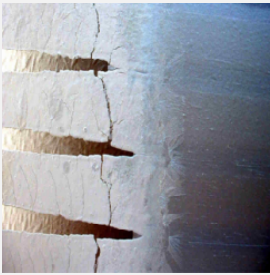




Test Equipment for Lab and Production Products for



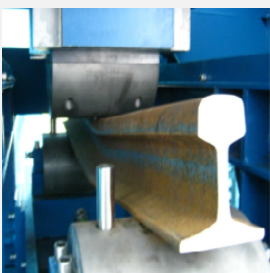
Paint/ Coatings



Plastics/ Rubber



Pipes



Special Solutions/
Service Strength

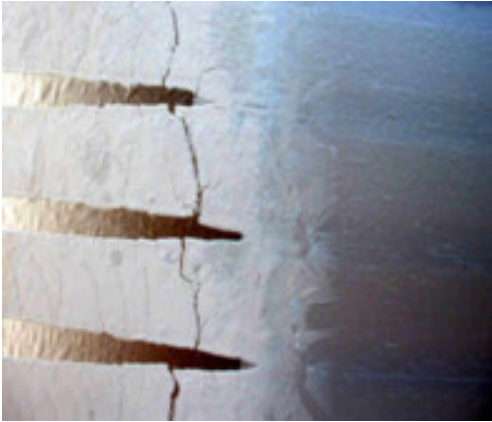
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Surface, Paint, Coatings



The test equipment of this field embraces physical, electrical and thermal test of powder coating, hartz, paint, lacquer and plastic coating. This includes mechanical tests as abrasion and gauge, electrical test as cathodic disponding, resistance, and coating thickness, thermal tests as gel time, film forming temperature, softening, melting point, evaporation and corrosion.



MFFT Gradient Plate

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Gel Time

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Plastic granulate pouring funnel

page **15**



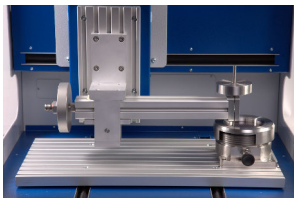
Apparent Density Tester

page 15



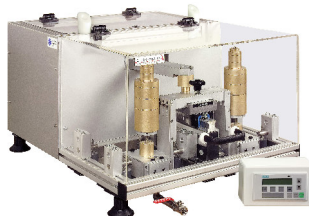
Floatation and Apparent Density

page 15



Gauge Tester

page 15



Wear Resistance

page 15



Cathodic Disbonding

page 15



Coating resistivity

Tera ohm meter

for resistance measurement

- 3 device configurations with different resistance ranges
- programmable data storage with read-out by PC or device
- wide range of electrodes available



Holiday testing

Holiday detector

for non-destructive holiday detection of coatings via high voltage impulse technology test

- sensitive coatings like FBE, enamel, epoxy, halar etc.
- intelligent signal analysis allows testing of completely coated parts
- menu-driven sensitivity guarantees exact results

Others

COESFELD

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50-113 / 50-130 MFFT 10 and MFFT 20

Standards

ISO 2115 – ASTM D 2354



Application

Temperature gradient plate for measuring the Minimum Film Forming Temperature, MFFT of polymer dispersion.

Features

For determination of the MFFT a sample is applied on the tempered measuring plate by the help of a film caster. A visual inspection of the dry film is then made to determine the position along the length of the film where it changes from the coalesced to the non-coalesced state. A non-coalesced film shows whitening and /or cracking. The lowest temperature at which the film is coalesced is reported as the MFFT.

The temperature gradient plate consists of a high precision chromium measuring plate, with equispaced temperature sensors beneath the surface. For measuring the temperature, the MFFT 20 is equipped with 20 Pt-100 temperature sensors. (MFFT 10: 10 Pt-100 sensors). The controller guarantees optimal temperature control. The temperature set points for the MFFT 20 can vary with a maximum possible gradient on the surface of 100° (MFFT 10: with a maximum gradient of 20°). Purge gas is dried by an integrated membrane dryer and flows over the heating plate. A constant flow according to the standards can be set with a built-in flow meter. The flat hinged acrylic glass cover provides thermal and atmospheric insulation while allowing constant visual inspection of the experiment.



Technical Data

	MFFT 10 (50-113)	MFFT 20 (50-130)	MFFT 20 (50-131)
Variable adjustment of set point	-5°C ... +80°C	-30°C ... +250°C	-30°C ... +250°C
Max. gradient (depends on the used cryomate)	20°C*	100°C*	100°C*
Temperature detection	10 Pt-100 sensors in measuring plate	20 Pt-100 sensors in measuring plate	20 Pt-100 sensors in measuring plate
Resolution temperature display	0.1 K	0.1 K	0.1 K
Measuring length	500 mm	500 mm	500 mm
Measuring width	180 mm	180 mm	180 mm
Lanes	None	None	6 lanes; 300 µm depth, 20 mm width

*ATTENTION: The maximum gradient also depends on the set temperature range and can be lower than indicated.

Dimensions and Connection

	MFFT 10 (50-113)	MFFT 20 (50-130)	MFFT 20 (50-131)
Dimensions (WxDxH)	800 x 350 x 320 mm	800 x 350 x 320 mm	800 x 350 x 320 mm
Weight	approx. 50 kg	approx. 52 kg	approx. 52 kg
Mains	230 V, 50/60 Hz (optional: 115 V)	230 V (optional: 115 V)	230 V (optional: 115 V)
Power	1500 W	1500 W	1500 W
Interfaces	n.a.	n.a.	n.a.
Air	Compressed air	Compressed air	Compressed air
Cooling	Cooling connection	Cooling connection	Cooling connection
Other	n.a.	n.a.	n.a.

Accessories

incl.	Item no.	Description
-	50-037-001	Changeable hood for MFFT up to 250°C made of stainless steel 4301
-	50-034	Changeable hood for MFFT up to 80°C made of acrylic glass (720 x 280 x 250 x 5 mm)
1	9-107-085	Standard hood for MFFT up to 80°C made of acrylic glass (750 x 280 x 76 mm)
-	50-100-001	Dropping bordering made of stainless steel
-	50-047-002	Film caster 100 µm, made of plastics, for 6 parallel grooves (20 mm each)
-	50-047-008	Film caster 100 µm, made of stainless steel, for 6 parallel grooves (20mm each), with guide rolls
-	60-005-004	Cryomate, temperature range: -20...40°C, for MFFT 10
-	60-005-005	Cryomate, temperature range: -45...200°C, for MFFT 20



51-... Gel Time Measurement Devices

Standards

ASTM D3451, ASTM D3532, ASTM D4217, CAN/CSA-Z245.20, DIN 16 916, DIN 55 990, EN ISO 8130-6, ISO 21809-2



Application

Instruments for determination of gel time and hardening characteristics of powder coatings and resins

Features

The exact surface temperature control and the integrated digital stop watch enable the user to produce repeatable and comparable gel times. Using a measuring spoon the specimen is filled into the polished hollows of the tempered heating plate. Simultaneously the integrated stop watch is turned on. The test piece is stirred with a stirring needle until there are no threads when pulling out the needle. When this point is reached, the watch is stopped and the gel time is read off.

Technical Data

Temperature control	micro processor controller, digital temperature display
Temperature range	+60 ... +250°C
Temperature accuracy	± 0.1 °C
Digital stop watch	1 sec ... 24 h

Device configuration

Device	Geltest GT 16	Geltest GT 16	Geltest GT 16/20	Geltest GT 20	Geltest GT 20	Geltest GT 100
Polished hollows	1	4	2/2	1	4	plain plate
Diameter	16 mm	16 mm	2x16 mm 2x20 mm	20 mm	20 mm	100x100 mm
Item no.	51-100	51-100-001	51-103	51-104-002	51-104	51-108



Dimensions and Connection

Dimensions (WxDxH)	450 x 220 x 240 mm
Weight	approx. 10 kg
Mains	230 V / 50 HZ (optional 115 V / 60 Hz)
Power	450 VA
Interfaces	n.a.
Air	n.a.
Cooling	n.a.
Others	n.a.

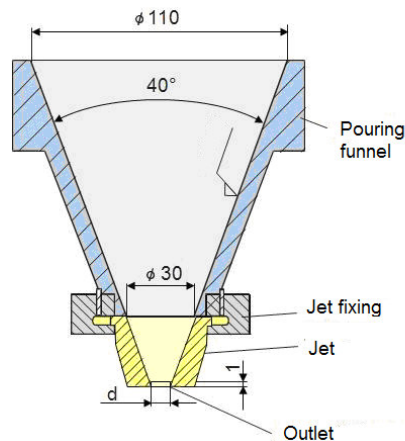
Accessories

incl.	Item no.	Description
-	51-114	Dust cover with door made of acryl glass
-	51-126	Handle for stirring pins Ø 1 mm
-	51-125	Handle for stirring pins Ø 2 mm
-	51-127	Stirring pins made of stainless steel Ø 1 mm (1 pack = 100 pieces)
-	51-128	Stirring pins made of stainless steel Ø 2 mm (1 pack = 100 pieces)
-	51-130	Stirring pins made of glass Ø 2 mm (1 pack = 100 pieces)
-	51-131	Measuring spoon for samples 200 mg (±10 mg)
-	51-136	Cleaning scraper brass Ø 16 mm for hollows
-	51-137	Cleaning scraper brass Ø 20 mm for hollows

51-145-001 Plastic granulate pouring funnel

Standards

DIN EN ISO 6186



Application

Measuring system for determination of pourability plastics in form powder or granulate.

Features

- Funnel made of stainless steel, upper \varnothing approx. 110 mm
- Polished surface
- Funnel with earth connection
- Miscellaneous stand constructions available
- Exchangeable jets
- Miscellaneous jet diameters available (jets to be ordered separately)

Technical Data

Dimensions (WxDxH) 290 x 160 x 210 mm
 Weight ca. 7.5 kg
 Funnel \varnothing 110 mm, 40° angle

Schnittstellen n.a.
 Luft n.a.
 Kühlung n.a.
 Andere n.a.

Accessories

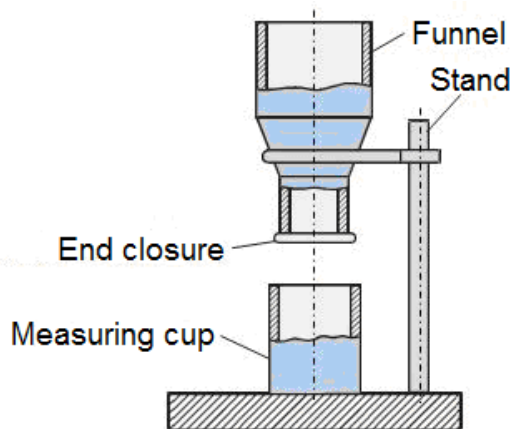
incl.	Item no.	Description
-	51-146	Jet no. 1 \varnothing 10,0 \pm 0.05 mm
-	51-147	Jet no. 2 \varnothing 15,0 \pm 0.05 mm
-	51-148	Jet no. 3 \varnothing 25,0 \pm 0.05 mm
-	51-149	Certificate for flotation of granulate plastics (only with jet no. 1)

Other jets are available on request.

61-400 Apparent Density Tester

Standards

DIN 53 466 - ISO 60 - ISO 171



Application

Measuring system for determination the apparent density of free flow powder or granulate.

Features

- Solid, warp resistant stand
- Height adjustable loading funnel
- Snap closure for loading funnel with recuperating spring
- Scraper made of stainless steel
- Calibrated measuring cup
- Drip cup for surplus material

Dimensions

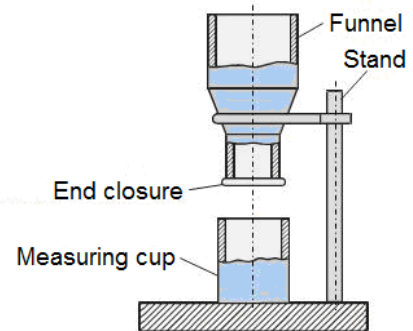
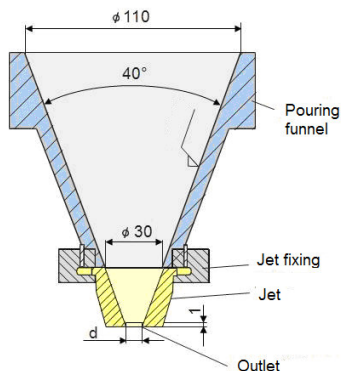
Dimensions (WxDxH)	260 x 160 x 210 mm
Weight	approx. 3.5 kg
Funnel	height: 115 mm, volume approx. 200 ml
Measuring cup	100 ±0.5 ml



97-230 Flotation and Apparent Density Tester

Standards

DIN EN ISO 6186 – (Apparent Density: similar to ISO 60)



Application

Measuring system for simultaneous measurement of flotation and apparent density of plastic granulate.

Features

- Time saving through simultaneous measurement
- plastic granules pouring funnel (without jet)
- apparent density measuring cup 100 ml \pm 0.5 ml
- collecting cup
- moveable sealing plate
- support with holder for the pouring funnel incl. the stripper of the moulding compounds

Technical Data

Dimensions (WxDxH) 290 x 160 x 210 mm
 Weight ca. 8 kg
 Funnel \varnothing 110 mm, 40° angle

Interfaces n.a.
 Air n.a.
 Cooling n.a.
 Other n.a.

Accessories

incl.	Item no.	Description
-	51-146	Jet no. 1 \varnothing 10,0 \pm 0.05 mm
-	51-147	Jet no. 2 \varnothing 15,0 \pm 0.05 mm
-	51-148	Jet no. 3 \varnothing 25,0 \pm 0.05 mm
-	51-149	Certificate for flotation of granulate plastics (only with jet no. 1)

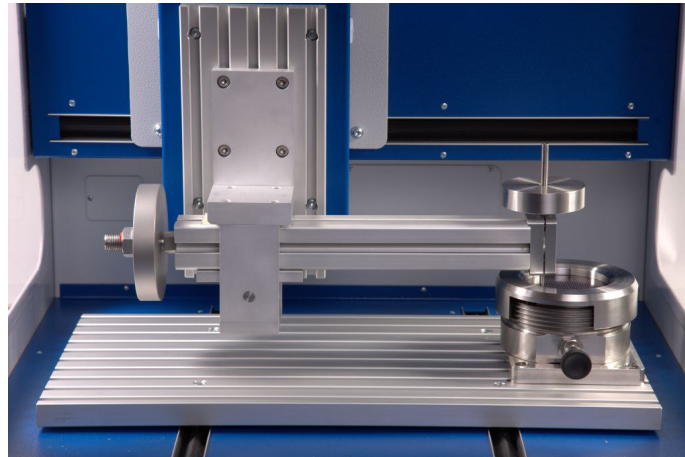
Other jets are available on request.



79-200-100 Gauge Tester

Standards

DIN EN ISO 7253 – EN ISO 2409 – EN ISO 17872 – ISO 1518 – ASTM D 3359
GME 60 280 – VW PV 3952 – VDA 621



Application

All-purpose cutter for automatic scratching in surfaces with high precision and reproducibility

Features

The Gauge Tester works fully automated. The data (X-, Y-, Z-coordinates) is defined once and saved regardless of the specimen, coating and clamping device. Afterwards, repeatable and clean cuts can be carried out independently of the user.

The scope of delivery contains a large library of ready scratch guidances for a lot of standard tests according to DIN EN ISO and ASTM with all machining data. For automatic series production the parameters are set with the help of the software. CAD/CAM software is available optionally.

Customized scratching patterns can be constructed this way.

Due to freely definable testing parameters there is practically no limit in terms of scratching patterns and specimen type. The load unit can be tared. With an optionally available universal weight set every load up to 50N can be chosen in 0.01N steps.

A broad variety of clamping devices is available. Additionally, customized clamping devices according to particular specifications can be delivered. With the available accessories nearly all scratching patterns and forms can be realized. This makes the Gauge Tester a flexible instrument. For example, a CNC controlled rotary plate turns the specimen automatically while a mesh-, X- or T-grid is produced. Further, a motoric load application allows automatic setting of the force needed for scratching through the coating.



Technical Data

Cutting stroke	200 mm x 180 mm
Height setting	90 mm
Movement speed	0.1 mm/sec ... 50 mm/sec
Working table	T groove table
Clamping surface (WxD)	400 x 250 mm
Propulsion	2-phase stepper motor
Controller	4-axial-microstep controller with RS232 communication interface
System memory	Saving of test programs for operating the tester without a PC

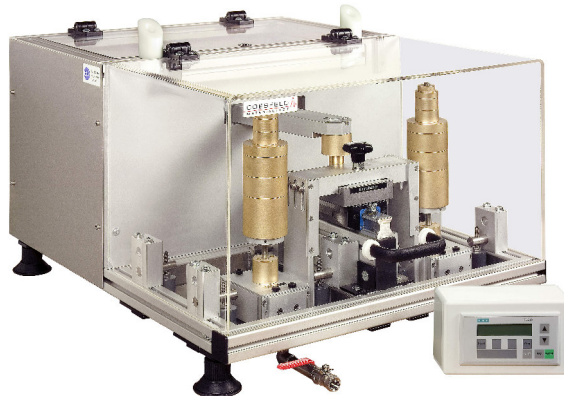
Dimensions and Connection

Dimensions (WxDxH)	535 x 600 x 690 mm
Weight	ca. 70 kg
Mains	230 V, 50 Hz
Power	1500 W

Interface	RS232
Air	n.a.
Cooling	Optional: air cooling
Other	n.a.



art.-no.: 76-170



type: Test appliance for determining the wear resistance of plastic coatings

description: Compact desktop appliance with acrylic glass cover for the sample compartment. The appliance works with a motor drive and an infinitely adjustable lift path for two parallel tests. The two test places are constructed in a stainless steel tank with a drain valve, so that the tests can be carried out with the addition of liquids (cleaners, scouring agents or similar). All relevant test parameters such as speed and cycle number can be defined through the appliance's controller.

technical data:

- Speed: 30 – 120 lifts/min
- Sample holder with tank and drain (height approx. 30 mm)
- Sample size: max. DIN A4
- Sample thickness: 0.5...30 mm
- Lift path variable to max. 200 mm
- sep. controller with specification of lift speed and lift cycles
- Frame made of low-torsion ITEM profiles
- max. load per test position 5 kg, the test positions must be loaded symmetrically
- Weight of clamping device and weight holder approx. 0.5 kg
- 7 weights per test position: 1 x 2 kg, 2 x 1 kg, 1 x 0.5 kg, 2 x 0.2 kg, 1 x 0.1 kg
- Clamping device for cleaning sponges and cleaning cloths
- Plexiglass safety hood
- Mains connection: 230 V, 50 Hz



75-091-... – Cathodic Disbonding Tester

Standards

ASTM G-8, ASTM G-42, DIN 30 670, DIN EN ISO 15711



Application

The CD-Test unit tests the adhesion of plastic coatings on steel.

Features

For testing, the coating of a sample (steel pipe) is deliberately damaged so that the steel surface is exposed. Then the sample is polarized cathodically towards an anode, i.e. the steel is connected to the negative pole of an adjustable power source (potentiostat of the CD-Tester). After testing, the coating is removed and the dimension of the disbonding is rated.

Technical Data

Measuring stations	1 / 4 / 8 / 10 / 16 / 20 / 30 (depending on device configuration)
Nominal voltage range	5 V
Max. current	± 200 mA
Current ranges	200 mA / 20 mA / 2 mA (depending on device configuration)



Dimensions and Connection

Dimensions (HxBxD)	4 measuring stations: 152 x 280 x 385 mm 8 measuring stations: 152 x 560 x 385 mm 16 measuring stations: 304 x 560 x 385 mm
Weight	6 / 12 / 18 kg (depending on device configuration)
Mains	230 V / 50 – 60 Hz or 110 V / 50 – 60 Hz
Power	1000 W
Interfaces	analog output
Air	n.a.
Cooling	n.a.
Others	n.a.

Device configuration

incl.	Articlenumber	Description
-	75-091-018	Cathodic Disbonding Tester 4 measuring stations, ± 5 V output; 200 mA
-	75-091-020	Cathodic Disbonding Tester 8 measuring stations, ± 5 V output; 200 mA
-	75-091-021	Cathodic Disbonding Tester 16 measuring stations, ± 5 V output; 200 mA

Other devices from 1 up to 30 measuring stations are also available.

Accessories

incl.	Articlenumber	Description
-	75-091-101	Reference electrode calomel (Hg/HgCl)
-	75-091-113	Reference electrode Ag/AgCl
-	75-091-123	Titanium anode with platinum wire \varnothing 0,5 mm
-	75-091-103	Titanium anode with platinum wire \varnothing 0,6 mm
-	75-091-114	Titanium anode with platinum wire \varnothing 0,8 mm
-	75-091-129	Titanium anode with platinum wire \varnothing 1,0 mm
-	75-091-110	Platinum coated anode \varnothing 8 x 120 mm
-	75-091-137	Test cup with cover made of acrylic glass \varnothing 74 mm with lid, 2 drill-holes
-	75-091-115	Test cup with cover made of acrylic glass \varnothing 74 mm with lid, 3 drill-holes
-	75-091-125	Test cup with cover made of acrylic glass \varnothing 74 mm with lid, 4 drill-holes
-	75-091-112	Test cup with cover made of acrylic glass \varnothing 80 mm
-	75-091-102	Test cup with cover made of acrylic glass \varnothing 100 mm
-	75-091-124	Test cup with cover made of acrylic glass \varnothing 100 x 145 mm
-	75-093-003	Sandbath, 50...300°C, 590 x 440 mm, 4000 W, 230 V
-	75-093	Sandbath up to 350°C, 580 x 430 mm, 4000 W, 230 V
-	75-093-001	Sandbath for 4 sample plates, \hat{a} 100 x 100 mm
-	KABELMCP-3.0-T	Cell cable for MCP, L 3,0 m to 100°C
-	75-091-050	Datalogger for monitoring and recording for up to 4 measuring stations (to be integrated into newly purchased CD-Tester)*
-	75-091-058	Datalogger for monitoring and recording for up to 8 measuring stations (to be integrated into newly purchased CD-Tester)*
-	75-091-057	Datalogger for monitoring and recording for up to 16 measuring stations (to be integrated into newly purchased CD-Tester)*
-	75-091-059	Datalogger for CD-Tester 4-place device (for retrofitting of CD-Tester)*

Normally, the number of needed reference electrodes, test cups and titanium anodes is equal the number of measuring stations. Other dataloggers (for new devices and retrofitting) are also available on request.

*Datalogging of two parameters, standard: voltage and temperature (selectively: current).
For logging all three parameters, another logger is required (75-091-054).



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