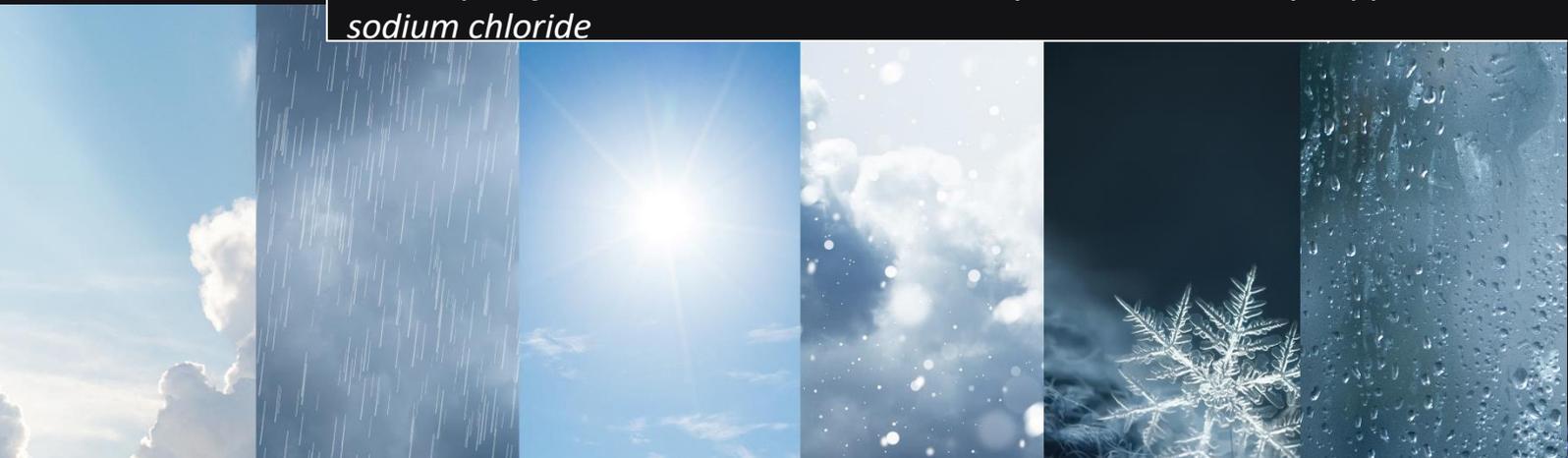


# Product catalog 2025

*Your expert for environmental simulation systems, laboratory supplies and sodium chloride*



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Your expert for **corrosion**

# KÖHLER

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## TESTING TECHNOLOGIES VLM

As a mechanical engineering company with more than 70 years of experience in the manufacture of environmental simulation systems, we at Köhler-VLM are experts in the field of corrosion testing.

Our origins go back to 1951, when we developed the first Kesternich condensation water system in collaboration with Wilhelm Kesternich. With our many years of experience and our outstanding expertise, we always offer you the best possible advice and are constantly striving to improve.

Today, our diverse systems can be found in a wide range of quality assurance and development areas. We offer series devices for front and top loading as well as walk-in test chambers that can be individually adapted to customer requirements. We also offer a wide range of laboratory equipment, such as metal block thermostats, evaporators and salt for corrosion testing.

# Why corrosion testing systems?



## Why are corrosion testing systems needed?

Many products and their materials are freely exposed to today's environmental influences. As the quality assurance of products and their reproduction play an increasingly important role in today's world, very high demands must also be placed on the testing systems.

Corrosion testing systems are used to accelerate the corrosion process. These can show the progression of corrosion in fast motion using various methods.

## Our expertise

Thanks to our many years of experience in the field of environmental simulation, we are able to develop customized solutions for you in every area. Whether customer-specific test standards, special requirements or special dimensions; we always try to find the best possible solution together with you.

Customer contact and joint cooperation are particularly important to us, as the quality of our products is our greatest asset.

Would you like to know whether we can realize your wishes? Simply give us a call or send us an e-mail:

E-mail: [m.schormann@koehlerauto.de](mailto:m.schormann@koehlerauto.de) Phone:

+49 (0) 2942 98492 0

## Service in all areas



With over 7500 test devices sold, we have extensive experience in the service sector. We guarantee competent support for our products through our customer service.



### Maintenance

Once for a check-up? No problem! We will check your test system and test all functions and components. Ask for an appointment now so that your system continues to test reliably. On request, we can also provide the inte



### Repair

Does your corrosion testing system need a general overhaul? Then you've come to the right place. We will bring your system up to date and put it through its paces.



### Factory calibration

Is your system not operating within the standard range? Then you've come to the right place. Whether temperature or humidity, we calibrate your system with professional equipment. We also offer DKD calibration on request.

## Our test standards

<p><b>ASTM</b></p> <ul style="list-style-type: none"> <li>• ASTM G85-A1</li> <li>• ASTM G85-A2</li> <li>• ASTM G85-A3</li> <li>• ASTM B117</li> </ul>	<p><b>Renault</b></p> <ul style="list-style-type: none"> <li>• Renault ECC 1</li> </ul>
<p><b>BMW</b></p> <ul style="list-style-type: none"> <li>• BMW AA-0129</li> <li>• BMW AA-0168</li> <li>• BMW AA-0213</li> <li>• BMW AA-0224</li> <li>• BMW AA-0324</li> <li>• BMW AA-0326</li> <li>• BMW AA-P175</li> <li>• BMW AA-P184</li> <li>• BMW AA-P1224</li> </ul>	<p><b>Toyota</b></p> <ul style="list-style-type: none"> <li>• TSH1552G</li> <li>• TSH1554G</li> </ul>
<p><b>DIN, EN, ISO, IEC</b></p> <ul style="list-style-type: none"> <li>• DIN EN 60068-2-30</li> <li>• DIN EN ISO 6270-2</li> <li>• DIN EN ISO 9227 NS</li> <li>• DIN EN ISO 9227 CASS</li> <li>• DIN EN ISO 6988</li> <li>• DIN EN 60068-2-52</li> <li>• DIN EN ISO 11997-1</li> </ul>	<p><b>VDA</b></p> <ul style="list-style-type: none"> <li>• VDA 233-102</li> <li>• VDA 621-415</li> </ul>
<p><b>FORD</b></p> <ul style="list-style-type: none"> <li>• Ford CETP 00.00-L-467</li> </ul>	<p><b>VW</b></p> <ul style="list-style-type: none"> <li>• PV 1208</li> <li>• PV 1209</li> <li>• PV 1210</li> <li>• VW 80,000</li> <li>• PV 1078 Table 1</li> </ul>
<p><b>GM</b></p> <ul style="list-style-type: none"> <li>• GMW 14872</li> <li>• GMW 3172 9.4.7 SaltMist</li> <li>• GMW 3172 9.4.8 Salt Spray</li> </ul>	<p><b>Volvo</b></p> <ul style="list-style-type: none"> <li>• STD 1027,1449</li> <li>• STD 1027,149</li> <li>• STD 1027,1375</li> <li>• STD 423-0014</li> <li>• STD 423-0018</li> <li>• VCS 1027,149</li> <li>• VCS 1027,1449</li> </ul>
<p><b>Nissan</b></p> <ul style="list-style-type: none"> <li>• NES M0140</li> <li>• NES M0158</li> </ul>	<p><b>Other</b></p> <ul style="list-style-type: none"> <li>• SAE J2334</li> <li>• MIL-STD-810k</li> <li>• NES M0158</li> </ul>
<p><b>Porsche</b></p> <ul style="list-style-type: none"> <li>• PPV 4017</li> </ul>	

The purpose of test standards is to ensure that material tests are carried out uniformly and therefore provide reproducible results. The test standards are only an excerpt from the possible tests and are continuously updated and expanded. If you cannot find the test standard you require, simply contact us. We will find a solution!

## Our series devices



### Our standard salt spray systems for ISO G227 and more

In a salt fog test, the samples to be tested are subjected to a sodium chloride fog atmosphere at an elevated temperature. We differentiate between front-loading and top-loading systems, which are available in various designs and sizes. Each of these systems is equipped as standard for the following test standards:

- ✓ ISO 9227 NSS/ASS/CASS
- ✓ ISO 60068-2-11
- ✓ ASTM B 117

Furthermore, the above-mentioned salt spray test can be combined with other test methods. This results in alternating corrosion tests with cyclical sequences and controlled temperature and humidity. Below you will find a selection of examples:

- ✓ ISO 6270-2 CH/AT/AHT
- ✓ ISO 11997-1
- ✓ VDA 621-415
- ✓ VW PV 1210
- ✓ ISO 60068-2-52
- ✓ SAE J2334
- ✓ Nissan CCT1
- ✓ Volvo / Ford

Is your desired test standard not listed? Just ask us whether the standard can be realized!



## Our walkable systems



### Chambers according to customer requirements

For test specimens with special dimensions and more weight, we offer you individual walk-in and drive-in chambers according to customer requirements. An internal volume of up to 100m<sup>3</sup> is possible. You also have the choice between a test chamber made of plastic or stainless steel. The basic configuration of each individual chamber is designed for the following tests:

- ✓ ISO 9227 NSS/ASS/CASS
- ✓ ISO 60068-2-11
- ✓ ASTM B 117

Other test standards can also be implemented, such as

- ✓ ISO 6270-2 CH/AT/AHT
- ✓ ISO 11997-1
- ✓ VDA 621-415
- ✓ VW PV 1210
- ✓ ISO 60068-2-52
- ✓ SAE J2334
- ✓ Nissan CCT1
- ✓ Volvo / Ford



Is your desired test standard not listed? Just ask us whether the standard can be realized!

# Our DeepFreeze systems



## Salt spray systems with DeepFreeze

With our DeepFreeze range, we offer various solutions that can reproduce the DIN 55635 (VDA 233-102) standard. From chests for top loading and cabinets for front loading to walk-in and drive-in individual chambers, everything is possible:

- ✓ Cabinet with 1000l to 2000l
- ✓ Customized chamber up to 100m<sup>3</sup>

Each version mentioned above is suitable for the following tests:

- ✓ ISO 6270-2
- ✓ ISO 9227
- ✓ ASTM B 177
- ✓ PV 1208, PV 1209
- ✓ PV 1210, ISO 11997
- ✓ DIN 55635
- ✓ VDA 233-102
- ✓ and more...



Is your desired test standard not listed? Just ask us whether the standard can be realized!



## Salt spray systems with DeepFreeze

Our DeepFreeze range also includes a toploding version, which is equipped with an extended temperature range of  $-40$  to  $+80^{\circ}\text{C}$ . The technical equipment of the ClimaCORR<sup>®</sup> chest freezers is based on the proven technology of the ClimaCORR<sup>®</sup> test chambers, but also offers the option of programming freezing phases down to  $-40^{\circ}\text{C}$ .

- ✓ VDA 233-102
- ✓ Porsche PPV 4017
- ✓ Daimler (KWT-DC) (PA PP PWT 3101)

This ClimaCORR<sup>®</sup> FR chest meets the highest demands in terms of cooling performance and can be used universally for most corrosion tests, e.g. for:

- ✓ Condensation water tests CH, AT, AHT
- ✓ Salt spray tests, NSS, ESS and CASS tests
- ✓ Climate change tests e.g. ISO 11997-1 Cycle B , VW PV 1210
- ✓ Climate change tests e.g. Renault ECC1, GMW 14872, Nissan CCT 1, IEC 60068-2- 52



Is your desired test standard not listed? Just ask us whether the standard can be realized!

## Our BatteryTest systems



### The advance of electromobility

Quality assurance for rechargeable batteries in electromobility, for example, is becoming increasingly important. Above all, the safety of people and the environment plays a decisive role here. To ensure long-term safety, the batteries must be tested under a wide range of weather conditions. We offer you a corrosion test system for battery tests in which we can implement various test standards. Thanks to precisely coordinated safety measures and close customer consultation, we can find a solution for all customer requirements. All existing hazard levels (HL) 0-7 can be realized.

<b>Security package I</b> <ol style="list-style-type: none"> <li>(1) Electric door lock</li> <li>(2) Independent temperature limiter Tmax</li> </ol>	<b>Achievable hazard level: 0-3</b>  <b>Note:</b> If the gas or liquid (electrolyte) escaping from the cell is flammable, Hazard Level 5 applies
<b>Security package II</b> <ol style="list-style-type: none"> <li>(1) Electric door lock</li> <li>(2) Independent temperature limiter Tmax</li> <li>(3) Pressure relief via reversible flap</li> </ol>	<b>Achievable hazard level: 0-4</b>  <b>Note:</b> If the gas or liquid (electrolyte) escaping from the cell is flammable, Hazard Level 5 applies
<b>Security package III</b> <ol style="list-style-type: none"> <li>(1) Electric door lock</li> <li>(2) Independent temperature limiter Tmax</li> <li>(3) Pressure relief via reversible flap</li> <li>(4) Fire detection via CO measurement</li> <li>(5) Flushing device with CO<sub>2</sub> / N<sub>2</sub> / LN<sub>2</sub></li> </ol>	<b>Achievable hazard level: 0-5</b>
<b>Security package IV</b> <ol style="list-style-type: none"> <li>(1) Electric door lock</li> <li>(2) Independent temperature limiter Tmax</li> <li>(3) Pressure relief via reversible flap</li> <li>(4) Fire detection via CO measurement</li> <li>(5) Flushing device with CO<sub>2</sub> / N<sub>2</sub> / LN<sub>2</sub></li> <li>(6) Overpressure relief through rupture disk</li> </ol>	<b>Achievable hazard level: 0-6 (7)</b>  <b>Note:</b> Level 7 may only be present with a very small risk, as a tolerable residual risk.

## Our laboratory supplies



### **Metal block thermostats with heating trays for exchangeable heating blocks or with permanently installed heating blocks**

- ✓ Types QS, EC, LS
- ✓ Working temperatures up to 130°C /210°C
- ✓ Microprocessor controller (PID) with timer, ramp and calibration function

### **Metal block thermostats with liquid-tight, solid heating trays for the highest demands on temperature control precision**

- ✓ Optimal decontamination in clinical and life science laboratories
- ✓ Types HP, BIO, HC
- ✓ Working temperatures 130°/ 210°C
- ✓ Microprocessor controller (PID) with timer, ramp and calibration function

### **Metal block thermostats with permanently installed heating blocks for high temperatures**

- ✓ Type HT
- ✓ Working temperatures up to 300°C, 400°C
- ✓ Microprocessor controller (PID) JUMO or program controller for temperature
- ✓ Time programs

### **Metal block thermostats for special applications (SPA)**

- ✓ Hydroxyproline digestions (food analysis)
- ✓ COD digestions, Kjeldah digestions, aqua regia digestions
- ✓ High-temperature thermostats up to 450°C
- ✓ Custom-made products according to your specifications

### **Evaporator systems for evaporating solvents with nitrogen**

- ✓ Inexpensive systems with tripod
- ✓ Particularly user-friendly systems with lift
- ✓ Systems for visual inspection for evaporation to a residual volume.

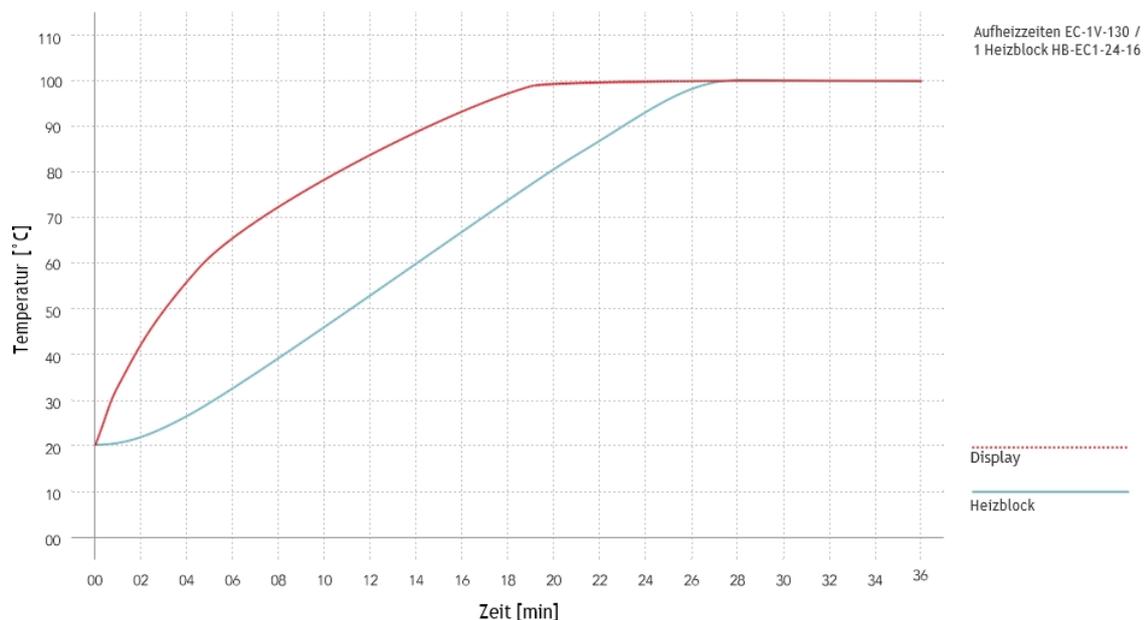
## Jumo controller (PID)

*Optimum temperature stability thanks to precise control*



The function of the microprocessor controller (PID)

The devices in the EC, LS, QS, HP and BIO product lines are equipped with the JUMO PID controller. The PID control parameters allow fast heating rates without overshooting and guarantee precise temperature control of the samples (see diagram)



### Calibration:

If the temperature shown on the display deviates from the value measured in the heating block over time, it can be calibrated by the user using the calibration function. All heating blocks have a 4 mm sensor hole for this purpose. A precise temperature measuring device with Pt 100 sensor is available as an accessory.

The controller operates in the functions:

- ✓ Continuous operation (unlimited heating operation)
- ✓ Timer mode (time-limited heating)
- ✓ Ramp operation
- ✓ Standby mode (heating switched off)
- ✓ Calibration function

## Quality guarantee

*for reliable results in the laboratory*

Köhler-VLM metal block thermostats meet the highest demands in terms of:

- ✓ Precision of the temperature control
- ✓ Safety in operation
- ✓ Electrotechnical and mechanical processing

We develop, produce and test the devices in accordance with the standards applicable to laboratory devices:

- ✓ 73/23/EEC amended by 93/68/EEC,
- ✓ 2014/30/EU and
- ✓ 93/68/EWG, EN 61010-1, EN 61010-2, EU 61326-1

### *High-quality components*

We adhere to our quality guidelines at all times and only use VDE-tested components from well-known manufacturers.

### *"Made in Germany"*

The appliances are manufactured by our experienced specialists at our Geseke site and then individually adjusted and tested.

### *High reliability*

The careful workmanship and comprehensive inspection of each individual appliance have proven their worth. You can rely on many years of flawless operation.

### *Serial numbers for traceability*

Each appliance can be traced back to the exact date of manufacture using the serial number. Reproductions of special appliances purchased earlier are therefore possible at any time without any problems.

## Evaporators

The EVA-EC complete systems for 48, 24 or 16 samples consist of:

- ✓ Evaporator with gas dosing unit and motor-driven lift or the stand unit
- ✓ EC thermostat with heating tray for exchangeable heating blocks, working temp. up to 130°C or 210°C
- ✓ 1 heating block for 48, 24 or 16 standard test tubes Ø16 mm, drilling depth 65 mm
- ✓ 48, 24 or 16 stainless steel cannulas optionally coated with PVDF (surcharge)  
Microplates: 96 cannulas
- ✓ PU connection hose with adapter for connection to gas fittings
- ✓ Optional: Adapter plate for the use of Pasteur pipettes or pipette tips (surcharge)
- ✓ Optional: Gas pressure reducer with pressure gauge

Köhler VLM evaporators are a cost-effective alternative to rotary evaporators and other concentrators if a large number of samples need to be processed. Evaporation of the solvent is accelerated by gassing with nitrogen, a particularly gentle method for oxidation-sensitive samples. The metal block thermostats are used to compensate for the evaporative cooling, thereby maintaining the temperature of the system.

A complete evaporator system consists of the evaporator unit with motorized lift or a manually height-adjustable stand, the gas dosing unit and the metal block thermostat QS, EC, LS or VIS. In the lift version, this stands on a base plate that can be pulled out to the front, making it very easy to replace the heating blocks or samples.

After rotating the gas dosing unit of the EVA-Lift by 180°, the stainless steel cannulas or Pasteur pipettes (adapter plate required) can be conveniently inserted into the silicone holders from above. In the stand version, the gas dosing unit can be removed and also loaded from above after turning it over.

We supply cabinets as accessories that can be connected to a laboratory ventilation system if there is no space in the fume cupboard. It is also possible to pulse the nitrogen flow and switch it off after a preselected time has elapsed.

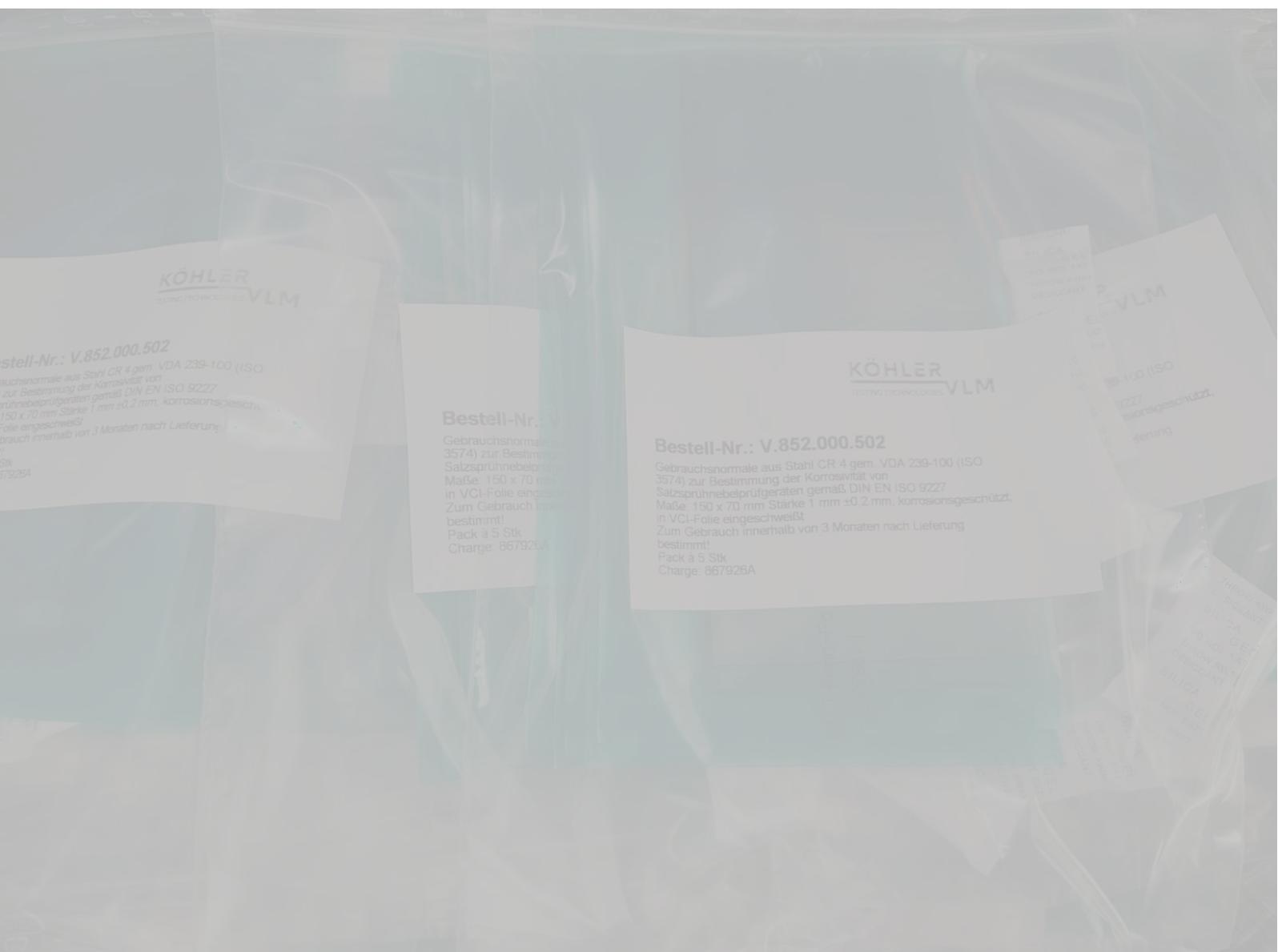
## Certified test panels

Test panels are used to check the corrosivity of corrosion test chambers in accordance with the corrosion test standards ISO 9227. Regular tests of the reproducibility and repeatability of the test results are prescribed for salt spray or cyclic corrosion test chambers.

- ✓ Material: Cold-rolled steel CR4
- ✓ Size (LxW): 150 x 70 mm
- ✓ Thickness:  $1 \pm 0.2$  mm

The Köhler VLM test plates are supplied in a practical 5-pack.

- ✓ NSS -  $70 \pm 20$  g/m<sup>2</sup> per 48 hours exposure
- ✓ AASS -  $40 \pm 10$  g/m<sup>2</sup> per 24 hours exposure
- ✓ CASS -  $55 \pm 15$  g/m<sup>2</sup> per 24 hours exposure



# Certified sodium chloride



We offer you sodium chloride in the highest possible purity (pharmaceutical quality). The salt can be ordered in various packaged sizes. You can also choose from three different grades.

The quality and purity of the salt are certified and confirmed by a laboratory. The certificate can be viewed.

- Certified salt with the highest possible purity (pharmaceutical quality)
- three different quality classes:
  - ✓ ISO 6363-2
  - ✓ DIN EN ISO 9227:2017 NSS, ESS, CASS
  - ✓ ASTM B117