Based on the Accreditation and Designation Ordinance dated 17 June 1996 and on the advice of the Federal Accreditation Commission, the Swiss Accreditation Service (SAS) grants to

Helmut Fischer AG
Moosmatthstrasse 1
6331 Hünenberg

Period of accreditation:
09.12.2018 until 08.12.2023
(1st accreditation: 09.12.2013)

the accreditation as

Testing laboratory for length measurements, coating thickness measurements, elemental analysis, electrical conductivity measurements, ferrite content measurements and measurements of mechanical properties

International standard: ISO/IEC 17025:2005
Swiss standard: SN EN ISO/IEC 17025:2005

3003 Berne, 09.10.2018
Swiss Accreditation Service SAS

Head of SAS
Konrad Flück

SAS is a signatory of the multilateral agreements of the European co-operation for Accreditation (EA) for the fields of testing, calibration, inspection and certification of management systems, certification of personnel and certification of products, processes and services, of the International Accreditation Forum (IAF) for the fields of certification of management systems and certification of products, processes and services and of the International Laboratory Accreditation Cooperation (ILAC) for the fields of testing and calibration.
International standard: ISO/IEC 17025:2005
Swiss standard: SN EN ISO/IEC 17025:2005

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Internet: www.helmut-fischer.ch
Initial accreditation: 09.12.2013
Current accreditation: 09.12.2018 bis 08.12.2023
Scope of accreditation see: www.sas.admin.ch
(Accredited bodies)

Scope of accreditation as of 24.07.2018

Testing laboratory for length measurements, coating thickness measurements, elemental analysis, electrical conductivity measurements, ferrite content measurements and measurements of mechanical properties

<table>
<thead>
<tr>
<th>Group of products or materials, field of activity</th>
<th>Principle of measurement 2) (characteristics, measuring ranges, type of test)</th>
<th>Test methods, remarks (national, international standards, in-house test methods)</th>
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</thead>
</table>
| Coating thickness measurements of various coated materials (galvanized, anodized, painted materials, PVD, CVD coating structures etc.) | Microscopic methods | Evaluation of ion-beam polished cross-sections with scanning electron microscopy
Measuring range: 0.5 - 500 micrometer (µm) | Modified according to: SN EN ISO 9220:1994
SN EN ISO 1463:2004 |

1) Scope of accreditation type A (fix)
2) Scope of accreditation type B (flexible)
3) Scope of accreditation type C (flexible)
# STS Directory

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<tr>
<td>(galvanized, anodized, painted materials, PVD, CVD coating structures etc.)</td>
<td>Electromagnetic measurement methods (magnetic induction method, amplitude- or phase-sensitive eddy-current methods, micro resistance method)</td>
<td>ISO 2178, ISO 2360, ISO 21968, ISO 14571</td>
</tr>
<tr>
<td></td>
<td>Measuring range: ca. 0.1 µm – 100 millimeters (mm)</td>
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<tr>
<td>(galvanized, anodized, painted materials, PVD, CVD coating structures etc.)</td>
<td>X-ray fluorescence spectroscopy, (ED-XRF)</td>
<td>ISO 3497</td>
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<tr>
<td></td>
<td>Measuring range: 5 nanometers (nm) – 100 µm</td>
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<tr>
<td></td>
<td>Energy dispersive x-ray spectrometry (SEM-EDX)</td>
<td>Modified according to: ISO 22309</td>
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<td>Measuring range: 10 - 500 nm</td>
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<td>Coulometry</td>
<td>ISO 2177</td>
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<td>Measuring range: 0.1 - 100 µm</td>
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<td></td>
<td>Beta backscattering method</td>
<td>ISO 3543</td>
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<td>Measuring range: 0.5 - 500 µm</td>
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<td>X-ray fluorescence spectroscopy (ED-XRF)</td>
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<td>Measuring range: ~10 mg/kg – 1000 g/kg, depending on analyte/matrix</td>
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<td>Inductively coupled plasma optical emission spectroscopy (ICP-OES)</td>
<td>ISO 11885</td>
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<td>Measuring range: ~10 mg/kg – 1000 g/kg, depending on analyte/matrix</td>
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<td>Energy dispersive x-ray spectrometry (SEM-EDX)</td>
<td>ISO 22309</td>
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<tr>
<td></td>
<td>Measuring range: ~3 - 1000 g/kg, depending on analyte/matrix</td>
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<tr>
<td></td>
<td>Phase-sensitive eddy-current measurement</td>
<td>DIN EN 2004-1</td>
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<tr>
<td></td>
<td>Measuring range 0.3 - 60 MS/m</td>
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<td>Ferrite content of steels</td>
<td>Magnetic induction measurement</td>
<td>ISO 2177, DIN 50022</td>
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<td>Measuring range: 0.2 - 80 Fe %, 0.2 - 120 FN</td>
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</tr>
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<td>STEP-Test</td>
<td>Coulometric STEP Test</td>
<td>ISO 14577</td>
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<tr>
<td>Electrochemical potentials between individual layers of a multiplex nickel coating system</td>
<td>Measuring range: 10 - 500 mV</td>
<td></td>
</tr>
<tr>
<td>Measurement of mechanical properties</td>
<td>Instrumented indentation test</td>
<td></td>
</tr>
<tr>
<td>(Martens hardness, indentation modulus) of bulk materials, coatings, etc.</td>
<td>Measuring range: Load range: 0.05 – 2000 mN</td>
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<tr>
<td></td>
<td>Hardness range: &lt; diamond</td>
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<td>Indenter: Vickers, Berkovich, semi-spheres</td>
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Definition of flexibility see SAS Document 741