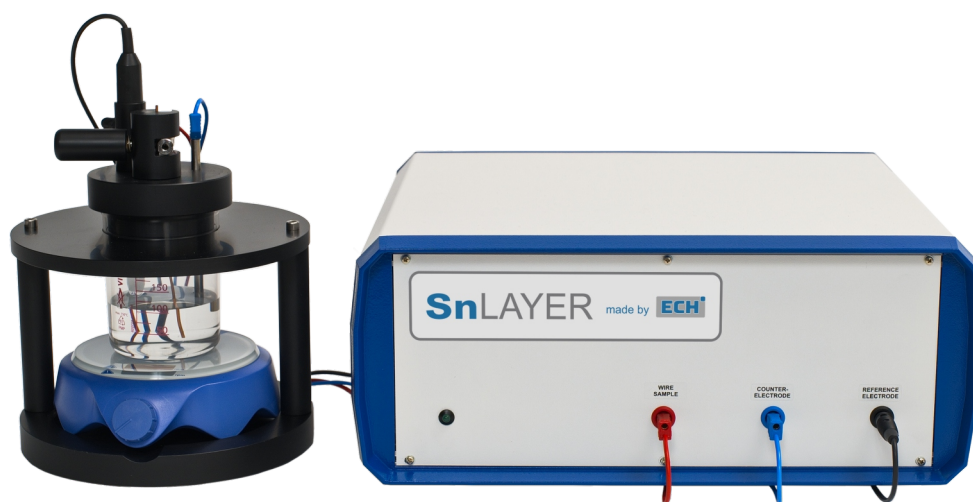


Layer Thickness of Metal Surfaces

Determination of thickness
of metal layers on wires and strips



SnLAYER

made by **ECH**

SnLAYER

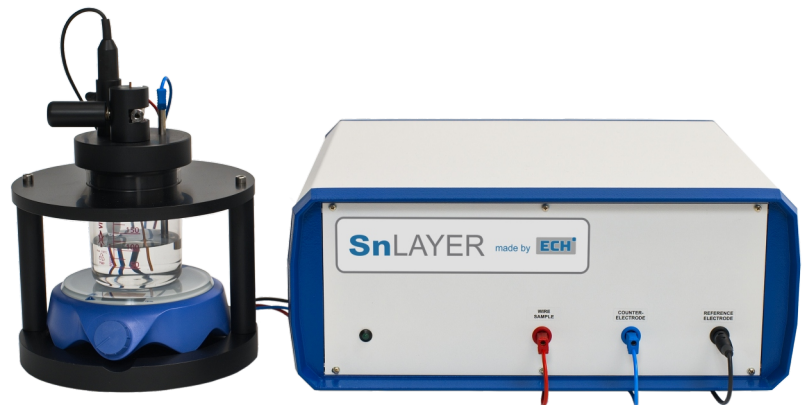
Thickness of metal layers on wires and strips

Product description

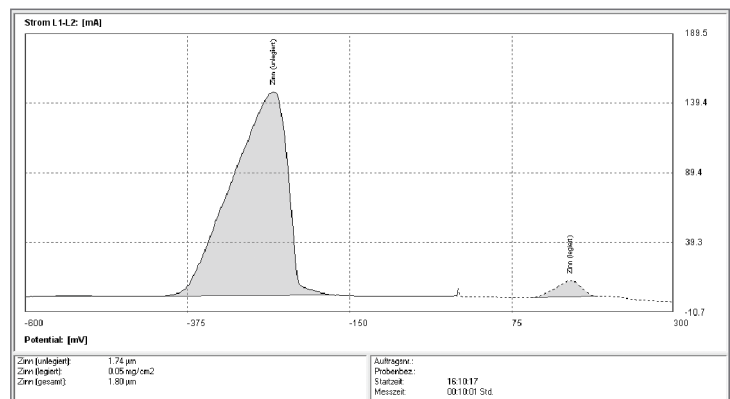
When coating metals, wafer-thin layers are often sufficient to achieve the necessary effect. At the same time, homogeneous thin layers should be achieved that fulfil the required electrical properties and stability over many years. A few additional micrometres mean an increased, useless consumption of valuable material and thus unnecessary costs.

With ECH's **SnLAYER** analysis system, the coating thickness on metals is determined quickly and with high precision with only one single measurement. For this purpose, a new electrochemical method was developed, which is based on coulometric voltammetry and is oriented towards the standards DIN 1787 and DIN 40500, Part 5. The patented potential scan method enables the simultaneous determination of free and alloyed parts of coatings, e.g. tin on copper.

A typical measurement takes less than five minutes.



SnLAYER for determination of thickness of metal layers



Typical measurement curve

Advantages

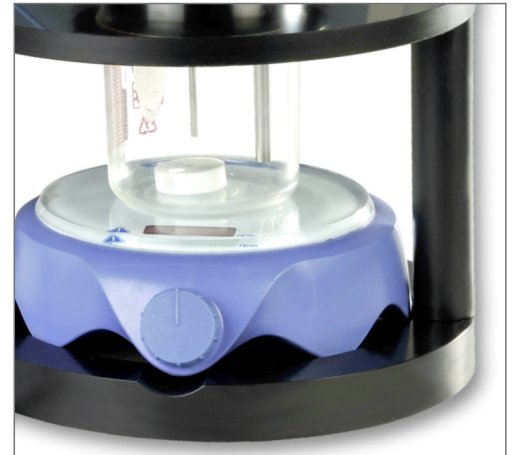
- Complete measurement system for determination of the layer thickness of metal coatings
- Differentiation of free and bounded tin
- Fast analysis
- Customer-friendly handling
- Intuitive software
- Comprehensive statistic module
- Wide dynamic range for various wire-diameters and layer thickness
- Universally applicable for different types of layers

Applications

- Measurement of tin layer thickness on copper wires, copper sheets, wire strands
- Determination of alloyed and unalloyed tin
- Analysis of nickel, silver, copper and alloys on copper, steel, Percon and others
- Conductor board manufacture
- Wire and cable manufacture
- Quality management in rolling mills
- Applications in the metalworking industry

Features

- Typical duration: 8 min (non-alloyed and alloyed tin),
< 2 min (non-alloyed tin)
- High precision of the analysis
- Currency will be registered in the provided potential range,
freely adjustable in a range from - 2000 mV to + 2000 mV,
e. g. - 600 mV up to + 300 mV
- Pre-defined methods specified for certain wire types
- Generation of individual methods
- Determination of the mass of the coating by integration
of the current (amount of electric charge)
- Automatic procedures
- Determination of the thickness with only one
measurement with high precision in a short duration
- According to the actual standard regulations



Coulometric measuring cell - the sample is the working electrode

Measurement and Results

Measurements with SnLAYER are easy:

1. Enter the sample parameters in order to start the measurement.
 2. Enter the measured wire diameter into the software.
 3. Fix the wire and start the measurement.
- It processes automatically.



Holder for metal strips

Measuring start

Step 1/3

Please enter:

Assistant:

Ordering no.:

Sample name:

Back Continue Cancel

Step 1

Measuring start

Step 2/3

Please enter wire diameter!

Diameter: mm

Back Continue Cancel

Step 2

Measuring start

Step 3/3

Please put the wire into the apparatus!

Back Continue Cancel

Step 3

Result overview							
Date	Start time	Sample name	Diameter	Length	Tin (unalloyed)	Tin (alloyed)	Tin (total)
15.03.12:14:39		Charge 4509	1.000 mm	15.8 mm	4.70 µm	0.87 mg/cm2	5.88 µm
15.03.12:24:45		Charge 4509	1.000 mm	15.8 mm	4.73 µm	0.87 mg/cm2	5.92 µm
15.03.12:33:54		Charge 4509	1.000 mm	16.6 mm	4.79 µm	0.88 mg/cm2	5.99 µm

Statistics			
	Tin (unalloyed) [µm]	Tin (alloyed) [mg/cm2]	Tin (total) [µm]
Minimum:	4.70	0.87	5.88
Maximum:	4.79	0.88	5.99
Mean:	4.74	0.87	5.93
RSD [%]:	0.97	0.48	0.87

Value table ... Close ? Help

Table of results of a multi measurement with statistics



Application: Copper layer on steel wire



Application: Tin on copper sheet strip

Technical specifications

Working electrode:	Wire or strip sample to be examined
Reference electrode:	Ag/AgCl - adapted to the application
Counter electrode:	Pt
Typical duration:	2 ... 8 min (depending on the layer thickness)
Typical wire diameters:	0.05 ... 8 mm
Typical layer thicknesses:	0.01 ... 22 µm
Power supply:	230 V/50 Hz (optional 115 V/60 Hz)
Power input:	150 W
Device control:	PC software (PC not included in the scope of delivery)

Control unit

Dimensions:	370 x 345 x 160 mm (W x D x H)
Weight:	Approx. 6 kg

Titration unit

Dimensions:	Max. 200 x 300 mm (Ø x H)
Weight:	2.5 kg



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