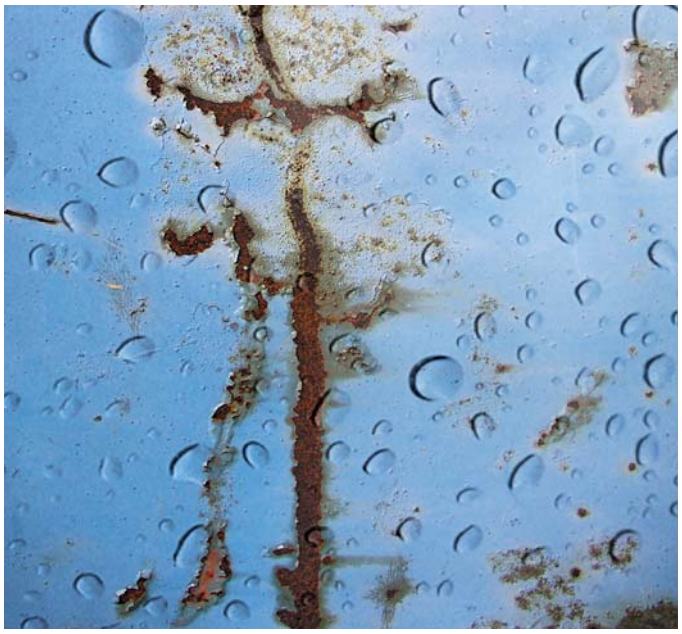
testing equipment for quality management

NOVELTIES 2016

Corrosion Testing

ERICHSEN



Corrosion creeps under coatings and attacks the products. To reduce these costly failure effects ERICHSEN offer a wide range of testing instruments. Some time or other almost every material will be attacked by corrosion. There are only a few materials, e. g. noble metals, that resist corrosion for a long time. Acid rain, exhaust emission and other influences of civilisation contribute to the caducity of values.

The aggressive influences of humidity, acids, alkaline solutions and gases act particularly corrosion inciting on metals. Weld and solder seams, rivets and screw fittings made from different metals occasion electrolytic reactions which stimulate the chemical corrosion. Corrosion in plastics occurs among other things by dissolving out the softeners. UV light, heat and the capture of foreign matters accelerate this development. Plastics don't get rusty, but corrosion becomes noticeable by cracking, softening, brittleness and change of colour. Efforts are made to retard or to stop the corrosion by coatings and electroplating.

Using the ERICHSEN Corrosion Testing Equipment it is possible to make corrosion "measurable". Tests like the condensation water test and the salt spray fog test are the base for the determination of surface corrosion.

HYGROTHERM 519 / 519 SA / 519 FA

Humidity Cabinet

Fully automatic corrosion test apparatus for standardised tests in condensation water climate with and without SO_2 addition, using a programmable logic control (PLC) for the automatic sequence, i.e. control of heating, acid feeding and draining, filling and draining of the bottom trough water tank as well as evacuation and replacement of air (manual operation also possible). Test chamber volume 300 l. Model 519 SA equipped with a semi-automatic control system, i. e. acid draining, evacuation and replacement of air as well as the control of the heating system are executed automatically.

HYGROTHERM 529

Humidity Cabinet

For tests of bulky parts in condensation water climate (without addition of gas), e. g. in accordance with (EN) ISO 6270–2, this instrument with a test chamber capacity of 1000 l or 2000 l is available. The instrument consists of a control unit and a separate test chamber, hemispherical or rectangular design at choice (Model 529/2000 l only rectangular version).

SOLARBOX 522/522 RH

Light Exposure Test Apparatus

Compact instrument to determine the resistance to exposure to sun light using a Xenon high pressure lamp (1.5 kW or 2.5 kW). Adjustable level of irradiance, uniform illumination by special mirror system, exchangeable filters for variable UV fraction. Four versions available:
- SOLARBOX 522/1500, 522/3000
- SOLARBOX 522/1500e, 522/3000e
(each without and with microprocessor controls)

Light Exposure Test Apparatus
- SOLARBOX 522/1500e RH
- SOLARBOX 522/3000e RH
are extended versions of Model 522/1500e and 522/3000e with additional control/monitoring of relative humidity in the test chamber during the test.

Optional: Programmable flooding system for periodic wetting of specimens.

BANDOL WHEEL® 532

Accelerated Weathering Instrument

BANDOL WHEEL® 532 is a reliable accelerated weathering instrument in a compact design for acceleration of natural weathering.

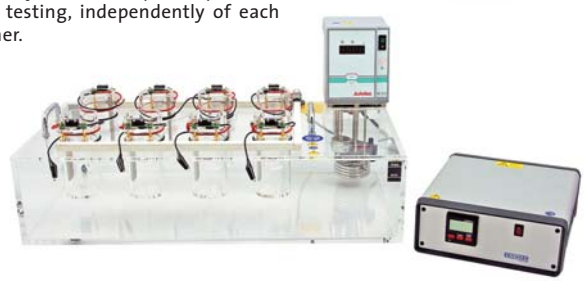
BANDOL WHEEL® 532/I – designed for dry weathering cycles, BANDOL WHEEL® H 532/II – designed for wet or dry weathering cycles. have been developed for quick but natural weathering, similar to outdoor exposure. To complete the weathering cycle, a mask can be added in the equipment which permits the introduction of obscurity phases without switching off the light source. The samples get a nominal UV radiation level corresponding to about “2 suns”. This permits an important acceleration in weathering that, at the same time, still correlates with natural weathering.

Cathodic Delaminator, Model 602

Corrosion Quick Test

Used for rapid checking of product quality and frequently quality control of coated metals. The apparatus consists of a control unit and a temperature control vessel (immersion container) with 8 test receptacles and circulator. Each test vessel has its own constant current source. So you can use up to 8 specimen for testing, independently of each other.

The cathodic delamination allows the determination of infiltration of the coating in the damaged area and erroneous pretreatments can be made visible (formation of bubbles during pinholes, scratches or stone impact).

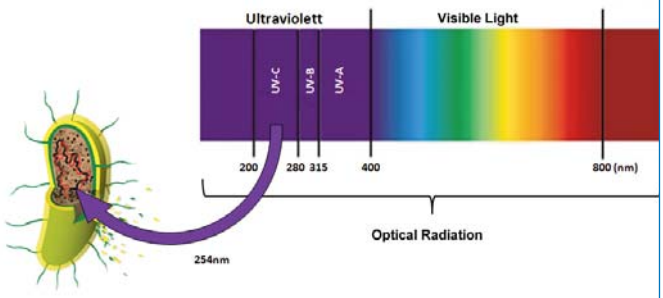


UV-C Cleaner, Model 635

UV-C Desinfection

Short-wave UV-C radiation has a strong germicidal effect on bacteria, yeasts, fungal spores, etc..The microorganisms are destroyed or damaged by the radiation, in both cases this prevents their multiplication.

UV-C disinfection is a physical process with high efficiency against all microorganisms. It allows effective cleaning of the test solution without residue and chemistry (tank volume starting at 100 liters).



Corrosion Test Apparatus, Model 606–Basic

Corrosion Test Apparatus for Salt Spray and Condensation Tests

The compact Corrosion Testing Instrument, Model 606-Basic, to perform salt spray and condensation tests, is made of impact resistant, ecofriendly polypropylene material and is delivered in a rectangular design. It consists of a test chamber, available either of 400 l or 1000 l capacity, with a built-in control unit and built-in storage tank for the spray solution as well as the necessary control instruments. A dosing pump serves for an infinitely variable adjustment to achieve optimum consumption of spray solution.

Corrosion Test Apparatus, Model 606

Corrosion Test Apparatus for Salt Spray Tests

To carry out the mostly required salt spray tests and condensation water tests in accordance with the current standards. Corrosion test apparatus with circular or rectangular chamber of plastic construction system.

Corrosion testing equipment consisting of regulation unit including salt-solution-reservoir with operator friendly controls and up to 2 individual test chambers selectable with volumes of 400 l, 1000 l and/or 2000 l. Special dimensions upon request.

Corrosion Test Apparatus, Model 608

Corrosion Test Apparatus for Alternating Tests

For testing with cycles of changing corrosive effects in accordance with e.g. VDA 621–415. Basic concept, design details and dimensions as for Model 606 consisting of a regulation unit including salt-solution-reservoir and up to 2 individual test chambers

With touch screen, for the display of the present projected and the actual states and for the input of the test conditions selectable with volumes of 400 l, 1000 l and /or 2000 l.The control and adjustment of the test instrument is effected by a Siemens S7-200 PLC (programmable logig controler).

Corrosion Test Unit 618

Corrosion Test Unit for high demands

Besides the usual applications such as salt spray test and cyclic corrosion tests, the specimens can be stored and tested in an atmosphere with controlled humidity.

An additional air conditioner allows the operator to carry out low-temperature cycles down to -40 ° C.

Constant settings, as well as rising and falling ramps for temperature and humidity can be programmed quickly and easily using a display with "Touch" function.

The Model 618 is ideal for using fast ramps for temperatures or rel. humidity or for slowly increasing/ decreasing over several hours.

ERICHSEN / Specifications and Selection Table

Test Type / Model	519 Humidity	519 FA Humidity	519 SA Humidity	529 Humidity	606 BASIC Humidity, Saltspray, Standard	606 Humidity, Saltspray, Standard	608 Humidity, Saltspray, Cyclic	610 Humidity, Saltspray, Standard	610 E Humidity, Saltspray, Cyclic	618 Humidity, Saltspray, Cyclic (CCT)
Salt Spray (continuous spraying - ambient up to +50 °C)					x	x	x	x	x	x
ASS/CASS (continuous spraying - ambient up to +50 °C)					x	x	x	x	x	x
Prohesion (spray at ambient, dry at +35 °C)							x		x	x
SWAAT/Intermittent (spray at +49 °C, wetting at +49 °C)							x		x	x
Temp. Control Air Flush; (air flush/drying - ambient up to +35 °C)							x		x	x
Temp. Control Air Flush; (fresh/warm air drying - ambient up to +70 °C)							x			x
Cyclic/CCT (multi-modes of operation - ambient up to +60 °C max)										x
Condensation Humidity/Wetting (constant 95-100% RH, ambient +10 °C up to +50 °C)	x	x	x	x	x	x	x	x	x	x

Performance / Model	519	519 FA	519 SA	529	606 BASIC	606	608	610	610 E	618
Cabinet temperature, adjustable ambient up to +50°C	x	x	x	x	x	x	x	x	x	x
Cabinet temperature, adjustable ambient up to +60°C										x
Air Saturator Temperature, adjustable ambient up to +63°C										x
Air Saturator Temperature, adjustable ambient up to +70°C						x	x	x	x	
Automatic test cycle repeat			x				x		x	x
Display: cabinet temperature/run time		x	x	x	x	x	x	x	x	x
Display; cabinet temp./saturator temp/pump speed/run time									x	x
Display; cabinet temp./saturator temp/pump speed/run time programs/steps/%RH										x
Temp. / RH logging, 72 h.										x
Alarms; low salt solution, low saturator water, over-temperature										x

Standard Equipment / Model	519	519 FA	519 SA	529	606 BASIC	606	608	610	610 E	618
Bars with hooks	x	x	x	x						
Sample racks					x	x	x	x	x	x
Air Pressure gauge + regulator					x	x	x	x	x	x
Peristaltic pump					x	x	x	x	x	x
Alpha-numeric digital display	x	x	x	x	x	x		x	x	x
Touch-screen, fully pixilated, graphical display							x			
Full color high resolution graphical Touch-screen display										x
Language menu										x
Enlarged memory for up to 99 program storage										x
Pneumatic roof				x		x	x			x
Controlled humidity device for CCT cabinets (adjustable up to 95%RH - subject to test temperature)										x
Water auto-fill for humidity cabinets			x				x		x	x
Air saturator automatic filling					x	x	x	x	x	x
Internal salt solution reservoir (400l/1000l)						200	200	110/280	110/280	
External salt solution reservoir (for 450, 1000, 2000 l size)					x					x

Optional Accessories / Model	519	519 FA	519 SA	529	606 BASIC	606	608	610	610 E	618
Additional Second Test Chamber including specimen holders, dosing pump for optimum setting for the salt solution to be sprayed						x	x			
Temp. chart recorder										x
Entry port 35/110 mm diameter	x	x	x	x		x	x	x	x	x
Internal light										x
Reinforced false floor (for large/heavy samples)				x		x	x			x
Logging software for CCT cabinets										x
Gas Injector (02 – 2l) for tests in SO2-containing atmospheres ISO 3231		x	x							
Mini Gas Injector (50 – 200ml) for tests in SO2-containing atmospheres ISO 3231		x	x							
SO2 –Valve to adjust the pressure between gas injector and gas bottle, ISO 3231		x	x							
Flexible Mist Extraction Tube		2m	2m		2m	2m	2m			2m

Optional Accessories / Model	519 Humidity	519 FA Humidity	519 SA Humidity	529 Humidity	606 BASIC Humidity, Saltspray, Standard	606 Humidity, Saltspray, Standard	608 Humidity, Saltspray, Cyclic	610 Humidity, Saltspray, Standard	610 E Humidity, Saltspray, Cyclic	618 Humidity, Saltspray, Cyclic (CCT)	
Specimen Holder for Weathering Panels as supplement to the 3 panels included with the basic equipment				x	x	x	x	x	x	x	
Specimen Holder for Bulky Parts for holding lager finished parts, consisting of 4 upright tubes with holes and 8 support rails				x	x	x	x			x	
Specimen Holders for Weathering Panels with customer defined slot width and slot angle				x	x	x	x				
Provision of a second Air Humidifier for Double-chamber Instruments (separate preselection of air humidifier temperature),for the performance of salt spray tests and Cass Tests in different test chambers						x	x				
Multi-channel Data Acquisition and Recording System HoBo 12 for the acquisition of test chamber temperature,air humidifier temperature and spray pressure, data logger with 20 bit resolution					x		x				
Multi-channel Data Acquisition and Recording System PCC Jumo for the acquisition of test chamber temperature, air humidifier temperature and spray pressure, data logger with 8 bit resolution, RS 232 interface via D-SUB-9F-base, memory space for 15,000 measured values							x				
Circulating Pump for mixing up salt solution in the storage vessel, complete and installed					x	x	x			x	
Climate Control Unit for refrigerating the test chamber to any temperature from ambient to -40 °C,and controlling the humidity from <. 30% to 95% relative humidity at +25 °C, for tests in altering climates, e.g. in accordance with KWTDC										x	
Chamber Wall Wash Facility										x	

Specimen Preparation Tools
Scratching Tool acc. to van Laar, Model 426
SCRATCHMARKER 427, portable instrument to apply defined scratches through coatings on specimen panels used for corrosion tests
Scratch Stylus acc. to Sikkens, Model 463
Test Panel Scratcher CORROCUTTER, Model 639, to define scratches on coatings of corrosion testing panels, with manual drive,including test tip acc. to van Laar, relocatable supporting weight, spirit level and allen key SW 2

ERICHSEN / Test Standards Compliance

Test standard number	Country / Industry/ Company of origin	Humidity	Humidity	Humidity	Humidity, Saltspray, Standard	Humidity, Saltspray, Standard	Humidity, Saltspray, Cyclic	Humidity, Saltspray, Standard	Humidity, Saltspray, Cyclic	Humidity, Saltspray, Cyclic (CCT)	
Condensation Humidity Test Standards	**Model**	**519/529**	**519 FA**	**519 SA**	**606 BASIC**	**606**	**608**	**610**	**610 E**	**618**	
ASTM D2247	USA	x	x	x	x	xx	x	x	x	x	
BS 3900 Part F2	Great Britain	x	x	x	x	xx	x	x	x	x	
DIN EN ISO 4623-2 (Filiform)	Germany									x	
DIN EN ISO 6270-2 CH (former DIN 50 017-KK)	Germany	x	x	x	x	xx	x	x	x	x	
DIN EN ISO 6270-2 AHT (former DIN 50 017-KFW)	Germany		x	x			x		x	x	
DIN EN ISO 6270-2 AT (former DIN 50 017-KTW)	Germany		x	x			x		x	x	
VDA 621-421	Germany									x	
DIN 50958	Germany	x	x	x	x	x	x	x	x	x	
DIN 55991	Germany	x	x	x	x	x	x	x	x	x	
ISO 4541	Germany									x	
ISO11503	Germany	x	x	x	x	x	x	x	x	x	

Condensation Test in SO2 atmosphere	**Model**	**519/529**	**519 FA**	**519 SA**	**606 BASIC**	**606**	**608**	**610**	**610 E**	**618**	
ISO 3231	European		x	x							
ISO 6988	European		x	x							
DIN 50018	Germany		x	x							
DIN 53771	Germany		x	x							

Water FOG Humidity Test Standards	**Model**	**519/529**	**519 FA**	**519 SA**	**606 BASIC**	**606**	**608**	**610**	**610 E**	**618**	
ASTM D1735	USA				x	x	x	x	x	x	
GM4465P	General Motors				x	xx	x	x	x	x	

Salt Spray, Mist/Fog Test Standards	**Model**	**519/529**	**519 FA**	**519 SA**	**606 BASIC**	**606**	**608**	**610**	**610 E**	**618**	
50180 method A1					x	x	x	x	x	x	
50180 method A2					x	x	x	x	x	x	
50180 method A3					x	x	x	x	x	x	
AS 2331 method 3.1	Australia				x	x	x	x	x	x	
AS 2331 method 3.2	Australia				x	x	x	x	x	x	
AS 2331 method 3.3	Australia				x	x	x	x	x	x	
ASTM B117	USA				x	x	x	x	x	x	
ASTM B287	USA				x	x	x	x	x	x	
ASTM B368	USA				x	x	x	x	x	x	
ASTM G43	USA				x	x	x	x	x	x	
ASTM G85 annex A1	USA				x	x	x	x	x	x	
ASTM G85 annex A2	USA						x		x	x	
ASTM G85 annex A3	USA						x		x	x	
ASTM G85 annex A5	USA						x		x	x	
ASTM G5894	USA						x		x	x	
BS2011 Part2.1 Ka + Part2.1 Kb	Great Britain				x	x	x	x	x	x	
BS 3900 Part F4	Great Britain				x	x	x	x	x	x	
BS 3900 Part F12	Great Britain				x	x	x	x	x	x	
BS 5466 Part 1	Great Britain				x	x	x	x	x	x	
BS 5466 Part 2	Great Britain				x	x	x	x	x	x	
BS 5466 Part 3	Great Britain				x	x	x	x	x	x	
BS 7479	Great Britain				x	x	x	x	x	x	
DIN 50907	Germany				x	x	x	x	x	x	
DIN 40046	Germany				x	x	x	x	x	x	
DIN 53167	Germany				x	x	x	x	x	x	
ECCA T8					x	x	x	x	x	x	
FLTM BI 103-01					x	x	x	x	x	x	
SIS H 8502					x	x	x	x	x	x	
METH 1/2/3					x	x	x	x	x	x	
NFT 30-077					x	x	x	x	x	x	
NFX 41-002					x	x	x	x	x	x	
SIS 184 190					x	x	x	x	x	x	
BS EN ISO 7253	Great Britain				x	x	x	x	x	x	
BS EN 60068-2-11	Great Britain				x	x	x	x	x	x	
BS EN 60068-2-52	Great Britain				x	x	x	x	x	x	
D171058	Renault				x	x	x	x	x	x	

Notes for Test Standards Compliance:
x= This Cabinet can fully comply with all requirements of this test standard.
xx= This Cabinet, together with optional accessories,
can fully comply with the requirements of this test standard.
The right of technical modifications is reserved

Test standard number	Country / Industry/ Company of origin	Humidity	Humidity	Humidity	Humidity, Saltspray, Standard	Humidity, Saltspray, Standard	Humidity, Saltspray, Cyclic	Humidity, Saltspray, Standard	Humidity, Saltspray, Cyclic	Humidity, Saltspray, Cyclic (CCT)	
Salt Spray, Mist/Fog Test Standards	**Model**	**519/529**	**519 FA**	**519 SA**	**606 BASIC**	**606**	**608**	**610**	**610 E**	**618**	
DEF STAN 00-35 Part 3 test CN2	Great Britain-Defence				x	x	x	x	x	x	
DEF STAN 133 method 14	Great Britain-Defence				x	x	x	x	x	x	
DEF STAN 1053 method 24	Great Britain-Defence				x	x	x	x	x	x	
DEF STAN 1053 method 36	Great Britain-Defence						x		x	x	
DIN EN ISO 9227 SS (former DIN 50021 SS)	Germany				x	x	x	x	x	x	
DIN EN ISO 9227 ESS (former DIN 50021 ESS)	Germany				x	x	x	x	x	x	
DIN EN ISO 9227 CASS (former DIN 50021 CASS)	Germany				x	x	x	x	x	x	
BI 103-01	Ford				x	x	x	x	x	x	
GM4298P	General Motors				x	x	x	x	x	x	
IEC 68-2-11	Europe				x	x	x	x	x	x	
IEC 68-2-52	Europe				x	x	x	x	x	x	
IEC 60068-2-11	Europe				x	x	x	x	x	x	
IEC 60068-2-52	Europe				x	x	x	x	x	x	
ISO 3768	International				x	x	x	x	x	x	
ISO 3769	International				x	x	x	x	x	x	
ISO 3770	International				x	x	x	x	x	x	
ISO 7253	International				x	x	x	x	x	x	
ISO 9227	International				x	x	x	x	x	x	
JIS H 8502 - Method 1	Japan				x	x	x	x	x	x	
JIS H 8502 - Method 2	Japan				x	x	x	x	x	x	
JIS H 8502 - Method 3	Japan				x	x	x	x	x	x	
JIS H 8502 - Method 4	Japan				x	x	x	x	x	x	
JIS Z 2371	Japan				x	x	x	x	x	x	
JNS 30.16.03	Jagua				x	x	x	x	x	x	
MIL-STD-202	USA - Military				x	x	x	x	x	x	
MIL-STD-750	USA - Military				x	x	x	x	x	x	
MIL-STD-810	USA – Military				x	x	x	x	x	x	
NFAX 41-002	France				x	x	x	x	x	x	
RTCA/DO-160	RTCA Inc.				x	x	x	x	x	x	
VG 95 210	Germany				x	x	x	x	x	x	

Cyclic Corrosion (CCT) Test Standards	**Model**	**519/529**	**519 FA**	**519 SA**	**606 BASIC**	**606**	**608**	**610**	**610 E**	**618**	
IS0 14993	International									xx	
JASO M 609	Japan – Automotive									xx	
JASO M 610	Japan – Automotive									xx	
P-VW 1210	VW/Audi						x		x	xx	
VDA 621-415	Germany - Automotive						x		x	x	
GM9540P	General Motors									x	
GMW14872	General Motors									xx	

Cyclic Corrosion Test (CCT) Standards with Regulated Humidity, etc.	**Model**	**519/529**	**519 FA**	**519 SA**	**606 BASIC**	**606**	**608**	**610**	**610 E**	**618**	
CCT 1 and 2	Japan - Automotive									xx	
CCT 4	Japan - Automotive									xx	
GM9540P	General Motors									xx	
ISO11997-1	International									xx	
VDA 233-102										xx	
UNICHIM 652										xx	
UNICHIM 741u										xx	

Short-term Corrosion Test	
Bac Ford Bath	RNUR 1327
	AFNOR T30-054
	EN ISO 28122
	ISO 1521
	PSA D27 1327

Short-term Corrosion Test	
Machu-Test-Bath	according to QUALICOAT

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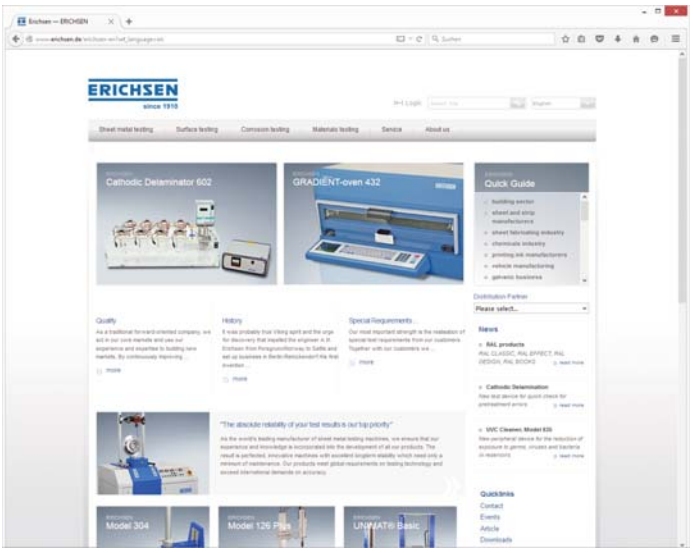

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