CRS

LABORATORIES


# Schedule of Services

2025

# CRS Laboratories

CRS Laboratories was founded in Oulu in 1994, so our expertise is built on more than 30 years of experience in our field – not to mention the insight and in-depth knowledge of our highly qualified personnel. We are consistently advancing the industry, refining our best practices, and, above all, continually improving ourselves as individuals, colleagues and leaders.

We provide our clients with expertise especially in the fields of mineral prospecting, mining, laboratory establishment, environmental analyses and laboratory testing. We specialise in sample preparation and analysis of geological samples, e.g. drill core, rock, till and drill sludge. CRS is also a professional and flexible partner for establishing and operating new laboratories according to clients' needs. At this moment we have 3 different labs including one main laboratory in Kempele and two laboratories at our clients' sites.

Client satisfaction and continuous improvement are at the heart of our quality policy. We always interact closely with our clients and make sure that the quality, cost and turnaround time of our services meet the defined needs. CRS is a reliable laboratory partner, who has knowledge and comprehension of the industry. We are always happy to serve you!

# Table of Contents


Table of Contents ..... 2

Sample Preparation ..... 3

Aqua Regia digestion ..... 5

Bromine-Methanol leach ..... 6

Sodium Peroxide Fusion ..... 7

Lithium Borate Fusion ..... 8

XRF- and LOI-analyses ..... 9

Combustion analyses ..... 10

PAL1000 Analysis ..... 11

ICP-OES analysis of solutions ..... 12

Laboratory Establishment ..... 13

Terms of Service ..... 14


# Sample preparation

Sample preparation involves all necessary steps to ready your sample material (such as drill core, rock, till) for analysis. Our sample preparation quality control includes blank samples and duplicate samples to maintain consistent quality. We assist in selecting the most appropriate preparation methods based on your requirements. If the desired preparation method cannot be found, please contact us.

### Sample preparation packages

*Includes cleaning the crusher/ pulverizer between every sample

| Code | Description | List Price |
|---|---|---|
| PRP-924 | Dry, crush to 2 mm, split 450 g sub-sample using rotating sample divider attached to crusher and pulverize sub-sample to 85% passing 75 µm. | 16.01 € |
| PRP-929 | Dry, crush to 2 mm, split 900 g sub-sample using rotating sample divider attached to crusher and pulverize sub-sample to 85% passing 75 µm. | 18.21 € |
| PRP-940 | Dry, Crush, total grind up to 3 kg to 85% passing 75 microns. Samples that are bigger or if sample isn't fine enough after 12 min pulverizing, will be split to smaller sample size. | 26.63 € |

### Drying

| Code | Description | List Price |
|---|---|---|
| DRI-060 | Drying of soil samples at max 60 °C. | 1.98 € |
| DRI-100 | Surcharge for wet sludge samples in plastic bags, adds 2 days to turnaround time. | 3.19 € |
| DRI-300 | Determination of moisture content by weighing, drying and weighing | 4.75 € |

### Crushing

*Includes cleaning the crusher between every sample

| Code | Description | List Price |
|---|---|---|
| CRU-220 | Crush sample to 70% passing 2 mm and split to client specification. | 4.29 € |
| CRU-200 | Crush size charge / kg. | 1.05 €/kg |

### Splitting

| Code | Description | List Price |
|---|---|---|
| SPL-400 | Split sample for various uses using rotating sample divider. | 3.74 € |

### Pulverizing

*Includes cleaning the pulverizer between every sample

| Code | Description | List Price |
|---|---|---|
| PPU-524 | Pulverize 450 g to 85% passing 75 µm. | 6.49 € |
| PPU-529 | Pulverize 900 g to 85% passing 75 µm. | 8.47 € |

### Specific gravity

| Code | Description | List Price |
|---|---|---|
| SG10 | Specific gravity by weight | 8.03 € |

### Screening

| Code | Description | List Price |
|---|---|---|
| PSC-063 | Screen sample to 63 microns | 5.23 € |
| PSC-180 | Screen sample to 180 microns | 4.35 € |
| PSC-100 | Surcharge for samples >500 g, per 500 g | 1.87 € |
| PSC-110 | Save all plus and minus fraction. | 1.05 € |

## Disposal and Storage

All pulps and rejects can be stored at our facilities free of charge for 90 days (or less if wished), starting from the day the analysis report has been released. After the free period the samples are either returned (PIC-100) or disposed.

| Code | Description | List Price |
|---|---|---|
| DIS-100 | Reject warehouse disposition handling after analysis | 0.67 € |
| DIS-200 | Pulp warehouse disposition handling after analysis | 0.25 € |
| DIS-400 | Heat treatment and disposal of international soils | 0.93 € |
| DIS-600 | Environmental levy for fire assay waste (for responsible waste treatment) | 0.75 € |
| STO-200 | Additional storage of samples | By quotation |

## Other

| Code | Description | List Price |
|---|---|---|
| ADM-100 | Administration fee | 39 €/batch |
| PIC-100 | Sample pick-up service. Transport of samples for example via Posti from site to laboratory in Kempele. Same price for return of rejects | By quotation |
| PLG-100 | Samples submitted as pulps (no other sample prep charges) | 2.86 € |
| SAM-001 | Sampling drill cores in boxes. | 6.04 € |
| HAN-200 | Special handling, per hour | 58 € / h |

# Aqua regia digestion

## AR-ICP10 & 11

| | |
|---|---|
| Analysis method: | *Aqua regia digestion with ICP-OES finish* |
| CRS method code & list price (VAT 0%): | *AR-ICP10 21.79 €*<br>*AR-ICP11 26.40 €* |
| Laboratory location: | *Kempele, Finland* |

FINAS Finnish Accreditation Service T342 (EN ISO/IEC 17025)

**Method description:**

0.25 g sample is leached in aqua regia, diluted, centrifuged and analyzed with ICP-OES technique. Quality control includes certified reference materials, blank samples and duplicate samples.

**Scope of method:**

Aqua regia digestion is suitable for analysis of geochemical samples in exploration and mining industry. Aqua regia leaching is partial digestion, which means that the whole sample material will not dissolve. Most sulphides, carbonates and some oxides are dissolved leaving more resistant mineral phases including silicates mostly intact. Base metals are generally readily dissolved (with some exceptions).

**Measurement ranges:**

AR-ICP10

| Element | Ag * | Al | As * | Ba | Be | Ca | Cd |
|---|---|---|---|---|---|---|---|
| Lower limit (ppm) | 2 | 50 | 10 | 5 | 1 | 20 | 1 |
| Upper limit (ppm) | 3000 | 50000 | 25000 | 10000 | 10000 | 50000 | 10000 |

| Element | Co * | Cu * | Fe | K | Li | Mg | Mn |
|---|---|---|---|---|---|---|---|
| Lower limit (ppm) | 2 | 10 | 50 | 500 | 10 | 5 | 5 |
| Upper limit (ppm) | 10000 | 10000 | 50000 | 50000 | 25000 | 50000 | 10000 |

| Element | Mo | Na | Ni * | P | Pb * | S | Sb |
|---|---|---|---|---|---|---|---|
| Lower limit (ppm) | 5 | 100 | 5 | 20 | 10 | 100 | 10 |
| Upper limit (ppm) | 50000 | 50000 | 10000 | 50000 | 10000 | 120000 | 25000 |

| Element | Se | Sn | Sr | Ti | V | Zn * |
|---|---|---|---|---|---|---|
| Lower limit (ppm) | 10 | 5 | 1 | 5 | 5 | 10 |
| Upper limit (ppm) | 25000 | 10000 | 10000 | 50000 | 10000 | 25000 |

** Accredited analysis*

**Overlimit method:**

AR-ICP11

| Element | Ag * | Al | As* | Ba | Be | Ca | Cd |
|---|---|---|---|---|---|---|---|
| Upper limit (%) | 2 | 32 | 16 | 6.4 | 6.4 | 32 | 6.4 |

| Element | Co * | Cu * | Fe | K | Li | Mg | Mn |
|---|---|---|---|---|---|---|---|
| Upper limit (%) | 6.4 | 6.4 | 32 | 32 | 16 | 32 | 6.4 |

| Element | Mo | Na | Ni * | P | Pb * | S | Sb |
|---|---|---|---|---|---|---|---|
| Upper limit (%) | 32 | 32 | 6.4 | 32 | 6.4 | 80 | 16 |

| Element | Se | Sn | Sr | Ti | V | Zn * |
|---|---|---|---|---|---|---|
| Upper limit (%) | 16 | 6.4 | 6.4 | 32 | 6.4 | 16 |

** Accredited analysis*



**CRS Laboratories is a testing laboratory T342 accredited by FINAS Finnish Accreditation Service, accreditation requirement ISO/IEC 17025:2017. The scope of accreditation can be found from FINAS website (www.finas.fi).*

# Bromine-methanol leach

## BM-ICP

| | |
|---|---|
| **Analysis method:** | *Bromine-methanol leach with ICP-OES finish* |
| **CRS method code:** | *BM-ICP* |
| **Price (0% VAT):** | *65.72 €* |
| **Laboratory location:** | *Kempele, Finland* |

**Method description:**

0.2 g sample is leached in bromine-methanol mixture, filtrated, evaporated and diluted for ICP-OES analysis. Laboratory quality control involves using reference materials, blank samples and duplicate assays.

**Scope of method:**

Bromine-methanol leach is selective dissolution method for determination of sulphide-bound Co, Cu and Ni in metallurgical and geological samples. Bromine-methanol dissolves sulphides and arsenides very selectively but leaves silicates and oxides intact. In addition, some iron sulphides may dissolve, but pyrite only partially.

**Measurement range:**

| *Element* | *Co* | *Cu* | *Fe* | *Ni* |
|---|---|---|---|---|
| Lower limit | 10 ppm | 20 ppm | 200 ppm | 10 ppm |
| Upper limit | 10% | 20% | 50% | 10% |

If upper limit is surpassed, results will be reported with ">" symbol and corresponding upper limit (for example >10% with Co).

# Sodium Peroxide Fusion

## SPF-ICP16, SPF-MS16

| | |
|---|---|
| Analysis method: | Sodium peroxide fusion with ICP-OES or ICP-MS finish |
| CRS method code & Price (0% VAT): | SPF-ICP16 43.78 €<br>SPF-MS16 47.97 € |
| Laboratory location: | Kempele, Finland |

FINAS Finnish Accreditation Service T342 (EN ISO/IEC 17025)

**Method description:** 0.2 g sample is fused with sodium peroxide in zirconium crucible. The fused sample is dissolved in acid solution, diluted and analyzed with ICP-OES and/or ICP-MS instrument. Quality control includes certified reference materials, blank samples and duplicate samples.

**Scope of method:** Sodium peroxide fusion method is well suited for geochemical samples requiring total digestion and wide range of elements. The method allows complete dissolution of refractory minerals (like magnetite, ilmenite, rutile, etc.). It is ideal for determination of base metals and high field strength elements (for example Nb, Ta, Ti).

**Measurement ranges:**

SPF-ICP16

| Element | Al * | As | Ba * | Be | Ca * | Cd | Co * |
|---|---|---|---|---|---|---|---|
| Lower limit | 0.05% | 100 ppm | 30 ppm | 10 ppm | 0.1% | 10 ppm | 20 ppm |
| Upper limit | 50% | 25% | 5% | 0.5% | 50% | 2.5% | 10% |

| Element | Cr | Cu * | Fe * | Ga | K * | Li * | Mg * |
|---|---|---|---|---|---|---|---|
| Lower limit | 30 ppm | 30 ppm | 100 ppm | 100 ppm | 0.2% | 30 ppm | 200 ppm |
| Upper limit | 10% | 20% | 50% | 1% | 37.5% | 5% | 37.5% |

| Element | Mn * | Mo | Ni * | Pb * | S | Sc | Si * |
|---|---|---|---|---|---|---|---|
| Lower limit | 30 ppm | 30 ppm | 20 ppm | 50 ppm | 0.1% | 20 ppm | 0.1% |
| Upper limit | 12.5% | 2.5% | 12.5% | 12.5% | 100% | 0.5% | 50% |

| Element | Sr * | Ti * | V | Zn * |
|---|---|---|---|---|
| Lower limit | 20 ppm | 50 ppm | 50 ppm | 50 ppm |
| Upper limit | 2.5% | 25% | 2.5% | 20% |

** Accredited analysis*

If upper limit is surpassed, results will be reported with ">" symbol and corresponding upper limit (for example >50 % with Fe).

SPF-MS16

**Pegmatite** exploration add-on

| Element | As | Nb | Sn | Ta | Th | U | W |
|---|---|---|---|---|---|---|---|
| Lower limit(ppm) | 5 | 1 | 10 | 1 | 1 | 1 | 1 |
| Upper limit (%) | 2.5 | 1.25 | 1.25 | 0.5 | 0.5 | 0.125 | 1.25 |

**REE** add-on

| Element | Ce | Dy | Er | Eu | Gd | Ho | La | Lu |
|---|---|---|---|---|---|---|---|---|
| Lower limit (ppm) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Upper limit (%) | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

| Element | Nd | Pr | Sm | Tb | Tm | Y | Yb |
|---|---|---|---|---|---|---|---|
| Lower limit (ppm) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 0.5 |
| Upper limit (%) | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

# Lithium borate fusion

## LBF-ICP18, LBF-MS18

| | |
|---|---|
| Analysis method: | *Lithium borate fusion with ICP-OES or ICP-MS finish* |
| CRS method code & list price (VAT 0%) | *LBF-ICP18 44.70 €*<br>*LBF-MS18 50.80 €* |
| Laboratory location: | *Kempele, Finland* |

FINAS Finnish Accreditation Service T342 (EN ISO/IEC 17025)

**Method description:**

Sample aliquot is fused with lithium borate flux in graphite crucible in high temperature. The fused sample is dissolved in acid solution, filtered, diluted and analyzed with ICP-OES (LBF-ICP18) or ICP-MS (LBF-MS18) instrument. Quality control includes certified reference materials, blank samples and duplicate samples.

**Scope of method:**

Lithium borate fusion method is suitable for geochemical samples requiring total digestion. The method allows complete dissolution of rock matrix elements and refractory high field strength elements (such as REE and Nb)

**Measurement ranges:**

LBF-ICP18

| Element | $Al_2O_3$ * | BaO * | Be | CaO * | $Cr_2O_3$ * | $Fe_2O_3$ * | $K_2O$ * |
|---|---|---|---|---|---|---|---|
| Lower limit | 0.1% | 50 ppm | 10 ppm | 0.02% | 0.01% | 0.01% | 0.1% |
| Upper limit | 100% | 6% | 0.5% | 70% | 15% | 70% | 45% |

| Element | MgO * | MnO * | $Na_2O$ | $P_2O_5$ * | $SiO_2$ * | SrO * | $TiO_2$ * |
|---|---|---|---|---|---|---|---|
| Lower limit | 0.01% | 0.01% | 0.1% | 0.1% | 0.1% | 0.01% | 0.01% |
| Upper limit | 65% | 17% | 50% | 60% | 60% | 3% | 40% |

| Element | Zn |
|---|---|
| Lower limit | 0.01% |
| Upper limit | 20% |

** Accredited analysis*

If upper limit is surpassed, results will be reported with ">" symbol and corresponding upper limit (for example >6 % with BaO).

LBF-MS18

| Element | Ce * | Co | Dy * | Er * | Eu * | Gd * | Hf |
|---|---|---|---|---|---|---|---|
| Lower limit | 1 ppm | 2 ppm | 1 ppm | 1 ppm | 1 ppm | 1 ppm | 1 ppm |
| Upper limit | 5% | 1% | 0.5% | 0.5% | 0.5% | 0.5% | 0.1% |

| Element | Ho * | La * | Lu * | Nb * | Nd * | Pr * | Rb |
|---|---|---|---|---|---|---|---|
| Lower limit | 1 ppm | 1 ppm | 1 ppm | 1 ppm | 1 ppm | 1 ppm | 2 ppm |
| Upper limit | 0.5% | 5% | 0.25% | 5% | 2.5% | 2.5% | 0.5% |

| Element | Sc | Sm * | Sn | Ta | Tb * | Th | Tm * |
|---|---|---|---|---|---|---|---|
| Lower limit | 2 ppm | 1 ppm | 10 ppm | 1 ppm | 1 ppm | 1 ppm | 1 ppm |
| Upper limit | 0.5% | 0.5% | 1% | 0.5% | 0.5% | 0.5% | 0.25% |

| Element | U | V | W | Y | Yb * | Zr |
|---|---|---|---|---|---|---|
| Lower limit | 1 ppm | 1 ppm | 1 ppm | 1 ppm | 1 ppm | 5 ppm |
| Upper limit | 0.1% | 1% | 1% | 0.5% | 0.5% | 2.5% |

** Accredited analysis*

If upper limit is surpassed, results will be reported with ">" symbol and corresponding upper limit (for example >1 % with Nb).

# XRF- and LOI-analyses

## LBF-XRF12, PP-XRF12, LOI

XRF-, LOI- and Combustion analysis are performed in our laboratory in Outokumpu, Finland. Standardless XRF analyses are performed with a Thermo Fisher Scientific Perfom'X 4200W analyzer and the results are calculated using the UniQuant calculation program. This enables measurements of pellets and fused glass beads for up to 79 elements and the method can be optimized for different sample matrices.

| | |
|---|---|
| Analysis method: | *Borate fusion with XRF finish* |
| CRS method code: | *LBF-XRF12* |
| Price (0% VAT): | *129.32 €* |
| Laboratory location: | *Kempele, Finland* |
| Method description: | Routine analysis uses a 0.3 g milled sample which is fused with lithiumtetraborate and lithiummetaborate in a muffle furnace to form a glass bead for XRF analysis. Laboratory quality control involves using reference materials and duplicate assays. |
| Scope of method: | Borate fusion destroys the mineralogy of a geological sample by dissolving it in a flux. It dissolves even refractory materials and effectively matrix matches samples of different types, which enables accurate determination of major and minor elements with XRF finish. Method is not suitable for samples containing large amounts of sulfides, metallic metals, or other reduced species without pre-oxidation. |
| Measurement range: | Generally, from 50 ppm to 100%. Matrix and element dependent. |

| | |
|---|---|
| Analysis method: | *Pressed pellet with XRF finish* |
| CRS method code: | *PP-XRF12* |
| Price (0% VAT): | *128.79 €* |
| Laboratory location: | *Kempele, Finland* |
| Method description: | Routine analysis uses a 7 g milled sample which is mixed with wax and pressed into a pellet for XRF analysis. Laboratory quality control involves using reference materials and duplicate assays. |
| Scope of method: | Pressed pellet enables the highest intensities for trace elements. However, the varying mineralogy of samples increases uncertainty, especially when measuring minors and majors. |
| Measurement range: | Generally, from 10 ppm to 100 %. Matrix and element dependent |

| | |
|---|---|
| Analysis method: | *Loss of ignition* |
| CRS method code: | *LOI* |
| Price (0% VAT): | *17.73 €* |
| Laboratory location: | *Kempele, Finland* |
| Method description: | The weighed sample is dried at 1000 °C and reweighed to calculate the loss of ignition. |
| Scope of method: | LOI (loss of ignition) can be used to complement XRF-calculations to improve method accuracy. It's recommended especially for samples with sulfur, carbon, crystallization water and/or hydroxides. |

# Combustion analyses

## CA-CS, CA-C, CA-S

| | |
|---|---|
| Analysis method: | *Combustion analysis of carbon and sulfur* |
| CRS method code: | *CA-CS*<br>*CA-C*<br>*CA-S* |
| Price (0% VAT): | *32.10 €*<br>*28.89 €*<br>*28.89 €* |
| Laboratory location: | *Kempele, Finland* |
| Method description: | A 10-100 mg sample is combusted with Leco CS744 analyzer or with Eltra CS 530 analyzer. With Leco CS744 combustion takes place in an induction furnace at a high temperature under an oxygen flow. With Eltra CS 530 the sample is combusted in a resistance furnace under an oxygen flow. During combustion CO2 and SO2 gases are formed, analyzed by detectors and the percentage of the analyte in the sample is calculated. Certified reference materials, duplicate assays and blank samples are used for the quality control of the method. |
| Scope of method: | The advantages of combustion method are the small amount of sample required and rapid analyze time. The analyzed sample must be as dry as possible, as humidity directly affects the result (causes lower results). |
| Measurement range: | |

| Element | C | S |
|---|---|---|
| Detection limit | 0.02% | 0.02% |

# PAL1000 Cyanide Leach

## PAL-AAS

| | |
|---|---|
| **Analysis method:** | PAL1000 Cyanide Leach with AAS finish |
| **CRS method code & list price (VAT 0%)** | PAL0.5kg-AAS 19.59 €<br>PAL0.5kg-DiBK-AAS 23.54 €<br>PAL1.0kg-AAS 22.44 €<br>PAL1.0kg-DiBK-AAS 27.07 € |
| **Laboratory location:** | Kempele, Finland |

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| | |
|---|---|
| **Method description:** | The PAL1000 machine (produced by Mineral Process Control Pty Ltd) contains steel pots in which the samples are completely pulverized (> 80% < 75 µm grain size) with steel balls and simultaneously leached with cyanide (using Assay Tabs). The solution is analyzed for gold by AAS. For lower detection limit solvent extraction is used in addition. The quality control of the analysis process is monitored with certified reference materials, blank samples and duplicate assays. |
| **Scope of method:** | Determination of cyanide soluble gold in geological materials. |
| **Advantages:** | The method is capable of analyzing very large samples (up to 1 kg) which improves the representativeness of the assay results and minimizes the gold nugget effect. The method doesn't require pulverizing before leaching which minimizes the variance caused by sample preparation. |
| **Interferences:** | High concentrations of graphite, sulphide or copper may lower the recovery of gold in the cyanide leach. Test batch of representative samples is suggested before bulk use of PAL1000 is started on any new mineralization. Usually recoveries have been within range of 95-100% with our clients. Analyzing PAL1000 analysis residue with fire assay tells best if there is cyanide insoluble gold in the samples. |
| **Measurement range:** | Regular methods: 0.05 mg/kg – 100 mg/kg<br>DiBK extraction methods: 0.01 mg/kg – 2 mg/kg |

# ICP-OES analysis of solutions

## ICP40

| | |
|---|---|
| **Analysis method:** | *ICP-OES analysis of solutions* |
| **CRS method code:** | *ICP40* |
| **Price (0% VAT):** | *20.56 €* |
| **Laboratory location:** | *Kempele, Finland* |

**Method description:** Solution sample is diluted once if necessary and measured with ICP-OES. Quality control involves control solutions, spiked samples and blank solutions.

**Scope of method:** Determination of dissolved elements in different types of water samples (e.g. ground, surface, potable, waste water).

**Measurement range:** Detection and upper limits apply only to undiluted samples. If samples need dilution (for example due high TDS value) detection and upper limits are proportionally higher (for example dilution factor of 10 increases limits ten-fold.)

| *Element* | *Ag* | *Al* | *As* | *Ba* | *Be* | *Ca* | *Cd* |
|---|---|---|---|---|---|---|---|
| Lower limit (mg/l) | 0.001 | 0.05 | 0.02 | 0.005 | 0.005 | 0.05 | 0.001 |
| Upper limit (mg/l) | 1 | 20 | 10 | 4 | 4 | 20 | 4 |

| *Element* | *Co* | *Cr* | *Cu* | *Fe* | *K* | *Li* | *Mg* |
|---|---|---|---|---|---|---|---|
| Lower limit (mg/l) | 0.002 | 0.002 | 0.005 | 0.02 | 0.5 | 0.01 | 0.01 |
| Upper limit (mg/l) | 4 | 4 | 4 | 20 | 20 | 10 | 20 |

| *Element* | *Mn* | *Mo* | *Na* | *Ni* | *P* | *Pb* | *S* |
|---|---|---|---|---|---|---|---|
| Lower limit (mg/l) | 0.005 | 0.005 | 0.1 | 0.002 | 0.1 | 0.05 | 0.5 |
| Upper limit (mg/l) | 4 | 20 | 20 | 4 | 20 | 4 | 100 |

| *Element* | *Sb* | *Se* | *Sn* | *Sr* | *Ti* | *V* | *Zn* |
|---|---|---|---|---|---|---|---|
| Lower limit (mg/l) | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 |
| Upper limit (mg/l) | 10 | 10 | 4 | 4 | 20 | 4 | 10 |

If upper limit is surpassed, results will be reported with ">" symbol and corresponding upper limit (for example >4 mg/l with Co). Additional dilutions can be made upon request but will be charged with an additional 50% of the analysis price.

**Add-ons** Add-ons like filtration, preservation with $HNO_3$/NaOH, extra dilutions, pH and solid content upon a request.

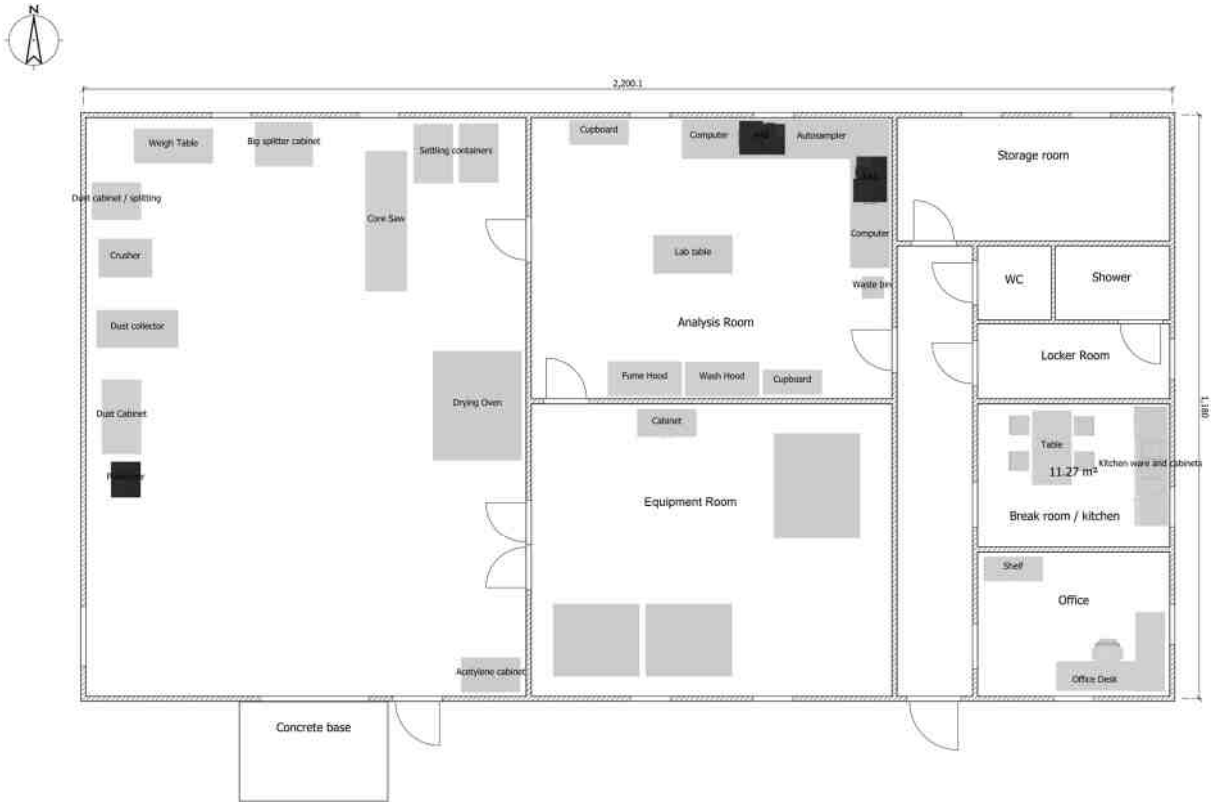
# Laboratory construction, design and management

We are pleased to share our knowledge of laboratory establishment. We can establish a laboratory to serve the specific needs of the client. Our team of experienced chemists include experts on various analysis techniques including but not limited to AAS, ICP-OES, ICP-MS, XRF and combustion techniques for C and S. Optimizing analysis techniques to specific ore type leads to improved quality and cost performance.

On-site laboratory resources can be optimized by constant cooperation with CRS main laboratory in Kempele. During sample volume peaks or employee absences, some samples can be shipped to Kempele while priority samples are done on-site. In this comprehensive service, the client is charged per sample or cost-plus if requested.

Should the client desire to manage their laboratory unit independently, we offer subcontracting services encompassing laboratory design, quality system implementation, process development, chemical risk assessment, and employee training, among other services. Additionally, our consultancy extends to any other aspects related to the establishment of a laboratory.

For further information regarding our laboratory design references, please visit our webpage www.crs.fi.



# General Information

### Laboratory Accreditation

CRS Laboratories is a testing laboratory T342 accredited by FINAS Finnish Accreditation Service, accreditation requirement ISO/IEC 17025:2017. The scope of accreditation can be found from FINAS website (www.finas.fi). Internal and external audits are conducted annually to ensure the effectiveness of the Quality Management System.

### Analytical Error

CRS Laboratories routinely inserts, processes and monitors a variety of high-quality certified reference materials (CRMs), as well as internal reference materials (IRM) to cover matrices and grade ranges not available commercially.

CRS has a strong commitment to working in partnership with its customers to investigate all QC failures and to understand their root causes. Taking a collaborative approach allows us to continually improve our methods and procedures, and to provide the highest quality data to our customers. Should you have any inquiries or concerns, our quality manager is readily accessible for discussions and ensures swift follow-up on your queries.

### Confidentiality

CRS Laboratories treats all customer information as strictly confidential.

### Health and Safety of Employees

CRS Laboratories promotes, encourages and trains good health and safety practices to each employee on and off work. Safety meetings are held weekly to discuss prevention and resolution of different types of accidents, incidents and near misses.

### Pricing

All prices presented in this catalogue are in Euros (€) without taxes (VAT 0%). The prices apply to unprocessed geological samples, not e.g. concentrates. The prices are list prices and are applicable for small volume of samples. Please ask for quotation for larger sample amounts. Rush sample preparation and analysis is normally charged twice the quoted price but please contact the lab for availability. Prices in this catalogue are subject to change by CRS without prior notice.

### Turn-Around Time

Turn-around time varies depending upon the season, the number of samples for each batch submitted and the type of analysis. Missing sample submittal forms or excessively wet samples will contribute to late turn-around time. CRS is committed to collaborating with our clients to ensure the timely delivery of results that align with their specific requirements. Any relevant updates or occurrences will be promptly communicated to the customer.

### Sample Submittal Forms

A completed and signed SSF with instructions for analysis, reporting requirements and invoicing information must be provided at the time of sample submission to samples@crs.fi. Sample submissions received without a SSF may result in delays in turn-around time.

# CRS

## LABORATORIES

Meaning for Mining

**BJÖRKDAL**
On-site
Laboratory

**KEMPELE**
Main
Laboratory

**SOTKAMO**
On-site
Laboratory

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