

**Scharlab S.L.**

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CERTIFICATE OF ANALYSIS

Product: **Hydrochloric acid, 37%, Ultratrace®**, ppb-trace
AC0780 analysis grade

Batch
Quality release date 21/11/2019
Expiry date 11/2022

Analysis	Batch value	Specifications
assay (acidimetric)	35%	34 - 37 %
colour (Hazen)	< 7	max. 10
bromides (Br)	< 10 ppm	max. 10 ppm
free chlorine (as Cl)	< 0,5 ppm	max. 0,5 ppm
total phosphorus (P)	< 0,01 ppm	max. 0,01 ppm
total sulfur (S)	< 0,3 ppm	max. 0,3 ppm
aluminium (Al)	< 0,5 ppb	max. 1 ppb
antimony (Sb)	< 0,1 ppb	max. 0,5 ppb
arsenic (As)	< 0,1 ppb	max. 0,5 ppb
barium (Ba)	< 0,1 ppb	max. 0,1 ppb
beryllium (Be)	< 0,1 ppb	max. 0,1 ppb
bismuth (Bi)	< 0,1 ppb	max. 0,1 ppb
boron (B)	< 0,5 ppb	max. 1 ppb
cadmium (Cd)	< 0,1 ppb	max. 0,1 ppb
calcium (Ca)	< 0,5 ppb	max. 1 ppb
cerium (Ce)	< 0,1 ppb	max. 0,1 ppb
cesium (Cs)	< 0,1 ppb	max. 0,1 ppb
chromium (Cr)	< 0,1 ppb	max. 0,5 ppb
cobalt (Co)	< 0,1 ppb	max. 0,1 ppb
copper (Cu)	< 0,2 ppb	max. 0,5 ppb
dysprosium (Dy)	< 0,1 ppb	max. 0,1 ppb
erbium (Er)	< 0,1 ppb	max. 0,1 ppb
europium (Eu)	< 0,1 ppb	max. 0,1 ppb
gadolinium (Gd)	< 0,1 ppb	max. 0,1 ppb
gallium (Ga)	< 0,1 ppb	max. 0,1 ppb
gold (Au)	< 0,1 ppb	max. 0,5 ppb
hafnium (Hf)	< 0,1 ppb	max. 0,1 ppb
holmium (Ho)	< 0,1 ppb	max. 0,1 ppb
indium (In)	< 0,1 ppb	max. 0,1 ppb
iron (Fe)	< 0,5 ppb	max. 1 ppb
lanthanum (La)	< 0,1 ppb	max. 0,1 ppb
lead (Pb)	< 0,1 ppb	max. 0,1 ppb
lithium (Li)	< 0,1 ppb	max. 0,1 ppb
lutetium (Lu)	< 0,1 ppb	max. 0,1 ppb
magnesium (Mg)	< 0,5 ppb	max. 0,5 ppb
manganese (Mn)	< 0,1 ppb	max. 0,1 ppb
mercury (Hg)	< 0,02 ppb	max. 0,1 ppb
molybdenum (Mo)	< 0,1 ppb	max. 0,1 ppb

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

Product: **Hydrochloric acid, 37%, Ultratrace®**, ppb-trace
AC0780 analysis grade

Batch
Quality release date 21/11/2019
Expiry date 11/2022

Analysis	Batch value	Specifications
neodymium (Nd)	< 0,1 ppb	max. 0,1 ppb
nickel (Ni)	< 0,1 ppb	max. 0,5 ppb
niobium (Nb)	< 0,1 ppb	max. 0,1 ppb
palladium (Pd)	< 0,5 ppb	information only
platinum (Pt)	< 0,5 ppb	information only
potassium (K)	< 0,1 ppb	max. 1 ppb
praseodymium (Pr)	< 0,1 ppb	max. 0,1 ppb
rhodium (Rh)	< 0,1 ppb	max. 0,1 ppb
rhodium (Rh)	< 0,1 ppb	max. 0,1 ppb
rubidium (Rb)	< 0,1 ppb	max. 0,1 ppb
ruthenium (Ru)	< 0,1 ppb	max. 0,1 ppb
samarium (Sm)	< 0,1 ppb	max. 0,1 ppb
scandium (Sc)	< 0,1 ppb	max. 0,1 ppb
selenium (Se)	< 0,2 ppb	max. 1 ppb
silver (Ag)	< 0,1 ppb	max. 1 ppb
sodium (Na)	< 0,5 ppb	max. 1 ppb
strontium (Sr)	< 0,1 ppb	max. 0,1 ppb
tantalum (Ta)	< 1 ppb	information only
tellurium (Te)	< 0,1 ppb	max. 0,1 ppb
terbium (Tb)	< 0,1 ppb	max. 0,1 ppb
thallium (Tl)	< 0,1 ppb	max. 0,1 ppb
thorium (Th)	< 0,1 ppb	max. 0,1 ppb
thulium (Tm)	< 0,1 ppb	max. 0,1 ppb
tin (Sn)	< 0,1 ppb	max. 0,5 ppb
titanium (Ti)	< 0,1 ppb	max. 0,5 ppb
tungsten (W)	< 0,1 ppb	max. 0,1 ppb
uranium (U)	< 0,1 ppb	max. 0,1 ppb
vanadium (V)	< 0,1 ppb	max. 0,5 ppb
ytterbium (Yb)	< 0,1 ppb	max. 0,1 ppb
yttrium (Y)	< 0,1 ppb	max. 0,1 ppb
zinc (Zn)	< 0,5 ppb	max. 1 ppb
zirconium (Zr)	< 0,1 ppb	max. 0,1 ppb

Preparation

Operations are conducted under Class 100 or better clean-room conditions.

The product is bottled in specially cleaned polyethylene bottles to remove leachable metals.

Storage and use

For ppb-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

