

# Chem-Lab's Inorganic Standards



## 1 | Inorganic Standards for ICP, ICP-MS, AA

### 1.1 | Chem-lab's Plasma HIQU standards are:

- ISO 17034 accredited
- Ideal for ICP-OES, ICP-MS
- The certified mass fraction is achieved by method BM006 that uses the "High Performance ICP-OES" protocol developed by NIST. This value is traceable to the International System of Units (SI) via the value of the reference material. The certified density is measured by method BM008 that uses either an oscillating densimeter or a pycnometer. This value is traceable to the International System of Units (SI).
- Provided with "A Certificate of Analysis" stating:
  - Actual certified concentration of the final solution
  - Traceability to NIST
  - Date of certification
  - Expiry date of 3 years after production
  - Trace impurities detected

#### 1.1.1 | Single Element ICP/ ICP-MS Standards

- ISO 17034 accredited
- Available at 10.000, 1.000, 100\* & 10\* µg/ml (\* ISO 17025 accredited)
- In different matrices: H<sub>2</sub>O, HNO<sub>3</sub>, HCl, HF, NH<sub>4</sub>OH, NaOH, HNO<sub>3</sub> + traces HF, ...
- Custom ICP-OES, ICP-MS, AA Standards



**We have the solutions!**

ICP HIQU

Element	10.000 mg/L	1.000 mg/L	100 mg/L	10 mg/L
Al	CL01.0103	CL01.0102	CL01.0101.100	CL01.0101.010
	CL01.0104	CL01.0101		CL01.0102.010
Sb	CL01.0123	CL01.0121	CL01.0121.100	CL01.0121.010
	CL01.0124	CL01.0122		
		CL01.0162		
As	CL01.0134	CL01.0131	CL01.0133.100	CL01.0133.010
		CL01.0132		
		CL01.0133		
Ba	CL01.0203	CL01.0201	CL01.0201.100	CL01.0201.010
	CL01.0204	CL01.0202		
Be	CL01.0214	CL01.0212	CL01.0212.100	CL01.0212.010
		CL01.0211		
Bi	CL01.0223	CL01.0221	CL01.0221.100	CL01.0221.010
B		CL01.0231		
		CL01.0232	CL01.0231.100	CL01.0231.010
Cd	CL01.0303	CL01.0301	CL01.0301.100	CL01.0301.010
	CL01.0390			
Ca	CL01.0314	CL01.0311	CL01.0311.100	CL01.0311.010
		CL01.0312	CL01.0312.100	CL01.0312.010
CaO	CL01.0319	CL01.0313		
Ce	CL01.0323	CL01.0321	CL01.0321.100	CL01.0321.010
Cs	CL01.0333	CL01.0331	CL01.0331.100	CL01.0331.010
Cr	CL01.0364	CL01.0352	CL01.0362.100	CL01.0362.010
	CL01.0363	CL01.0361	CL01.0352.100	
		CL01.0362		
Co	CL01.1123	CL01.1121	CL01.1121.100	CL01.1121.010
	CL01.1128	CL01.1122		
Cu	CL01.1133	CL01.1131	CL01.1131.100	CL01.1132.010
	CL01.1134	CL01.1132		CL01.1131.010
Dy	CL01.0433	CL01.0431	CL01.0431.100	CL01.0431.010
Er	CL01.0503	CL01.0501	CL01.0501.100	CL01.0501.010
Eu	CL01.0513	CL01.0511	CL01.0511.100	CL01.0511.010
Gd	CL01.0703	CL01.0701	CL01.0701.100	CL01.0701.010
Ga	CL01.0713	CL01.0711	CL01.0711.100	CL01.0711.010
Ge	CL01.0743	CL01.0721	CL01.0721.100	CL01.0721.010
		CL01.0722	CL01.0741.100	CL01.0741.010
		CL01.0741		
Au	CL01.0733	CL01.0731	CL01.0731.100	CL01.0731.010
Hf	CL01.0803	CL01.0801	CL01.0801.100	CL01.0801.010
	CL01.0804	CL01.0802	CL01.0802.100	CL01.0802.010
Ho	CL01.0823	CL01.0821	CL01.0821.100	CL01.0821.010
In	CL01.0923	CL01.0921	CL01.0921.100	CL01.0921.010
Ir	CL01.0933	CL01.0931	CL01.0931.100	CL01.0931.010
Fe	CL01.0903	CL01.0901	CL01.0901.100	CL01.0901.010
	CL01.0904	CL01.0902		
FeO		CL01.0941		
La	CL01.1203	CL01.1201	CL01.1201.100	CL01.1201.010
		CL01.1202		
Pb	CL01.1223	CL01.1221	CL01.1221.100	CL01.1221.010
Li	CL01.1214	CL01.1211	CL01.1212.100	CL01.1212.010
		CL01.1212		
Lu	CL01.1233	CL01.1231	CL01.1231.100	CL01.1231.010

Element	10.000 mg/L	1.000 mg/L	100 mg/L	10 mg/L
<b>Mg</b>	CL01.1304	CL01.1301	CL01.1301.100	CL01.1301.010
	CL01.1310	CL01.1302		
<b>MgO</b>	CL01.1309	CL01.1303		
<b>Mn</b>	CL01.1313	CL01.1311	CL01.1311.100	CL01.1311.010
		CL01.1312		
<b>MnO</b>		CL01.1341		
<b>Hg</b>	CL01.1153	CL01.1151	CL01.1151.100	CL01.1151.010
<b>Mo</b>	CL01.1333	CL01.1331	CL01.1331.100	CL01.1331.010
	CL01.1334	CL01.1332		
<b>Nd</b>	CL01.1413	CL01.1411	CL01.1411.100	CL01.1411.010
<b>Ni</b>	CL01.1423	CL01.1421	CL01.1421.100	CL01.1421.010
	CL01.1428	CL01.1422		
<b>Nb</b>	CL01.1433	CL01.1431	CL01.1431.100	CL01.1431.010
		CL01.1432		
<b>Pd</b>	CL01.1603	CL01.1601	CL01.1602.100	CL01.1602.010
		CL01.1602		
<b>P</b>	CL01.0633	CL01.0631	CL01.0641.100	CL01.0641.010
	CL01.0634	CL01.0646	CL01.0646.100	CL01.0646.010
		CL01.0641		
<b>P<sub>2</sub>O<sub>5</sub></b>	CL01.0629	CL01.0621		
<b>Pt</b>	CL01.1613	CL01.1611	CL01.1611.100	CL01.1611.010
<b>K</b>	CL01.1104	CL01.1101	CL01.1101.100	CL01.1101.010
		CL01.1102		
<b>K<sub>2</sub>O</b>	CL01.1109	CL01.1103		
<b>Pr</b>	CL01.1623	CL01.1621	CL01.1621.100	CL01.1621.010
<b>Re</b>	CL01.1803	CL01.1801	CL01.1802.100	CL01.1802.010
	CL01.1804	CL01.1802		
<b>Rh</b>	CL01.1813	CL01.1811	CL01.1811.100	CL01.1811.010
<b>Rb</b>	CL01.1824	CL01.1821	CL01.1822.100	CL01.1822.010
		CL01.1822		
<b>Ru</b>	CL01.1834	CL01.1831	CL01.1831.100	CL01.1831.010
<b>Sm</b>	CL01.1903	CL01.1901	CL01.1901.100	CL01.1901.010
<b>Sc</b>	CL01.1913	CL01.1911	CL01.1911.100	CL01.1911.010
<b>Se</b>	CL01.1923	CL01.1921	CL01.1922.100	CL01.1922.010
		CL01.1922		
<b>Si</b>	CL01.1943	CL01.1931	CL01.1945.100	CL01.1945.010
	CL01.1933	CL01.1932	CL01.1931.100	CL01.1932.010
	CL01.1934	CL01.1945	CL01.1932.100	
<b>SiO<sub>2</sub></b>		CL01.1942	CL01.1942.100	
<b>Ag</b>	CL01.2603	CL01.2601	CL01.2601.100	CL01.2601.010
<b>Na</b>	CL01.1404	CL01.1401	CL01.1401.100	CL01.1401.010
	CL01.1472	CL01.1402		
<b>Na<sub>2</sub>O</b>	CL01.1409	CL01.1403		
<b>Sr</b>	CL01.1963	CL01.1961		
		CL01.1962		
<b>S</b>	CL01.2643	CL01.2641	CL01.2642.100	CL01.2642.010
	CL01.2644	CL01.2642		
<b>Ta</b>	CL01.2003	CL01.2001	CL01.2002.100	CL01.2002.010
	CL01.2004	CL01.2002		
<b>Te</b>	CL01.2014	CL01.2011	CL01.2013.100	CL01.2013.010
	CL01.2015	CL01.2012		
		CL01.2013		
<b>Tb</b>	CL01.2023	CL01.2022	CL01.2022.100	CL01.2022.010
<b>Tl</b>	CL01.2033	CL01.2031	CL01.2031.100	CL01.2031.010
<b>Th</b>	CL01.2043	CL01.2041	CL01.2041.100	CL01.2041.010

Element	10.000 mg/L	1.000 mg/L	100 mg/L	10 mg/L
<b>Tm</b>	CL01.2053	CL01.2051	CL01.2051.100	CL01.2051.010
<b>Sn</b>	CL01.2063	CL01.2061	CL01.2062.100	CL01.2062.010
	CL01.2064	CL01.2062	CL01.2061.100	CL01.2061.010
<b>Ti</b>	CL01.2073	CL01.2071	CL01.2075.100	CL01.2075.010
	CL01.2074	CL01.2072		CL01.4611.010
		CL01.2075		
		CL01.4601		
<b>W</b>		CL01.4611		
	CL01.2304	CL01.2301	CL01.2301.100	CL01.2301.010
	CL01.2303	CL01.2302		
	CL01.2333	CL01.2331		
<b>V</b>	CL01.2203	CL01.2201	CL01.2201.100	CL01.2201.010
<b>Yb</b>	CL01.2503	CL01.2501	CL01.2501.100	CL01.2501.010
<b>Y</b>	CL01.2513	CL01.2511	CL01.2511.100	CL01.2511.010
<b>Zn</b>	CL01.2613	CL01.2611	CL01.2611.100	CL01.2611.010
	CL01.2614	CL01.2612		
<b>Zr</b>	CL01.2633	CL01.2631	CL01.2672.100	CL01.2672.010
	CL01.2634	CL01.2632		
		CL01.2672		

### 1.1.2 | Multi Element ICP/ ICP-MS Standards

- Standard solutions are prepared to the certified concentrations by method BM001 using certified single element solutions that are directly traceable to SI via the NIST SRMs. These certified values are valid for a temperature of 20°C and traceable to the International System of Units (SI). Secondary verification of the certified concentrations was performed by IC or ICP-OES.
- ISO 17025 Accredited
- Available for different Methods: EPA, USP, SWDA, CLP, DIN, QCS, ... + ASTM
- In different matrices: H<sub>2</sub>O, HNO<sub>3</sub>, HCl, HF, NH<sub>4</sub>OH, NaOH, HNO<sub>3</sub> + traces HF, ...
- Custom Mixtures can be formulated to meet your special applications.



## 1.2 | Chem-Lab's Spectro ECON Standards are:

- Ideal for AA, ICP-OES
- ISO 17025 Accredited
- Certified using high performance ICP-OES, a method developed by NIST
- Provided with "A Certificate of Analysis" stating:
  - Actual certified concentration of the final solution
  - Traceability to NIST
- Available at 1.000 µg/ml
- In different matrixes: H<sub>2</sub>O, HNO<sub>3</sub>, HCl, HF, NH<sub>4</sub>OH, NaOH, HNO<sub>3</sub> + traces HF, ...
- Custom ICP-OES, AA Standards

## Chem-Lab's SPECTRO ECON Standards

Element	1.000 mg/L	Matrix
<b>Al</b>	CL01.0105	H <sub>2</sub> O
	CL01.0107	HCl
	CL01.0106	HNO <sub>3</sub>
<b>Sb</b>	CL01.0127	HNO <sub>3</sub> + traces HF
	CL01.0126	HCl
<b>As</b>	CL01.0135	H <sub>2</sub> O
	CL01.0136	KOH
	CL01.0138	HNO <sub>3</sub>
	CL01.0137	HCl
<b>Ba</b>	CL01.0207	HCl
	CL01.0206	HNO <sub>3</sub>
<b>Be</b>	CL01.0217	HNO <sub>3</sub>
	CL01.0216	HCl
<b>Bi</b>	CL01.0225	HNO <sub>3</sub>
	CL01.0226	HNO <sub>3</sub>
<b>B</b>	CL01.0236	H <sub>2</sub> O
	CL01.0237	HNO <sub>3</sub>
<b>Cd</b>	CL01.0305	H <sub>2</sub> O
	CL01.0306	HNO <sub>3</sub>
	CL01.0398	HCl
<b>Ca</b>	CL01.0317	HCl
	CL01.0316	HNO <sub>3</sub>
<b>Cr</b>	CL01.0365	H <sub>2</sub> O
	CL01.0366	HCl
	CL01.0356	H <sub>2</sub> O
	CL01.0367	HNO <sub>3</sub>
<b>Co</b>	CL01.1125	H <sub>2</sub> O
	CL01.1126	HNO <sub>3</sub>
	CL01.1127	HCl
<b>Cu</b>	CL01.1135	H <sub>2</sub> O
	CL01.1137	HCl
	CL01.1136	HNO <sub>3</sub>
<b>In</b>	CL01.0926	HNO <sub>3</sub>
<b>Fe</b>	CL01.0905	H <sub>2</sub> O
	CL01.0907	HCl
	CL01.0906	HNO <sub>3</sub>
<b>Pb</b>	CL01.1225	H <sub>2</sub> O
	CL01.1226	HNO <sub>3</sub>
<b>Li</b>	CL01.1216	HCl
	CL01.1217	HNO <sub>3</sub>
<b>Mg</b>	CL01.1307	HCl
	CL01.1306	HNO <sub>3</sub>
<b>Mn</b>	CL01.1315	H <sub>2</sub> O
	CL01.1317	HCl
	CL01.1316	HNO <sub>3</sub>
<b>Hg</b>	CL01.1155	H <sub>2</sub> O
	CL01.1156	HNO <sub>3</sub>
<b>Mo</b>	CL01.1336	HNO <sub>3</sub> + traces HF
<b>Ni</b>	CL01.1427	HCl
	CL01.1425	H <sub>2</sub> O
	CL01.1426	HNO <sub>3</sub>
<b>Nb</b>	CL01.1436	HF

Element	1.000 mg/L	Matrix
<b>P</b>	CL01.0635	H <sub>2</sub> O
	CL01.0636	H <sub>2</sub> O
<b>K</b>	CL01.1107	HCl
	CL01.1106	HNO <sub>3</sub>
<b>Se</b>	CL01.1927	HNO <sub>3</sub>
	CL01.1926	HCl
	CL01.1925	H <sub>2</sub> O
<b>Si</b>	CL01.1936	KOH
<b>Ag</b>	CL01.2605	H <sub>2</sub> O
	CL01.2606	HNO <sub>3</sub>
<b>Na</b>	CL01.1407	HCl
	CL01.1406	HNO <sub>3</sub>
<b>Sr</b>	CL01.1966	HCl
	CL01.1967	HNO <sub>3</sub>
<b>S</b>	CL01.2645	H <sub>2</sub> O
	CL01.2646	H <sub>2</sub> O
<b>Te</b>	CL01.2016	KOH
	CL01.2018	HNO <sub>3</sub> + traces HF
	CL01.2017	HCl
<b>Tl</b>	CL01.2036	HNO <sub>3</sub>
<b>Sn</b>	CL01.2066	HCl
<b>Ti</b>	CL01.2076	HF
	CL01.2077	HCl
<b>W</b>	CL01.2306	HF
	CL01.2308	NH <sub>4</sub> OH
<b>V</b>	CL01.2206	HNO <sub>3</sub>
	CL01.2208	H <sub>2</sub> SO <sub>4</sub>
	CL01.2205	NH <sub>4</sub> OH
<b>Y</b>	CL01.2516	HNO <sub>3</sub>
<b>Zn</b>	CL01.2615	H <sub>2</sub> O
	CL01.2617	HCl
	CL01.2616	HNO <sub>3</sub>
<b>Zr</b>	CL01.2637	HCl
	CL01.2635	HCl
	CL01.2636	HF



## 2 | Inorganic Standards for IC

### 2.1 | Chem-Lab's Ion HIQU standards are:

- ISO 17034 Accredited
- Ideal for IC (Ion Chromatography)
- Prepared to the certified concentration by method BM001 using high purity salts dissolved and diluted with filtered (0.22 µm), 18 M-ohm deionized water. Traceable to the International System of Units (SI). Secondary verification of the certified concentration was performed by Ion Chromatography, which was calibrated against a solution traceable to SI via NIST.
- The metals are certified using high performance ICP-OES, a method developed by NIST
- Provided with A Certificate of Analysis stating:
  - Actual certified concentration of the gravimetric production
  - Traceability to NIST
  - Date of certification
  - Date of expiration
  - Expiry date: 3 years after production date
  - Trace impurities detected

#### 2.1.1 | Single Element IC Standards

- Available at 10.000, 1.000 µg/ml
- Custom concentrations can be formulated to meet your special applications

#### 2.1.2 | Multi Element IC Standards

- Standard solutions are prepared to the certified concentrations by method BM001 using certified single element solutions that are directly traceable to SI via the NIST SRMs. These certified values are valid for a temperature of 20°C and traceable to the International System of Units (SI). Secondary verification of the certified concentrations was performed by IC or ICP-OES.
- Custom Mixtures can be formulated to meet your special applications.



# Chem-Lab's IC Single Element HIQU Standards

## Anions

Element	10.000 mg/L	1.000 mg/L
Acetate		CL01.0151
Adipate		CL01.0171
Benzoate		CL01.0271
Bromate		CL01.0261
Bromide		CL01.0241
Butyrate		CL01.0281
Carbonate		CL01.0391
Chlorate		CL01.0348
Chloride		CL01.0341
		CL01.0342
Chlorite		CL01.0871
Chromate		CL01.0351
		CL01.0354
Citrate		CL01.2921
Cyanide		CL01.0371
Dichromate		CL01.0353
Fluoride		CL01.0611
Formaldehyde		CL01.0651
Formate		CL01.0671
Fructose, D(-)	CL01.0693	CL01.0691
Galactose, D(+)	CL01.0783	CL01.0781
Glucose, D(+)	CL01.0733	CL01.0771
Glutarate		CL01.0761
Glycolate		CL01.0751
Hydrazine		CL01.0831
Hydrogen carbonate		CL01.2311
Iodide		CL01.1001
L-Lactate		CL01.1241
Lactose	CL01.1263	CL01.1261
Malate		CL01.1382
Maleate		CL01.1383
Malonate		CL01.1384
Molybdate		CL01.1361
Nitrate		CL01.1441
Nitrite		CL01.1451
Nitrogen		CL01.1991
		CL01.1952
		CL01.1954
		CL01.1955
		CL01.1981
		CL01.1951
Oxalate		CL01.1511
Perchlorate		CL01.0349
Phenol		CL01.0601
Phosphate		CL01.0622
Phthalate		CL01.0672
Propionate		CL01.1631
Saccharose, D(+)	CL01.4523	CL01.4521
Silicate		CL01.1941
Succinate		CL01.4511
Sulfate		CL01.1975
		CL01.1972
		CL01.1971
Tartrate		CL01.2341
Thiocyanate		CL01.2661
Thiosulfate		CL01.2351

## Cations

Element	10.000 mg/L	1.000 mg/L
Ammonia	CL01.0112	CL01.0111
Barium		CL01.0208
Calcium	CL01.0320	CL01.0338
Cesium		CL01.0336
Diethanolamine		CL01.0451
Diethylamine		CL01.0461
Ethanolamine		CL01.0521
Lithium		CL01.1218
Magnesium	CL01.1343	CL01.1342
Methoxypropylamine-(3)		CL01.1381
Morpholine		CL01.1351
Potassium	CL01.1110	CL01.1111
Rubidium		CL01.1828
Sodium		CL01.1418
Strontium		CL01.1968
Urea		CL01.2111

## 2.2 | Chem-Lab's Ion ECON standards are:

- Manufactured in our ISO 17025 accredited laboratory.
- Prepared to the certified concentration shown above by method BM001 using high purity salts dissolved and diluted with filtered (0.22 µm), 18 M-ohm deionized water. This value is valid for a temperature of 20°C and traceable to the International System of Units (SI). Secondary verification of the certified concentration was performed by Ion Chromatography, which was calibrated against a solution traceable to SI via NIST SRMs
- Provided with A Certificate of Analysis stating:
  - Actual certified concentration of the gravimetric production
  - Traceability to NIST

### 2.2.1 | Single Element IC Standards

- Available at 1.000 µg/ml

## Chem-Lab's IC ECON Standards

### Anions

Element	1.000 mg/L
Bromide	CL01.0246
Carbonate	CL01.0396
Chloride	CL01.0346
Chromate	CL01.0355
Cyanide	CL01.0378
	CL01.0376
Fluoride	CL01.0616
Hydrazine	CL01.0836
Hydrogen carbonate	CL01.2316
Iodide	CL01.1006
Nitrate	CL01.1446
Nitrite	CL01.1456
Nitrogen	CL01.1996
	CL01.1986
	CL01.1956
Phosphate	CL01.0617
	CL01.0627
	CL01.0625
Silicate	CL01.1946
Sulfate	CL01.1976

### Cations

Element	1.000 mg/L
Ammonia	CL01.0116
Barium	CL01.0205
Calcium	CL01.0315
Cesium	CL01.0355
Lithium	CL01.1215
Magnesium	CL01.1305
Potassium	CL01.1105
Rubidium	CL01.1825
Sodium	CL01.1405
Strontium	CL01.1965



#### CHEM-LAB NV

Industriezone "De Arend" 2  
B-8210 Zedelgem  
Belgium

Tel. +32 50 28 83 20  
Fax. +32 50 78 26 54  
info@chem-lab.be  
www.chem-lab.be

#### VLAANDEREN

Tel. 050 28 83 21  
Fax. 050 78 26 54  
vlaanderen@chem-lab.be

#### WALLONIE

Tél. 071 39 43 01  
Fax. 071 39 11 34  
wallonie@chem-lab.be

#### EXPORT

Tel. +32 50 28 83 22  
Fax. +32 50 78 26 54  
export@chem-lab.be