

**Scharlab S.L.**

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CERTIFICATE OF ANALYSIS

Product: **Nitric acid, 69%, Ultratrace[®], ppt-trace analysis**
AC1618 grade

Batch
Quality release date 19/9/2019
Expiry date 9/2022

Analysis	Batch value	Specifications
assay (acidimetric)	69%	67 - 69%
aluminium (Al)	< 1 ppt	max. 20 ppt
antimony (Sb)	< 0,02 ppt	max. 10 ppt
arsenic (As)	< 0,1 ppt	max. 20 ppt
barium (Ba)	< 0,05 ppt	max. 10 ppt
beryllium (Be)	< 0,01 ppt	max. 10 ppt
bismuth (Bi)	< 0,01 ppt	max. 10 ppt
boron (B)	< 10 ppt	max. 10 ppt
cadmium (Cd)	< 0,01 ppt	max. 10 ppt
calcium (Ca)	< 10 ppt	max. 10 ppt
cerium (Ce)	< 0,01 ppt	max. 10 ppt
cesium (Cs)	< 0,01 ppt	max. 10 ppt
chromium (Cr)	< 1 ppt	max. 10 ppt
cobalt (Co)	< 0,05 ppt	max. 10 ppt
copper (Cu)	< 0,5 ppt	max. 10 ppt
dysprosium (Dy)	< 0,01 ppt	max. 1 ppt
erbium (Er)	< 0,01 ppt	max. 1 ppt
europium (Eu)	< 0,01 ppt	max. 1 ppt
gadolinium (Gd)	< 0,01 ppt	max. 1 ppt
gallium (Ga)	< 0,01 ppt	max. 10 ppt
germanium (Ge)	< 0,01 ppt	max. 10 ppt
gold (Au)	< 1 ppt	max. 20 ppt
hafnium (Hf)	< 0,05 ppt	max. 10 ppt
holmium (Ho)	< 0,01 ppt	max. 1 ppt
indium (In)	< 0,01 ppt	max. 1 ppt
iron (Fe)	< 1 ppt	max. 10 ppt
lanthanum (La)	< 0,01 ppt	max. 1 ppt
lead (Pb)	< 0,05 ppt	max. 10 ppt
lithium (Li)	< 0,01 ppt	max. 10 ppt
lutetium (Lu)	< 0,01 ppt	max. 1 ppt
magnesium (Mg)	< 0,1 ppt	max. 10 ppt
manganese (Mn)	< 0,05 ppt	max. 10 ppt
mercury (Hg)	< 20 ppt	max. 50 ppt
molybdenum (Mo)	< 0,05 ppt	max. 10 ppt
neodymium (Nd)	< 0,01 ppt	max. 1 ppt
nickel (Ni)	< 5 ppt	max. 20 ppt
niobium (Nb)	< 0,05 ppt	max. 1 ppt

This certificate does not release the user from their control upon receipt of the goods.

You can get a copy of any of our COA from our web site: www.scharlab.com

M. Canet
Laboratory Manager

Scharlab S.L. - Certificate of Analysis

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palladium (Pd)	< 0,05 ppt	max. 20 ppt
platinum (Pt)	< 1 ppt	max. 20 ppt
potassium (K)	< 1 ppt	max. 10 ppt
praseodymium (Pr)	< 0,01 ppt	max. 1 ppt
rhodium (Rh)	< 0,01 ppt	max. 10 ppt
rhodium (Rh)	< 0,01 ppt	max. 10 ppt
rubidium (Rb)	< 0,01 ppt	max. 10 ppt
ruthenium (Ru)	< 0,01 ppt	max. 20 ppt
samarium (Sm)	< 0,01 ppt	max. 1 ppt
scandium (Sc)	< 0,01 ppt	max. 10 ppt
selenium (Se)	< 5 ppt	information only
silver (Ag)	< 0,1 ppt	max. 10 ppt
sodium (Na)	< 1 ppt	max. 10 ppt
strontium (Sr)	< 0,05 ppt	max. 10 ppt
tantalum (Ta)	< 0,01 ppt	information only
tellurium (Te)	< 0,01 ppt	max. 1 ppt
terbium (Tb)	< 0,01 ppt	max. 1 ppt
thallium (Tl)	< 0,01 ppt	max. 10 ppt
thorium (Th)	< 0,01 ppt	max. 1 ppt
thulium (Tm)	< 0,01 ppt	max. 1 ppt
tin (Sn)	< 0,1 ppt	max. 20 ppt
titanium (Ti)	< 0,1 ppt	max. 10 ppt
tungsten (W)	< 0,1 ppt	max. 10 ppt
uranium (U)	< 0,01 ppt	max. 1 ppt
vanadium (V)	< 0,05 ppt	max. 10 ppt
ytterbium (Yb)	< 0,01 ppt	max. 1 ppt
yttrium (Y)	< 0,01 ppt	max. 1 ppt
zinc (Zn)	< 1 ppt	max. 10 ppt
zirconium (Zr)	< 0,05 ppt	max. 10 ppt

Preparation

Operations are conducted under Class 100 or better clean-room conditions.
The product is bottled in specially cleaned fluoropolymer bottles to remove leachable metals.

Measurement

Most elements are determined by ICP-MS using sample preconcentration. The results are the average of three aliquots subsampled from three samples representative of the batch. The samples are slowly evaporated to dryness.
For volatile elements, the samples are diluted then directly injected into ICP-MS.
Values are below 3 times the standard deviation of the blank, otherwise stated.

Storage and use

For ppt-trace analysis

If the product is stored at room temperature and avoiding exposure to light and unopened, this solution is stable for 3 years from the date of manufacturing.

Once the bottle is opened, keep tightly closed at room temperature. Avoid exposure to light and to contaminants. The inner pack of plastic bag and bottle should be opened under Class 100 particle conditions.

The use of plastic gloves, hair net and a clean room suit is also advised.

In order to maintain trace metal purity if you made solutions from this product, these solutions must be made in a trace metal clean room and the water must be of the same trace metal quality or better.

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M. Canet
Laboratory Manager

