0.5 %	X-C-M-Y	●	$Pb(NO_3)_2$
Pd	CRMPDN	Palladium in HNO_3 2-10 %	M-Y	●	$Pd(NO_3)_2$
Pr	CRMPRN	Praseodymium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Pr(NO_3)_3$
Pt	CRMPTH	Platinum in HCl 5-6-7-10 %	X-C-M-Y	●	H_2PtCl_6
Rb	CRMRBN	Rubidium in HNO_3 0.5-2 %	M-Y	●	$RbNO_3$
Re	CRMREN	Rhenium in HNO_3 0.1-3 %	M-Y	●	NH_4ReO_4
Rh	CRMRHH	Rhodium in HCl 2-5-5-20 %	X-C-M-Y	●	$Rh(NO_3)_3$
Ru	CRMRUH	Ruthenium in HCl 7-20 %	M-Y	●	$RuCl_3$
S	CRMSW	Sulfur in H_2O	X-C-M-Y	●	H_2SO_4
Sb	CRMSBN	Antimonium in HNO_3 1-1-1-1 %	X-C-M-Y	●	Sb Metal
Sc	CRMSCN	Scandium in HNO_3 2-5-5-5 %	X-C-M-Y	●	$Sc(NO_3)_3$
Se	CRMSEN	Selenium in HNO_3 2-2-2-3 %	X-C-M-Y	●	Se Metal
Si	CRMSIW	Silicon in H_2O	X-C-M-Y	●	$(NH_4)_2SiF_6$
Sm	CRMSMN	Samarium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Sm(NO_3)_3$
Sn	CRMSNN	Tin in HNO_3 5-5-0.1-0.1 %	X-C-M-Y	●	Sn Metal
Sr	CRMSRN	Strontium in HNO_3 0.5-0.5-0.5-0.5-2 %	X-C-M-Y	●	$Sr(NO_3)_2$
Ta	CRMTAF	Tantalum in HF 0.2-2 %	M-Y	●	$(NH_4)_2TaF_7$
Tb	CRMTBN	Terbium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Tb(NO_3)_3$
Te	CRMTEN	Tellurium in HNO_3 2-2-2-5 %	X-C-M-Y	●	Te Metal
Th	CRMTHN	Thorium in HNO_3 2-2-5-5 %	X-C-M-Y	●	$Th(NO_3)_4$
Ti	CRMTIN	Titanium in HNO_3 2-2-0.1-0.1 %	X-C-M-Y	●	$(NH_4)_2TiF_6$
Tl	CRMTLN	Thallium in HNO_3 1-1-1-5 %	X-C-M-Y	●	$TlNO_3$
Tm	CRMTMN	Thulium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Tm(NO_3)_3$
U	CRMUN	Uranium in HNO_3 2-2-2-2 %	X-C-M-Y	●	$UO_2(NO_3)_2$
V	CRMVN	Vanadium in HNO_3 2-2-2-5 %	X-C-M-Y	●	NH_4VO_3
W	CRMWF	Wolframium in HF tr-0.01-0.1-1 %	X-C-M-Y	●	$(NH_4)_4H_2W_{12}O_{40}$
Y	CRMYN	Yttrium in HNO_3 2-2-2-2 %	X-C-M-Y	●	$Y(NO_3)_3$
Yb	CRMYBN	Ytterbium in HNO_3 2-2-2-5 %	X-C-M-Y	●	$Yb(NO_3)_3$
Zn	CRMZNN	Zinc in HNO_3 2-2-2-2 %	X-C-M-Y	●	$Zn(NO_3)_2$
Zr	CRMZRF	Zirconium in HF tr-0.01-0.1-1 %	X-C-M-Y	●	$Zr(NO_3)_4$

*tr = trace amount

● Available Packaging: 25-50-125-250-500 ml

● Available Concentrations: 1-10-100-1000-10000 mg/l

Each analyte concentration corresponds to a differently acidified aqueous matrix in order to guarantee the best stability.

E.g.: for the element "**Ag**" we have the possibility to choose between four different concentrations: **X-C-M-Y expressed as 10-100-1000 and 10000 mg/l**. Next to it, in the description, we read "**Silver in HNO3 2-2-2-5 %**". This indicates that for each analyte concentration there is a specific matrix. In this case, for the concentrations: 10-100-1000 we have a matrix of HP-Water with HNO_3 at 2%, while for **Ag at 10000 mg/l** the matrix is HP-Water with HNO_3 at 5%.

Each Ion-Lab® ISO 17034 has its own identification code. After the suffix "CRM" there are: ● The symbol of the **Element** or the **Ion**, in capital letters, followed by the valence in cardinal number (e.g., **CR6 for Cr (VI)**); ● **Matrix identifier** using the letters **W**, **N**, **H**, and **F** (**W for HP Water, N for Nitric Acid, H for Hydrochloric Acid, and F for Hydrofluoric Acid**) in a quantity predefined in the description table above; ● Analyte **concentration**: **I = 1, X = 10, C = 100, M = 1000, and Y = 10000 mg/l**; ● **Packaging type: (-)25-50-125-250-500 ml**.
E.g.: **CRMALNM-125** indicates an **ISO17034 CRM** of **Aluminium (Al)** in a **Nitric Acid (N)** solution at **1000 mg/l (M)** concentration in the **125 ml** package.

Ion-Lab®: TC - TIC - TOC

Carbon Form	Code	Description	Conc.	Pack.	Source
TC	CRMTCW	Total Carbon in H_2O	C-M	●	KHP□-$NaHCO_3$-Na_2CO_3Δ
TIC	CRMTICW	Total Inorganic Carbon in H_2O	C-M	●	$NaHCO_3$-Na_2CO_3 1:1
TOC	CRMTOCW	Total Organic Carbon in H_2O	C-M	●	KHP□

□ Potassium Hydrogen Phthalate (KHP).
Δ KHP-$NaHCO_3$-Na_2CO_3 are in the ratio 1:1:1.

Ion-Lab® Blanks - Dilution Matrices & Eluent

The catalog also includes various matrices and eluents for both ion chromatography (IC) and ICP-OES and ICP-MS, such as:

- High Purity Water (HP-Water) for ICP-OES and ICP-MS with a conductivity ≤ 0.055 µS·cm^{-1} (18.2 MΩ·cm) at 25°C in 500 ml packages, code CRMH2O-500;
- Nitric Acid Matrix Blank for ICP-OES and ICP-MS, in 500 ml packages, at 5% with code CRMHNO3V-500; at 2% with code CRMHNO3II-500; and finally, at 1% with code CRMHNO3I-500 in HP-Water;
- Na_2CO_3/$NaHCO_3$ eluent for IC at different concentrations in HP-Water (See catalog).