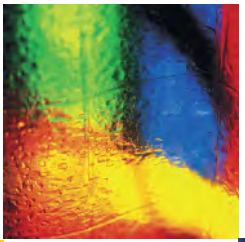
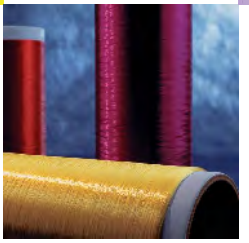
MAXTECHNICS

2010-2011





Introduction

Welcome to the Max Technics catalogue.

The purpose of this catalogue is to show in hard copy format what is on our Website. The website has the most up to date information and is updated as and when products are added or removed from our Product Range.

The catalogue is a collection of the Main Summary Pages on our Website. For more detailed information including technical specifications or specific information, please visit our Website or request more technical information by email or fax.

If you have any questions regarding this catalogue or our Website please contact us:
Phone: (905) 951 5118
Email: info@maxtechnics.ca

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Thickness

Fineness of Grind

Density

Weighing

Viscosity

Temperature Profile

Ultraviolet Accelerated Weathering Test

Xenon Light Stability & Weathering Test

Thermal Shock

Corrosion

Gloss

Glossmeter (20°/60°/85°) - GM-268

Introduction:

Gloss is an important attribute of surface appearance; it changes our perception of colors and shapes and influences our overall visual experience.
Gloss affects objects by the interaction of incident light with the surface and observer and depends on variables such as observation conditions. Illumination angle, surface profile, physical characteristics and for many products, gloss can play an important part in their visual acceptability and for quality purposes should be monitored with precision instrumentation particularly when it varies through the process.
The New GM-268 gloss meter has been designed mainly with the user in mind. Now offering greater versatility and ease of use, these instruments have far superior data handling capabilities than ever before.
With three angles in one robust, lightweight, portable package the GM-268 will easily tackle most gloss measurement applications.
Generally three geometries which cover the majority of industrial applications:

- **20° for high gloss surface**
- **60° for medium gloss surface**
- **85° for low gloss or matt surface**

The 60°geometry is widely used due to its medium gloss coverage. However, it has been experimentally shown that when readings taken at 60°exceed 70 GU, then a change to 20°is recommended for better differentiation. Equally, when readings drop below 10 GU the geometry should be changed to 85° for the same reason.

Applications:

- **All kinds of coating and finishing surfaces, such as paints, varnishes, printing ink, etc.**
- **Decorative materials, such as marble, granite, polishing brick, ceramic tile and so on**
- **The other kinds of materials and objects, such as plastic, woodenware, paper, etc.**
- **All kinds of metallic materials and their coatings**

Features:

- **Interface: Serial RS 232**
- **Memory: 10000 measurements or 999 data groups**
- **Power Supply: A single battery only; AA size, Rechargeable or alkaline**
- **Comes Complete With: Main Device, Holder with Working Standard, Calibration Certificate, Software (optional), Cable for PC Serial port (optional), USB Adapter (optional), Users Manual, Carrying Case**
- **Easy to calibrate**

Conformance to International Standards:

ASTM D 523, ASTM D2457, DIN EN ISO 2813, DIN 67530, EN ISO 7668, JIS Z 8741

Technical Specifications:

Model:	GM-268	
Measuring Rang :	GS (20°) : 0.0 ... 119.9 GS (60°) : 0.0 ... 119.9 GS (85°) : 0.0 ... 119.9	GS (20°) : 120 ... 2000 GS (60°) : 120 ... 1000 GS (85°) : 120 ... 160
Resolution (GU):	0.1	1.0
Repeatability (GU):	0.2%	0.2%
Reproducibility (GU):	0.5%	0.5%
Zero point deviation (GU):	0.2	
Operating temperature:	+10°C to +40°C	
Storage temperature:	-10°C to +60°C	
Relative humidity:	Up to 85%, non condensing	
Measuring spot (mm^2)	GS (20°) : 9×10 , GS (60°) : 9×16 , GS (85°) : 5×39	
Power supply:	One 1.5V Mignon Alkaline battery	
Dimension(mm):	155×48×75	
Weight:	400gr	

Complete Kit Includes:

GM268 Glossmeter:	1 Unit
Holder with calibrating standard:	1 Unit
Carrying case:	1 Piece
User's manual:	1 Piece
Traceable certificate:	1 Piece
Battery:	1 Piece

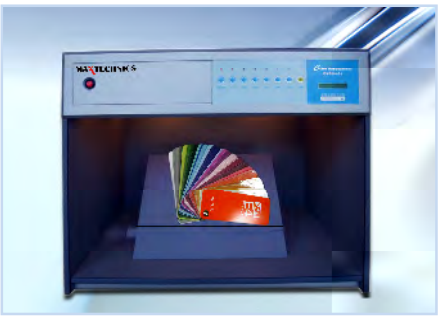
Optional accessories:

GM software	1 Piece
PC Cable	1 Piece
Standard Tile	1 Piece

Color

Color Assessment Cabinet (CAC-4, CAC-5 & CAC-6)

Introduction:



The cabinets come with the supply of some different lights control microprocessor LCD Screen that shows each Lighting usage Time. Each Button controls the individual set of Lights. The CLR (Clear) button allows the resetting of the Lighting Usage Time to ZERO when new lights are replaced. The ON/OFF Switch button must be switched off during long hours (more than 3 to 4 hours) of non-operation. This is to reduce the possibility of heat-up as well as life span extension for the electronic ballast, All Lights can be switched on at the same time as according to the user needs The optional Diffused Glass Panel below the lights ensures the elimination of direct reflection of lights to viewing products, There is no Warm-Up time/Flickering of Lights when there is a constant electrical supply. All electrical components used are of low power consumption and heat generation for efficiency in energy.

The international approved Light Gray Non-Reflective Surface ensures that no light is being reflected from the surface during color matching, so, what you see of your products in our Color Assessment Cabinets will be as natural as what you view them under the natural color matching conditions. The Non-Reflective Surface has certain degree of roughness not only acts as light absorption when light are illuminated, but it is also scratched-resistance, Many Color-Matching Cabinets do not have this dual ability.

Applications:

Suitable instrument for all industries and applications where there is a need to maintain color consistency and quality e.g. automotive, ceramics, cosmetics, foodstuffs, footwear, furniture, inks, knitwear, leather, ophthalmic, packaging, printing and textile.

Features:

Light source:	Description:	Number of Light:	Power:	Color Temperature:
D65	International-standard Artificial Daylight	2 Pieces	20W	6500K
TL84	Applicable to stores in Europe, Japan	2 Pieces	18W	4000K
CWF	Cool White Fluorescent	2 Pieces	20W	4150K
F/A	Comparison referential light source, Applicable to family/hotel	4 Pieces	40W	2700K
UV	Ultraviolet light source	1 Piece	20W	Wavelength 365nm

Conformance to International Standards:

BS950: part 1, 1967, ISO 3664, DIN, ANSI, BSI & AATCC

Technical Specifications:

Model:	CAC-4	CAC-5	CAC-6
Standard light sources:	D65, F, UV, TL84	D65, F, UV, TL84, A	D65, D50, F, UV, TL84, A
Voltages:	110V/ 220V,50/60Hz		
Operating temperature:	+10°C to +40°C		
Relative humidity:	Up to 85%, non condensing		
Dimension:	71 × 41 × 57cm		
Weight:	35kg		

Optional accessories:

D65 lamp set (CAC/L/D65): 2 Pieces
TL84 lamp set (CAC/L/TL84): 2 Pieces
CWF lamp set (CAC/L/CWF): 2 Pieces
F/A lamp set (CAC/L/F): 4 Pieces
UV lamp (CAC/L/UV): 1 Piece
D50 lamp set (CAC/L/D50): 2 Pieces
TL83 lamp set (CAC/L/TL83): 2 Pieces

Hiding Power

Hiding Power charts (HPC Series)

Introduction:

Hiding power chart surface is coated with film. It is used to determine the contrast ratio of construction paint or the sample of other paint. Coating the paint film at required thickness on the chart, after the film dried, to determine the reflection ratio of the black-white background by reflector meter, bigger ratio means better hiding power.
Black color reflection value: 1max. White color reflection value: 80±2

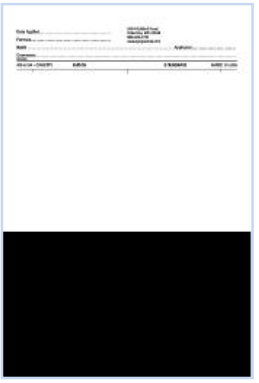
Applications:

HPC Series meet the requirements of most popular tests used to determine or compare hiding power and contrast ratios of pigmented coating materials such as paint, emulsions and inks. HPC are UV cured and their lacquer is solvent resistant. They are suitable for use with most organic, water based or solvent borne coatings.

Technical Specifications:

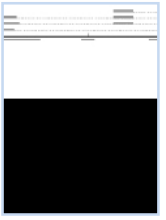
Model:	HPC-1	HPC-2	HPC-3	HPC-4
Dimension(mm):	250×140	250×140	250×100	150×100

HPC-1



HPC-2

HPC-3



PC-4

Application

APB, APC, APF, APL, APS, APW Series

Introduction:

For numerous products such as paint, ink, varnishes, glue and cosmetics, the reliability of many laboratory tests is directly related to the quality of the samples prepared from it.
It is absolutely essential that any measurements made on such coatings, whether for the purpose of describing their appearance or their physical properties (color, gloss, hiding power, drying time, etc.), are made on the basis of uniform and comparable samples with precisely controlled thickness.
Stainless steel and anodized aluminum are the preferred materials of construction, due to their resistance to corrosion.

Applications:

Film Applicators are used to deposit a known precise wet film thickness onto plate glass, paper charts, hiding power charts or any other smooth flat surface.
The wet film thickness deposited with this method is approx one half of the applicator gap size.

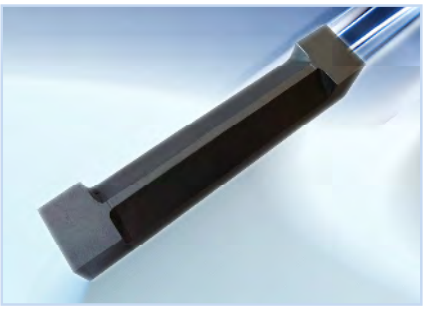
Conformance to International Standards:

ISO 2813, BS3900: D5, DIN 53-203, ASTM D3258, ASTM D3265, ASTM D823

Bird Type (APB Series)

Introduction:

The Bird Type One-Sided Applicator is made using modern technology of metallurgy with precision grinding machine. The accuracy of the Gap Depth is ±1.0μm (50μm and below) and or 2% of Full Scale. It is designed with ASTM D 823-25 and ASTM D 3022.



Technical Specifications:

Single Side

Model:	APB-S
Measuring range (μm):	25, 37.5, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500, 600
width (mm):	100
Dimension(mm):	125×25×12

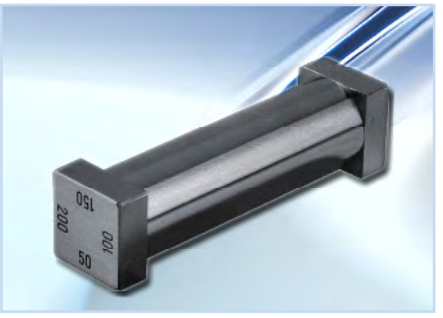
2-Sided

Model:	APB-1	APB-2	APB-3	APB-4	APB-5
Measuring range (μm):	25, 50	75, 100	125, 150	200, 250	400, 450
width (mm):	80				
Dimension:	100×23×23 mm				

Column Type (APC Series)

Introduction:

A flexible and easy to use applicator, combining 4 gaps size in one unit. The cylindrical shape provides excellent results particularly on firm substrates and smooth surface. By simply rotation through 90 angles, the next gap size is placed onto the test surface. It is designed with ASTM D 823-25.



Features:

- **Horizontal cylinder with square-type blocks**
- **Stainless steel, corrosion-resistant**
- **Hardened square-type blocks**
- **4 gap depths**

Application:

- **For the production of uniform films of paints, adhesives and similar products on plane substrates.**
- **Only for solid substrates e.g. test panels, test charts etc.**
- **Not for soft and uneven substrates**
- **Also suitable for use of aqueous, acid, and alkaline products**

A good rule of thumb for a beginning estimate of dry film thickness is as follows:

Dry film Thickness = wet film thickness x % solids

Technical Specifications:

Model:	Measuring range (μm)	width (mm)	Total length(mm)	Dimension (mm)
APC-1	5, 10, 15, 20	80	100	100×23×23
APC-2	25, 50, 75, 100	80	100	100×23×23
APC-3	30, 60, 90, 120	80	100	100×23×23
APC-4	50, 75, 100, 150	80	100	100×23×23
APC-5	50, 100, 150, 200	80	100	100×23×23
APC-6	100, 150, 200, 250	80	100	100×23×23
APC-7	100, 200, 300, 400	80	100	100×23×23
APC-8	250, 500, 750, 1000	80	100	100×23×23

Frame Type (APF Series)

Introduction:

The Frame-Type Four-Sided Applicators are designed for the production of uniform films of paint, adhesives and similar products on plane substrates.

They combine the accuracy of fixed applicators with the versatility of multiple gap choice in one unit. These applicators are suitable for use of aqueous, acid, and alkaline products.
It is made of high-grade, corrosion-resistant stainless steel 440C.

Features:

- Frame-shape
- Stainless steel, corrosion-resistant
- 4 gap depths

Application:

-For the production of uniform films of paints, adhesives and similar products on plane substrates
-Only for solid substrates e.g. test panels, test charts etc.
-Not for soft and uneven substrates
-Also suitable for use of aqueous, acid, and alkaline products

Technical Specifications:

Model:	Measuring range (μm)	width (mm)	Total length(mm)	Dimension (mm)
APF-1	25, 50, 75, 100	80	100	100×23×23
APF-2	30, 60, 90, 120	80	100	100×23×23
APF-3	50, 100, 150, 200	80	100	100×23×23
APF-4	125, 150, 200, 250	80	100	100×23×23

Adjustable Film Applicator (ADA Series)

Introduction:

The Max Technics Adjustable Film Applicator is an applicator designed to create a uniform film thickness on a flat substrate. Being adjustable, it may reduce the need for a variety of fixed clearance applicators. The clearance may be set from 0-3500 microns. The bottom edge of the drawdown blade produces a wet film thickness of approximately one-half the gap clearance.

Procedure:

1. Place the Max Technics Adjustable Film Applicator on a test surface which is perfectly flat. Adjust the blade on the knife to the desired gap; this should be twice the required amount of wet film thickness.
2. Put a small amount of the test sample in front of the applicator between the end plates. Move the instrument across the surface at a slow and uniform rate (about one inch per second) until the fluid has all been applied and/or any surplus has been drawn off the panel at the end of the film path.
3. The exact ratio of the wet film thickness to the gap clearance of any applicator depends on the material being used, the viscosity and texture of the fluid, the force applied to the applicator, the speed of the drawdown and the geometry of the edge which draws the fluid.
4. The actual wet film applied should be measured using an Inter-chemical Wet Film Thickness Gauge and the clearance readjusted until the wet film is exactly the desired thickness.

Maintenance and Care:

After each use, clean the instrument immediately with an appropriate solvent. The channels in which the ends of the blade move must be kept free of test sample material at all times. Occasionally, the applicator assemblies may require repositioning to compensate for wear or misalignment. To accomplish this adjustment, the assembly must be lowered or raised. This is facilitated by loosening (not removing) two recessed set screws for each micrometer.
To make the necessary adjustment:

- **Place the film casting knife on a flat surface;**
- **Adjust the micrometers to read zero "0";**
- **Slightly loosen the set screws;**
- **Manually lower, i.e., push down and hold, the blade to the surface;**
- **Push the micrometer assembly down in contact with the pivot point on top of the blade**
- **Tighten the set screws.**

Technical Specifications:

Model:	ADA-1	ADA-2
Measuring range (μm):	0-3500	0-3500
Weight (Kg):	0.4	0.4
Blade Width(mm):	55	100

Leveling Type (APL Series)

Introduction:

In most cases, leveling is a desired property of paints expressed in the fact that the cured film shows a surface as plain as possible with brush marks, spray drops or other unevenness occurring as little as possible. Sagging, however, is considered a paint defect, particularly occurring on vertical surfaces, in edges and corners. The most common terms, for example streaks or tear drops, perfectly describe its characteristic appearance. It is not always possible, or only with difficulties, to measure this type of flow behavior by means of viscometers

Procedure:

1. **Draw the paint to be tested over a plane substrate (test chart), producing 5 pairs of streaks of various film thicknesses**
2. **Hold the test panel in a horizontal position, and observe which of the pairs of streaks converge**
3. **Generally, the gap depth of that pair of streaks is indicated, where the intervals between the streaks are slightly visible**

Technical Specifications:

Model:	APL-1	APL-2
Measuring range (μm):	100-1000	250-4000
Weight (Kg):	0.3	0.3
Dimension(mm):	120×20×20	120×20×20

Sag Type (APS Series)

Introduction:

They are made of corrosion resistant stainless steel, the width of application is 75mm at 6mm per sagging thickness, and the gaps are being separated by a 1mm space as a marking on each sagging for distinctive identifications of each sagging. They are applicable to determine the relative sag resistance of a series of paints in order to provide the technical parameters for the paint application in site.

Procedure:

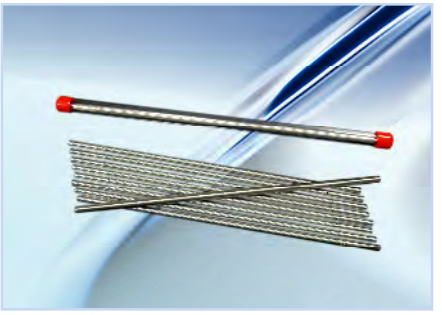
1. **Apply the coating, forming 10 streaks of various thicknesses**
2. **Immediately after application, place the test panel into a vertical position, with the thinnest film streak at the top, avoiding any shock**
3. **Depending on the sagging tendency the separate streaks converge**
4. **For a reproduction of the results, which is difficult anyway, it is important to work under constant climatic conditions, to apply film streaks uniformly, to set a time for evaluation wet film**

Technical Specifications:

Model:	APS-1	APS-2	APS-3	APS-4	APS-5
Measuring range (μm):	50-275	250-475	450-675	650-875	850-1075
Weight (Kg):	0.5	0.5	0.5	0.5	0.5
Dimension(mm):	120×20×20	120×20×20	120×20×20	120×20×20	120×20×20

Wire Bar Coater (APW Series)

Introduction:



The wire and its rod from the wire-rod applicators are made of stainless steel which is corrosion-resistance. A coating Paint or Ink is being drawdown by a known thickness wire-rod applicator over a substrate; e.g. Black/White Test Chart, Glass or Wood Panel, etc. onto our Drawdown Board. The motion of the drawdown is done by gripping the 2 edges of the applicator or by using the Holder. These applicators provide an economical way to assure the uniformity of thickness of very thin films.

Features:

- **Bar and wire manufactured of stainless steel**
- **Perfect for very thin films, e. g. foils and paper coating tests**
- **Ideal for flexible materials such as paper, cardboard, test charts, foils, leather, textiles, etc.**
- **Maximum attainable wet film thickness engraved on bar end**
- **Simultaneous drawdown of several samples side by side is possible**

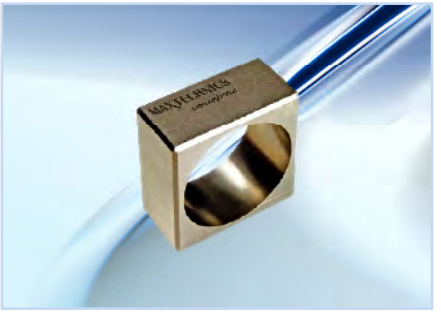
Technical Specifications:

Model:	APW-1	APW-2
Measuring range (µm):	7, 8, 10, 12, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 150, 200	7, 8, 10, 12, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 150, 200
Width (mm):	200	300
Total length (mm):	240	400

Cube Type (CAP Series)

Introduction:

This small applicator is available with 12.7 film width (overall width respectively 25mm). It has 2 gap sizes, machined into each application face. This applicator is recommended for use in conjunction with LDTR Drying time recorder.



Features:

- The total length: 25mm

Technical Specifications:

Model:	CAP-1	CAP-2
Measuring range (µm):	37, 75	75, 150

Drying Time

Linear Drying Time Recorder (LDTR)

Introduction:

The various stages of drying and curing that occur in films are easy to detect but difficult to define in terms of chemical and physical principles. In order to evaluate them satisfactory, it is necessary to use instrumentation under controlled conditions.
Max Technics offers a versatile drying time recorder to help quantify the various stages of film curing and drying, deliver reproducible results, and guarantee highest efficiency:
This reliable apparatus to test the drying time or gelation behavior of many paints and coatings, applied onto a glass strip of 300×25mm (12"×1") by means of our cube applicator. Hemispherical needles travel on these test tracks, over a selected time: 6, 12 or 24 h.
The drying time stages can be easily assessed with the graduation scale (according to traverse speed configuration):

- **Evaporation of solvent: deep pear-shaped impression**
- **Sol-gel transition: continuous track**
- **Surface dry: interrupted track**
- **Final dry time: the needle no longer penetrates the film**

Procedure:

1. **Coat the glass strip using special film applicator**
2. **Place Recorder Bridge in starting position and put the strip in place**
3. **Place needles on the sample strip and select the speed by adjusting the speed switch**
4. **Turn the recorder on, the unit will automatically switch off at the end of the test**
5. **Evaluate the results**

Technical Specifications:

Model:	LDTR

Optional Accessories:

Cube film applicator 37/75 micron gap sizes (CAP-1)
Special applicator frame (LDRT-1)
Brass weights (LDRT-2)
Glass strips (LDRT-3)

Adhesion

Cross Hatch Cutter (CHC)

Introduction:

The Cross Hatch Cutter will allow an assessment to be made of the adhesion resistance of coatings to separation from substrates when a right angled lattice pattern is cut into the coating and penetrates through to the substrate.
The coating thickness determines the Cutter size used.

Applications:

Cross Hatch Cutter is widely used to evaluate the adhesion of various coatings .A high precise machined wheel presenting 6 or 11 cutting blades with various spacing is mounted in a handle. The test is carried out by performing 2 series of crossed cuts at right angle. The obtained lattices is either brushed or cleared with adhesion tape. According to the coatings thickness and the related spacing, the results can be classified with reference to a standard scale. It has long life tool with 6 cutting edges and comfortable wood handle.
When applied to multi-coat system, assessment of the resistance to separation of individual layers of the coating from each other may be made.

Procedure:

1. **Make a lattice pattern in the film with the appropriate tool, cutting to the substrate**
2. **Brush in diagonal direction 5 times each, using a brush pen or tape over the cut and remove with the tape**
3. **Examine the grid area using an illuminated magnifier**

Conformance to International Standards:

BS EN ISO 2409: 1995, BS 3900 E6, ASTM D3359

Technical Specifications:

Model:	CHC-1	CHC-2	CHC-3	CHC-4	CHC-5
Bits (mm):	1mm 6 cutters	1mm 11cutters	2mm 6 cutters	2mm 11cutters	3mm 6 cutters
Hardness:	Hard	Hard	Hard & Soft	Hard & Soft	Hard & Soft
Hardness Film thickness:	0-60 µm	0-60 µm	61-120 µm	61-120 µm	121-250 µm

Optional Accessories:

Spare Blade 1mm 6 cutters (CHC/B/1)
Spare Blade 1mm 11 cutters (CHC/B/2)
Spare Blade 2mm 6 cutters (CHC/B/3)
Spare Blade 2mm 11 cutters (CHC/B/4)
Spare Blade 3mm 6 cutters (CHC/B/5)
Adhesive Tape 3M/375 (CHC/T/375)
Adhesive Tape 3M/600 (CHC/T/600)

Deformation

Tubular Impact Tester (IMP Series)

Introduction:

The impact resistance is the mechanical resistance of paint or coating layer against a sudden distortion caused by out- or indenting, depending on which side of the test panel faces upward, of the metal surface by a predetermined impacting object.

Applications:

Impact Testers produced by our company is in accordance with the specification in National Standards determination of paint film resistance to impact and the practical requirement of mechanical construction. The operation principle of the impact tester is by means of a weight that drops down from a specified height and impacts a painted panel under panel under test to result in its rapid deformation, and the film resistance to impact is then attained from observing the film whether cracked or peeled off.
Most protective coatings and constructional materials must be tested:
Paints, Varnishes, Coil coatings, Plastics, Plastic coatings, Resins & composites

IMP-1 & IMP-2

Technical Specifications:

Model:	IMP-1	IMP-2
Hammer weight (Kg):	1± 0.001	1± 0.001
Diameter of striking-head (mm):	8	8
Impacting height (cm):	0-50	0-100
Weight (Kg):	12.6	15
Dimension(mm):	200×200×800	200×200×1300

IMP-3 & IMP-4

Introduction:

For testing the resistance of a coating film and its substrate to the effects of rapid deformation;
The testing apparatus consists of a solid stand with a guide tube support and a clamping device for fixing the test panels. The guide tube has a slot to direct a cylindrical weight that slides inside the guide tube. A collar fits over the tube and slides up or down to enable the user to easily return the weight to the same dropping position. Graduations are marked along the slot to facilitate reading.
The base of the instrument includes a die support. The weights have steel balls built into their striking surfaces to provide different geometrical type configurations.
In order to limit the indentation depth of the falling weight, distance rings of different thickness can be fitted.

Procedure:

1. The impact test can be performed on the coated or on the uncoated side of the test panel. Thus, the indentation can be either an intrusion or an extrusion.
2. For testing place the panel on the die with the coated side either up or down depending upon the application. Fix the panel using the clamping device.
3. Raise the falling weight to the required drop height and release it.
4. After every test check the test panel for damage.

Testing should normally be started at a low load (small weight, small drop height). The impact energy is higher by increasing the drop height or by using an additional weight until damage can be seen.

The test should be carried out in at least 4 different places on the test panel not less than 4 cm from each other.

Evaluation:

Drop height multiplied by falling weight = impact energy in cm × kg (or inch × pound)

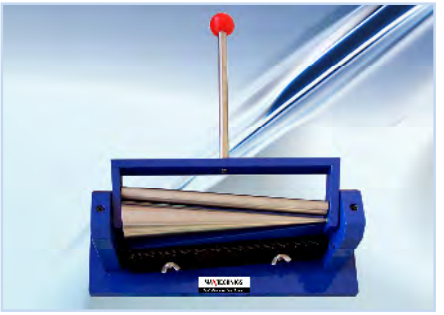
Conformance to International Standards:

ASTMD2794, ISO6272

Technical Specifications:

Model:	IMP-3 (ISO-6727, ASTM D2794)	IMP-4 (ASTM D2794, DIN-ISO-6727)
Hammer weight (lb):	2×1000gr 1×300gr	2×2lb 2× 1000gr
Diameter of striking-head (mm):	16.5 & 31.75	16.3 & 27
Impacting height (cm):	0-100 (0-40 in)	0-100 (0-40 in)
Weight (Kg):	18	
Dimension(mm):	300×200×1400	

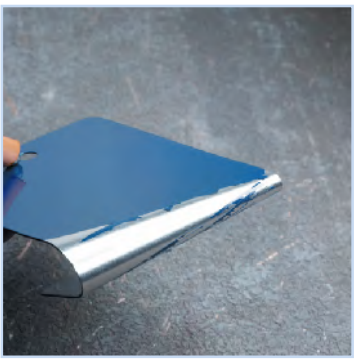
Bend Test
Conical Type (BTC-1)



Introduction:

A practical test to identify the elasticity and elongation of various coatings; Bend tester applies to determine extensibility of paint coatings on metal panels that are clamped in position and formed round the conical mandrel by rotating the roller frame under standard conditions.

Applications:



Conical Mandrel Bend Tester is applicable to determine extensibility of paint coatings on metal panels which are clamped in position and formed round the conical mandrel by rotating of the roller frame. The panels are examined to evaluate crack resistance and detachment from the metal substrate of coated surface which is coated with paint under standard condition.
BTC-1 allows easy identification in a single operation the coating failure at specified diameter, over part or entire mandrel length.

Conformance to International Standards:

ASTM D522, D1737, BS 3900:E11, ISO 6860

Technical Specifications:

Model:	BTC-1
Size of mandrel:	Ø3.2 ... Ø38 length × 203mm
Plate thickness (mm):	0.3-0.8(hard), 0.3-5(soft)
Plate size (cm):	19×17
Weight (Kg):	7
Dimension(mm):	300×120×90

Cylindrical Type (BTC-2)

Introduction:

Bend tester applies to determine extensibility of paint coatings on metal panels that are clamped in position and formed round the cylindrical mandrel by rotating the roller frame under standard conditions.
Bending coated sheet metal over a defined radius allows an indication of the elongation and adhesion of a paint film at bending stress.
The tests conditions for the mandrel bending test are defined in international standard DIN EN ISO 1519 describe the test method by means of a cylindrical mandrel.

Applications:

BTC-2 New Paint film bend tester complies with ISO 1519, ASTM D522 and DIN 53152; it is used to assess the coating layers of the pigmented paints, the varnishes and the relevant products. It is the special instrument testing the crack resistance or the stripping performances from the metal plates at bending around the cylindrical shaft. Procedures can be based on pass/fail or diameter to failure methods.

Procedure:

1. Fit the mandrel bending tester with the appropriate mandrel.
2. Lower the handle
3. Insert the test panel, coated side down, between the mandrel and the bending piece and fix it with the clamping jaws.
4. Fasten the clamping jaws using the thumb nuts.
5. Using the knurled screw, pull the test panel until it touches the mandrel.
6. Press the bending piece against the test panel and the mandrel by turning the handle.
7. Bend the test panel over the mandrel by lifting the handle through approx. 180°

Note:

The bending operation shall be carried out evenly and without jerking over a period of 1 - 2 seconds.
Starting with the largest bending radius, the test is continued until reaching the bending radius at which the film shows cracks or becomes detached.
The panel is evaluated with the unaided eye or, by agreement, with a lens of 8-10fold magnification.
Record the diameter of the first mandrel at which the film shows cracks or becomes detached.

Conformance to International Standards:

ASTM D522, BS 3900:E11, ISO 6860

Technical Specifications:

Model:	BTC-2
Dimension of mandrels (mm):	2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 25, 32
Plate thickness (mm):	0.3-0.8 (hard), 0.3-5 (soft)
Plate size (cm):	5×12
Weight (Kg):	6.8
Dimension(mm):	300×120×90

Digital Cupping Tester (DCT)

Applications:

DCT Cupping Tester is applicable to evaluate crack resistance and detachment from the metal substrate of coated surface which is coated with paint, varnish, etc., after the coating layer is deformed gradually under standard condition. The sample panel (max. 1.25mm thick×90 mm width, coated min.0.3mm) is clamped by an upper wheel and manually cupped by a Φ 20mm hemispherical indenter onto a Φ 27mm die by a drive wheel. The depth to cause failure is indicated on a precise digital display. The results can be easily observed with an illuminated magnifier.

Procedure:

- **Place the test panel into the opening of the cylinder with the coated side upwards**
- **Fix the panel in the clamping device using mild pressure**
- **Turn the hand wheel uniformly upwards observing the surface of the test panel through**
- **The magnifying glass**
- **Stop turning the wheel as soon as the first cracking is visible**
- **Read the cupping depth from the digital display**

Conformance to International Standards:

ISO 1520, BS3900 E4, DIN/ISO 1520

Technical Specifications:

Model:	DCT
Diameter of punch (mm):	20
Max. dent thickness (mm):	10
Dimension of test panel (mm):	70×70
Test panel thickness (mm):	0.30-1.25
Weight (Kg):	49
Dimension(mm):	200×300×460

Hardness

Pencil Hardness Testers (PHT Series)

Introduction:

This instrument offers an easy to use method for the determination of film hardness for a coating applied to a flat substrate, by means of drawing pencil leads of known hardness at a constant applied mass across the coated surface.

Specifications:

The Pencil Tester complies with the requirements of ISO 15184, ASTM D 3363, ECCA-T4 /1. In order to achieve consistent results it is recommended that the test be conducted in accordance with the stated test methods.

Procedure:

1. **The following instruction will provide the user with a working knowledge of how to conduct the test.**
2. **These notes should be read in conjunction with the stated test methods in order to obtain meaningful results that can be used for comparative purposes.**
3. **Select a pencil from the range, remove approximately 5 to 6 mm of wood from the point using the special Pencil Sharpener, being careful to leave an undisturbed, unmarked, smooth cylinder of pencil lead.**
4. **The tip of the pencil shall be squared by holding the pencil in a vertical position and moving the pencil back and forth over the abrasive paper, whilst maintaining an angle of 90°. Continue until a flat, smooth, circular cross-section is obtained, free from chips or nicks in the edges.**
5. **Repeat the procedures each time a pencil is used.**
6. **Place the coated panel to be tested on a level, firm horizontal surface.**
7. **Place the Pencil Tester Body on end, onto a firm horizontal surface (arrow pointing downwards).**
8. **Slowly slide (care should be taken not to chip the pencil edges) the prepared pencil into the hole adjacent to the arrow until it rests on the same firm horizontal surface as the pencil tester body. Turn the pencil clamping knob clockwise to lock the pencil in position.**
9. **Carefully lift the pencil tester off the surface, ensure pencil is set firm and is free from damage to edges.**

Important:

10. **Always ensure the position of the pencil is the same, thereby applying the consistent mass to the coating under test.**
11. **Place the pencil tip gently onto the scales and read the applied mass, value to be 750 (+10/-10) grams;**
12. **Carefully place the prepared pencil tester, wheels first onto the surface to be tested, gently bring the pencil tip into contact with the coated surface to be tested, ensure no chipping occurs.**
13. **Immediately after the tip of the pencil rests on the coated surface, place thumb and forefinger on the pencil tester, centre portion of each wheel, push the instrument in the direction of the arrow for a suggested distance of 7mm.**
14. **Inspect the coating after a specified period of time with the naked eye check for marking of the surface.**
15. **If no marking has occurred, repeat the test on a new portion of undisturbed coating, moving up the hardness grade scale until marking occurs over the test distance.**
16. **If marking has occurred repeat the test down the hardness scale until marking no longer occurs.**
17. **Carry out the test in duplicate, if the results differ by more than one pencil unit.**

Note:

The hardness of the hardest pencil that does not mark the coating is the so-called pencil hardness. Further definition of pencil hardness is stated in the test method standards.

Limitations:

This test method is applicable to smooth surfaces; it is not considered suitable for textured or rough surfaces.

Routine Maintenance:

- **Ensure the Pencil Tester body is free from damage, dents, paint chips etc. as this may effect the applied mass.**
- **The rubber rings on the wheels are clean and free to rotate.**
- **The instrument and pencils are stored in the case supplied when not in use. Always replace any pencils with the same reference type and manufacturer.**
- **Ensure the special pencil sharpener supplied is always used, check the blade for sharpness.**
- **Replace the abrasive paper 400 grit when required.**

Calibration:

- **The Pencil Tester may be checked for the correct applied mass by preparing the instrument as defined.**

Important:

The instrument is correctly set at the factory; no further adjustment can be made.

- **Set the wheels of the instrument on a firm horizontal surface in direct, precise alignment with the measuring pan of precision scales.**
- **Place the pencil tip gently onto the scales and read the applied mass, check the value to be within 750 (+10/-10) grams;**

Conformance to International Standards:

ASTM D3363 / ECCA T4, ISO 15184 / BS 3900 - E19

Technical Specifications:

Model:	PHT-1	PHT-2	PHT-3
Pressure of pencil lead:	500 ± 5gr	750 ± 5gr	1000 ± 5gr
Pencil code:	6B ... 9H	6B ... 9H	6B ... 9H
Dimension(mm):	90×75×60	120×75×60	130×75×60
Weight (Kg):	2	2.3	2.6

Optional Accessories:

Pencil 6B ... 9H (set of 12 pieces) – (PHT/P)

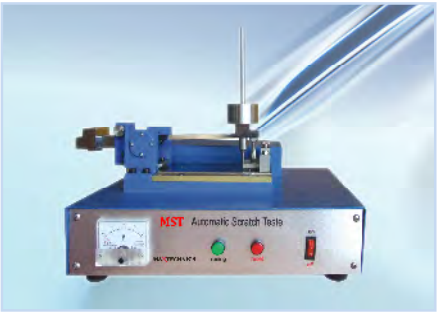
Motorized Scratch Tester (MST)

Introduction:

Coating performance is related to many factors that include the hardness of the coating with other physical properties such as adhesion, lubricity, resilience etc., as well as the influence of coating thickness and curing conditions; It is a quantifiable indication of the extent to which serious damage is resisted when a loaded needle is raked across a relatively smooth, flat surface.

Applications:

Scratch tester applies to determine the scratch resistance of single coating or multi coating of paints and varnishes.



Procedure:

Reference should be made to the relative test procedure, in general as follows:

1. **Check suitable needle / stylus are fitted.**
2. **Clamp test panel to slide.**
3. **Load needle arm with weights to determine threshold of failure. As specified forgo/no go tests or progressively increasing load until failure occurs;**
4. **Actuate slide - either automatically or manually, depending on model. If failure occurs, needle on Voltmeter will flick over or red light will illuminate only conductive metallic panels will be suitable for this test result.**
5. **Remove panel for visual assessment of scratch.**

Conformance to International Standards:

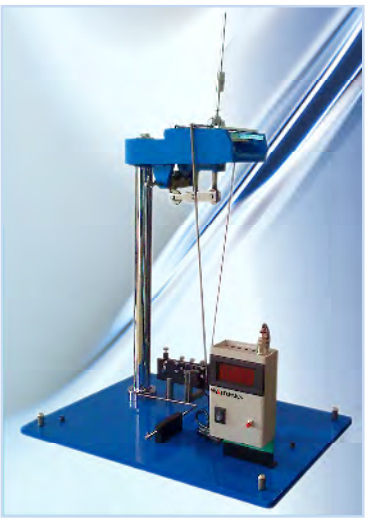
ISO12137-1, 1997, 1518 1992, BS 3900 Part E2, 6497

Technical Specifications:

Model:	MST
Power:	60 w , 220 v, 50 Hz
Poise (g):	50-2500
Diameter of indenter (mm):	1
Weight (Kg):	25
Dimension (mm):	380×300×180

Pendulum Hardness Tester (PHP & PHK)

Introduction:



The pendulum hardness tester is an instrument to determine the elastic hardness of coatings according to DIN EN ISO 1522 and ASTM D 4366.
It consists of a sample holder where a pendulum freely oscillates on the sample surface and a counting device. The number of oscillations in a defined angular range is a measure for the elastic hardness of a coating. It is expressed in seconds or number of oscillations.
The number of oscillations is detected by light barriers in the lower part of the instrument and is shown on the display as seconds or oscillations.

Procedure:

1. **Unpack the instrument and check for possible transport damage.**
2. **Before starting make sure delivery is complete.**
3. **The pendulum tester is delivered calibrated and ready for use. Only the protective cover needs to be mounted after delivery.**
4. **Pendulum hardness testers are as sensitive as precision balances, therefore a vibration free recommended.**
5. **After installing the instrument on a suitable location, remove the protective cover. Position on a special table suitable for balances is.**
6. **Plug in the power supply and switch on the instrument.**
7. **Balance the instrument properly by turning the screw feet according to the bubble level on top and lock it with the counter nuts (open-ended wrench size 10)**
8. **For testing according to Koenig, mount the wire release at 6° mark of the scale, for Persoz at 12 °.**
9. **Clean the balls of the pendulum and the adjustable glass plate with alcohol.**
10. **Place the glass plate on the lifting table.**
11. **Raise the lifting table to the stop.**
12. **Turn the handle by 180° to the stop position.**
13. **The handle sits horizontally and points forward.**
14. **If the bubble level is exactly horizontal, the glass plate is also in a straight position.**
15. **Lower the lifting table by turning the handle.**
16. **Place the pendulum exactly with the small holes on the pins of the lifting table, the marking arrow on the bar of the pendulum must point to the front. If it is placed the wrong way, the light barriers and the counter are inoperable.**
17. **Slowly raise the lifting table with the glass plate up to the pins. The handle is in horizontal position and points forward. The pendulum must lift up equally with both balls, if not the pins can be moved slightly in vertical direction.**
18. **In the lifted position the pendulum must swing freely.**
19. **Check the position of scale to the pendulum.**
20. **The completely stopped pendulum must point exactly to the zero marking of the scale. If not, check the tip of the pendulum. If twisted, straighten it and position the pendulum with the lifting table in the lowered position and then raise it. Repeat this procedure three times to assure an equal rest.**
21. **Pull out the handle.**
22. **Put the protective cover onto the instrument. The case fits exactly onto the edges of the base plate. Eventually fix the cover plates in the treads with a suitable adhesive.**
23. **Insert the handle through the opening in the cover into the jack underneath the lifting table. Check the bubble level once more, correct the leveling if necessary.**
24. **The pendulum tester is now ready for operation.**

Adjustment for König:

Duration of pendulum oscillation:

1. According to the Standard one pendulum oscillation is specified with 1.4 s ± 0.02 s. This value can be verified by the following procedure:
2. Mount the wire release at 6 °
3. Raise the lifting table to the stop and check the zero position.
4. Move the pendulum to 6 ° position and fix it with the wire release. Press start button.
5. Release pendulum
6. Repeat the procedure with the 3° osc mode. After 100 oscillations the elapsed time must be140 + 2s. If not, please call a service technician for adjusting.

Damping time:

The damping time is the change of oscillations from 6° to 3°.The damping time from 6° to 3° must be 250 ± 10s on the glass plate this can be verified with the following procedure:

1. Level the instrument with the positioning feet exactly horizontally control of the bubble level.
2. Move the pendulum to 6° position and hold it with the wire release.
3. Press Start button
4. Release the pendulum. The number of oscillation respectively the damping time must be within the values of the below mentioned table.
5. If the values are not in between this range, an adjustment by authorized service personal is necessary.

Adjustment according to Persoz:

Duration of oscillation:

According to the Standards the time of one oscillation is one second at 12°.

Damping time:

The damping time from 12° to 4° must be 430 ±10 seconds on the glass plate.
This value can be controlled with the procedure described in König adjusting part;

1. 8 testing procedure
2. Mount the wire release at 12°
3. Choose the appropriate method with the mode button.
4. Choose the required signal options
5. Place the sample on the lifting table.
6. Raise the table to the stop.
7. Move the pendulum to the 12 ° position and hold it with the wire release.
8. Start Measurement by pressing the start button.
9. Release the pendulum with the wire release.
10. The signal starts at the end of measurement and the result is shown on the display.
11. This method evaluates hardness by measuring the damping time of an oscillating pendulum. The pendulum rests with 2 stainless steel balls on the coating surface. A physical relationship exists between oscillation time, amplitude and the geometric dimensions of the pendulum. The visco-elastic behavior of the coating determines its hardness.
12. When the pendulum is set into motion, the balls roll on the surface and put pressure on the coating. Depending on the elasticity, the damping will be stronger or weaker. If there is no elastic force, the pendulum will damp stronger. High elasticity will cause weak damp stronger. High elasticity will cause weak damping.
13. The hardness will be described as the ratio of the necessary time for the pendulum swinging within the stated swing amplitude on the paint film and the necessary time for the pendulum swinging within the same swing amplitude on the glass board. It is designed and manufactured in according with ISO 1552 to Measure the hardness of the film of painting and coatings.

Features:

- **Automatic Counter range: 0-999**

Conformance to International Standards:

ISO 1552

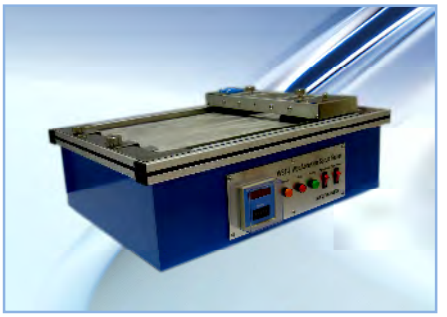
Technical Specifications:

Model:	PHK (König)	PHP (Persoz)
Weight (g):	200 ± 0.2	500 ± 0.1
Ball diameter:	5mm (0.2in)	8mm (0.3in)
Deflection start:	6°	12°
Deflection end:	3°	4°
Period of oscillation:	1.4s	1s
Damping time on glass:	250 ± 10s	430 ± 10s

Washability

Digital Wet Scrub Tester (WST)

Introduction:



A wide range of surfaces may be subjected to intensive accelerated wearing in order to assess long term potential changes in surface condition. The Wet Abrasion Scrub Tester will provide repeatable and reproducible results.

Applications:

Washability machine applies to determine the scrub resistance for architecture coatings. It has brand new structure and soap water recycling equipment. It is absolutely necessary for paint manufacturing factory and testing department.

Typical applications include abrasion resistance of: paints, varnishes, inks, plastics, floor coverings, carpets, and ceramics.

Conformance to International Standards:

ASTM D 2486

Technical Specifications:

Model:	WST
Weight of brush (including holder) (g):	450 ± 2
Brush size (mm):	38×90
Distance of brush travel back and forth (mm):	300
Travel frequency:	37 ± 1 counts cycles) / min
Display:	4 digital-number
Weight (Kg):	44
Dimension(mm):	580×480×300

Optional Accessories:

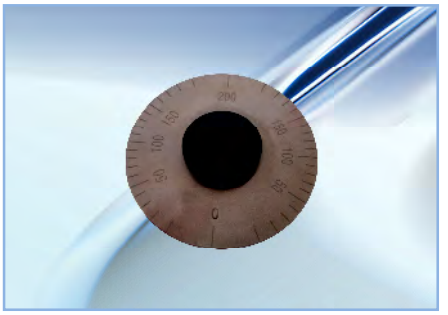
Plastic test panels (set of 100 pieces) – (WST/P)

Thickness

Wet Film Thickness Gauges (WWG Series)

Introduction:

The thickness of any paint film is a critical factor affecting the eventual performance of the finished scheme and must be carefully controlled. Too little paint will result in premature breakdown of the film whilst too much paint would be expensive. The wheel type gauge illustrated is an effective way of determining the film thickness in the wet stage immediately after application.



Applications:

The body of the rolling Wheel Wet Film Thickness Gauges is made of high-grade stainless steel, while the centre holder is made lightweight Aluminum. The readings are casted on 1 side.
Our Gauge is made to international Standards with allowable to tolerance and accuracy of 2.5µm or 2.5% full scale, whichever is greater.
The Gauge consists of an eccentric inner wheel, supported by the 2 larger outer concentric wheels. At a specific point, the inner wheel touches and picks up wet film when the gauge is rolled on the coated surface. Optional Wood Handle is also available and to be purchase separately.
The Wet film gauge applies to determine the wet film thickness of color paint and varnish on application. The gauge can be used on both smooth and curved surface baseboard with excellent precision.

Procedure:

1. **Insure that the gage has been thoroughly cleaned and dried to remove dried film, dirt, lint or chemicals which may inhibit wetting of the gauge surface, such as silicones, grease, oil or water. Inspect the gauge to be sure it is free of nicks and scratched on the edges of the wheels. With models having the rotating scale, the scale should be rotated so it is well clear of the substrate.**
2. **This is especially important when the substrate is moving.**
3. **Select an area of the sample that is as uniform as possible. It should be smooth and free of grooves, pits, ridges or other surface features. The sample may be flat or slightly curved.**
4. **Place the gauge on the surface with the maximum clearance between eccentric and the outer wheels down. The gauge must be placed squarely on the surface so both outside wheels are in contact with the substrate. If the substrate has curvature, the gauge should be placed such that no variance in plane exists between the outside wheels of the gauge.**
5. **Roll the gauge smoothly over the sample for one half revolutions in one direction. Lift the gage from the surface and repeat in the opposite direction.**
6. **Determine the ,thickness by observing the points at which the coating ceased to be picked up by the center (eccentric) wheel. These points should be visually lined up with the readings on the scale on the outside wheel of the gauge. The mean of these two points is considered one reading.**
7. **When the material picked up by the center wheel is speckled or otherwise poorly defined, select and arbitrary point of 1/3 the distance from "solid pickup" to "no pick up"; If the coating contains solvents which evaporate quickly or where the solids content is low, at least one additional reading should be taken on a freshly coated sample and the mean of the two readings calculated On units equipped with a rotating scale, the pointer is placed at the point at which the coating ceased to be picked up by the center wheel. The reading is determined by locating the number on the black scale indicated by the center line of the triple engraved mark found on the outside body of the gage. The rotating scale increases accuracy and precision of reading by minimizing the effects of parallax.**

Maintenance and Care:

- The Inter-chemical Wet Film Thickness Gage is a high precision instrument made to very close tolerance. Any amount of wear or damage may introduce errors in measurement.
- Keep the gauges clean, normally using a soft, lint free cloth moistened with an appropriate solvent;
- Clean immediately after use. Remove hardened material only after soaking in solvent until it can be removed by rubbing with a soft cloth.

Conformance to International Standards:

BS 3900 Part C5, ISO 2808 – Method 7A, ASTM D1212 Method A

Technical Specifications:

Model:	WWG-1	WWG-2	WWG-3
Measuring range (µm):	0 ... 100	0 ... 200	0 ... 1000
Weight (g):	250		
Dimension(mm):	Ø50 ×27		

Wet Film Comb Gauges (WFC Series)

Applications:

The Wet Film Thickness Gauges are made of a comb-shaped design with precision cut gaps to determine the coating thickness by placing vertically onto a wet coated substrate. It is a corrosion-resistant stainless steel with a hole at the top comer so that a string (not supply) can be attached for hooking

All Wet Film Thickness Gauges come standard with 10 gaps with inscriptions of the thickness at the side of each gap. It is recommended to replace a new gauge if there are chips, crack or uneven at the gap(s) of the gauge.

Conformance to International Standards:

ASTM D4414 - Procedure 'A', BS3900 - Part C5, ISO 2808 - Method 7B

Technical Specifications:

Model:	WFC-1	WFC-2	WFC-3	WFC-4
Measuring range (µm):	0 ... 100	20 ... 200	250 ... 700	50 ... 950
Weight (g):	50			
Dimension(mm):	65 ×36×1.5			

Dry film thickness gauge (DFT Series)

Applications:

Our new coating thickness gauges offer precision thickness measurement of non magnetic coatings such as paints, zinc etc. on steel and insulating materials on non-ferrous substrates. The gauge is available with either integral or external F, N or dual FN probes. The FN probe features automatic substrate recognition to simplify operation.

Conformance to International Standards:

ISO2178, ISO2361

Technical Specifications:

Model:	DFT-IFN	DFT-IN	DFT-IF	DFT-SFN	DFT-SN	DFT-SF
Type:	In built probes			With separate probes		
Operating principle:	F & NF	N	F	F & NF	N	F
Measuring range:	0-1250μm/0-50mil					
Resolution:	0.1/1					
Accuracy:	±1-3%					
Min measuring area:	6mm					
Min sample thickness:	0.3mm					
Metric/imperial:	Convertible					
Power supply:	4×1.5V AA Battery					
Operating conditions:	0-40°C; 10-90%RH					
Dimension(mm):	126×65×27					
Weight (g):	81					

Complete Kit Includes:

DFT gauge:	1 Unit
Calibration set:	1 Unit
Carrying case:	1 Piece
User's manual:	1 Piece
Traceable certificate:	1 Piece

Paint Inspection Gauge (PIG)

Introduction:

Direct measurement of the total coating thickness or individual coatings e.g. a primer and top coat on virtually any substrate are possible; aluminum, steel, plastic, wood, concrete or glass. Substrate condition, coating adhesion, microscopic cracking, brittleness, blistering and intercoat adhesion can also be measured using the built-in 50X illuminating microscope.

Applications:

To measure film thickness, in the range of 2-2000 µm on different substrate (e.g. steel, non-ferrous metal, plastics, wood etc.);

Features:

The body of the P.I.G. is cast from aluminum and contains a microscope, a lamp and the groove cutting bit. Two legs extend from the unit on the same side as the cutting bit and are used as stabilizers when making the incision. The instrument is supplied complete with three cutting tips, a fiber tip pen, extra batteries and bulb.

Conformance to International Standards:

ASTM D 4138 -Method A; DIN 50986; BS3900 part C5/ISO 2808 Method 5

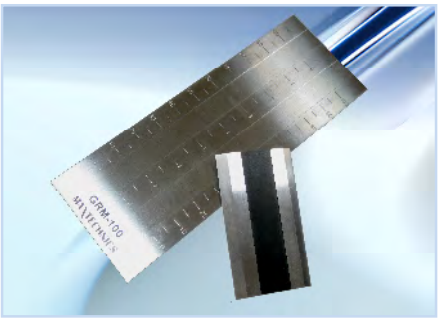
Complete Kit Includes:

PIG Unit:	**1 Unit**
Cutting tips:	**3 Pieces**
Marker:	**1 Pieces**

Fineness of Grind

Fineness of Grind Gauge GRM Series (GRM-Series)

Introduction:



Many types of solid materials must be ground or milled into finer particles for dispersion in appropriate liquid vehicles. The physical properties of the resulting dispersions, often called "grinds", depend not only on the actual size of the individual particles, but also on the degree to which they are dispersed.
The Fineness Gauges is used to indicate the fineness of grind or the presence of coarse particles or agglomerates in dispersion. It does not determine particle size or particle size distribution.
Grind gauges are used in controlling the production, storage, and application of dispersion products produced by milling in the paint, plastic, pigment, printing ink, paper, ceramic, pharmaceutical, food and many other industries.
The Fineness Gauges is flat steel block in the surface of which are one or two flat-bottomed grooves varying uniformly in depth from a maximum at one end of the block to zero near the other end. Groove depth is graduated on the block according to one or more scales used for measuring particle size.
The degree of dispersion is indicated in Microns or "Hegman".
The Hegman scale ranges from 0 to 8 with numbers increasing as the particle size decreases.
0 Hegman =100 microns particle size
4 Hegman =50 microns particle size
8 Hegman =0 microns particle size
The gauge and its scraper are made of hardened stainless steel and have one or two grooves with a graded slope (dependent on the model chosen), graduated in microns, mils, NS (Hegman), the gauges have a tolerance of ±2µm.

Applications:

The Fineness of Grind Gauge is used for the determination of the wet film thickness at which the size of the pigment just exceeds the film thickness.
GRM series are used for the checking of particle size in paint or inks and also a wide range of ancillary products i.e. Dyes, Talcum, Flour, and Chemicals etc.

Conformance to International Standards:

ISO 1524, BS3900: C6, DIN 53-203, ASTM D1210, ASTM D1316, ASTM D333

Technical Specifications:

Model:	Ranges	Overall dimension	Graduation	Number of Grooves
GRM/25/SG	0-25µm	175×50×12mm	2.5µm	1
GRM/50/SG	0-50µm	175×50×12mm	5µm	1
GRM/100/SG	0-100µm	175×50×12mm	10µm	1
GRM/150/SG	0-150µm	175×65×13mm	10µm	1
GRM/25/DG	0-25µm	175×65×12mm	2.5µm	2
GRM/50/DG	0-50µm	175×65×12mm	5µm	2
GRM/100/DG	0-100µm	175×65×12mm	10µm	2

Density

Stainless Steel Pyknometer Cup (DCP Series)

Introduction:

The Density of a coating should remain constant from batch to batch. Specific Gravity Cups are used to determine the specific weight per unit volume of a liquid at a given temperature.
A stainless steel or anodized aluminum precision instrument for determining the specific weight of paints and similar products; a tolerance of 0.1% is guaranteed. Testing is carried out in accordance with ISO at 23±2℃.
This instrument consists of a cylindrical container and cover with a hole for exhaust of excess liquid for any excess Paint, Ink to be removed when the cup cover is pressing tightly. By doing so, will also ensure that no air bubbles or pockets of air are being trapped.

Applications:

The cups are designed for use in the Determination of Density of liquids in respect of National Standards B.S. 3900 part A19 -1998, ISO 2811 -1:1997, DIN 53217 and ASTM 1475.

Procedure:

1. **Weight cleaned density cup empty and record weight**
2. **Temper density cup and test liquid (20℃±0.5℃; 68°F±1.0°F)**
3. **Fill density cup**
4. **Put cover on without tilting**
5. **Avoid air bubbles**
6. **Remove overflowing liquid carefully with absorbent cloth**
7. **Weight filled density cup**
8. **Calculate density**

Determination of Density:

$$\text{Density} = \frac{\text{Weight of filled density cup (g) - weight of empty cup (g)}}{\text{Volume of density cup (ml)}}$$

Conformance to International Standards:

B.S. 3900 part A19 -1998, ISO 2811 -1:1997, DIN 53217 and ASTM 1475.

Technical Specifications:

Model:	DCP50	DCP100
Cup volume (ml):	50	100

Aluminum Pyknometer Cup (APC Series)

Technical Specifications:

Model:	APC50	APC100
Cup volume (ml):	50	100

Weighing

Digital Balances (DBS & DBC Series)

Introduction:

Max Technics offers a range of laboratory scales for accurate measurements during the development of a coating. The new range of balances provides the user with a choice of standard, analytical or precision balance, with or without enclosed cabinet.

Features:

- **Calibration function**
- **Higher resolution**
- **Whole range of gross to net conversion**
- **LED indicator**
- **Unit conversion (g, CT, OZ, 1b)**
- **Power: AC 220V±10% 50HZ±1HZ DC 9V**

Technical Specifications:

Model:	Max load capacity	Resolution	The size of the weighing platform
DBS-1	100g	0.001g	Ø80mm
DBS-2	200g	0.001g	Ø 80mm
DBS-3	110g	0.01g	Ø 125mm
DBS-4	210g	0.01g	Ø 125mm
DBS-5	310g	0.01g	Ø 125mm
DBS-6	510g	0.01g	Ø 125mm
DBS-7	610g	0.01g	Ø 125mm
DBS-8	1100g	0.01g	Ø 125mm
DBS-9	2100g	0.01g	Ø 125mm
DBC-1	2100g	0.1g	155×175mm
DBC-2	3100g	0.1g	155×175mm
DBC-3	5100g	0.1g	155×175mm
DBC-4	6100g	0.1g	155×175mm

Viscosity

Flow Cups

Introduction:

For many applications, it is not necessary to know the absolute viscosity of a paint or varnish. A parameter permitting a relative classification and estimation is considered sufficient. The efflux time, measured in seconds, is such a reliable parameter. It is determined using flow cups of various designs. These cups hold a defined volume of liquid which flows through an orifice. The reproducibility of such measurements depends on:
-A constant temperature during measurement
-The accuracy of the size of the cup
-The Newtonian flow of the liquid.
Max Technics guarantees the accuracy of the size of its flow cups by using NC machines for the manufacturing process, surface refinement, quality control of raw materials through the manufacturing process until shipment, and by examining every single piece using test oil in a climatic chamber. Sufficiently long tempering of the cup and test sample produces a constant test temperature. For measurement at temperatures differing from room temperature, the cup is put into a temperature control jacket, which contains a liquid that is heated up or cooled down by means of a thermostat. The liquid under test flows over a thermometer, thus allowing the actual test temperature to be determined.
For efflux time measurement it is important to note that a cup can only produce satisfying and reproducible results when used within its defined viscosity range.
Flow cups cannot measure high viscosity liquids, pastes etc.

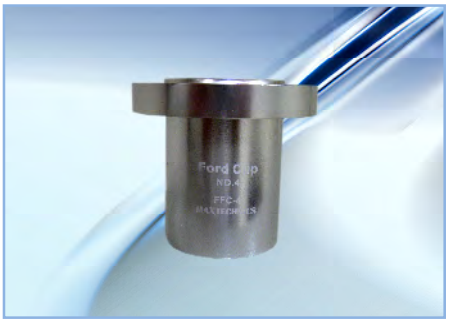
Ford Flow Cups (FFC Series)

Introduction:

Ford Viscosity Cups have been produced by Gardner Laboratory for over forty years.
Each cup produced has been in conformance with Viscosity Cup flow characteristics as initially listed in ASTM Bulletin No. 169 of October 1950. The Ford Cups produced by Max Technics, Inc. comply with the requirements listed in ASTM D 1200.

Applications:

Ford Cups produced by our company is in accordance with International Standard ASTM D1200, D333, and D365 for easy measurement of the viscosity of paints, inks, lacquers and other liquids. These cups are guaranteed to be within 2% throughout the recommended being use range.



Procedure:

1. **Select Cup #2, #3, or #4 to provide a test efflux time within the range covered by the attached table at a controlled temperature of 77ºF (25ºC).**
2. **Place the selected Ford Cup in the ring of the stand which has been leveled.**
3. **Mix, filter (if necessary) and temperature condition the sample to be measured, avoiding entrapment of air bubbles.**
4. **Close the orifice of the cup with a finger and fill to overflowing with the conditioned sample.**
5. **Remove excess sample by sliding the cover glass flush with the top of the cup. Most materials will not flow from the orifice while the cover glass is in place so that the finger may be removed from the orifice.**

6. Place a receptacle directly under the orifice to catch the sample as it flows from the cup.
7. Slide the cover glass from the top of the cup and simultaneously start timing the efflux.
8. Confirm the desired temperature of the sample directly in the efflux stream.
9. Measure the time to the nearest 0.2-second from the moment efflux commences until the first break in the stream occurs below the orifice. This time in seconds may be converted to centistokes by use of the attached table.
10. Record the efflux time and the type of Ford Cup used (for example 60 seconds with the No. 4 Ford Cup) as well as the measured efflux temperature.

Recalibration:

The Ford Cups are milled from solid aluminum bar stock and are fitted with a brass orifice. Each cup is tested with a viscous fluid referenced to National Bureau of Standards certified oils. The orifice is honed to insure that the assembly complies to the applicable "time viscosity" flow formula. If the orifice of the cup becomes damaged or worn and the original calibration is questioned, the cup should be returned to Max Technics, Inc., to be checked, fitted with a new orifice (if necessary) and recalibrated.

Care and Maintenance:

Clean the cup by use of a suitable solvent and a cleaning swab or soft brush following each use. In cleaning the orifice, take special care to avoid leaving any film deposits on the inside wall. Under no condition should cleaning tools made of metal be brought into contact with the orifice.

Conformance to International Standards:

ASTM D1200, ASTM D333, and ASTMD365

Technical Specifications:

Model:	FFC-2 (Ford 2)	FFC-3 (Ford 3)	FFC-4 (Ford 4)
Volume of cup (ml):	100	100	100
Dia. of flow orifice (mm):	2.8	3.4	4.12
Range of measurement (cSt):	4-100	25-105	20-105
Efflux time (sec):	25-120	49-220	70-370

Zahn Flow Cups (ZFC Series)

Introduction:

The Gardner Dip Viscosity Cup (Zahn Type) is designed to meet the parameters of ASTM 04212.
It is constructed of a solvent and corrosion resistant stainless steel and consists of a bullet shaped cup which can hold up to about 48 ml.
The viscosity range of the cup is determined by a precision-drilled orifice in the bottom of the cup. A 12 inch loop handle allows the cup to be dipped into a liquid container. At the top center of the loop handle is a nameplate.

Procedure:

For general purpose use the following procedure:

1. Choose the proper cup for the expected viscosity of the liquid to be evaluated. The time for the cup to empty should be between 20 and80 seconds.

2. **Immerse the cup and a thermometer in the sample container and stir the sample well to ensure uniform temperature and density. Allow the cup to remain in the fluid for at least5 minutes to allow the cup temperature to stabilize. Record the temperature.**
3. **Lift the cup out of the container allowing the cup to hang vertically from your finger by means of the ring**
4. **As the top of the cup breaks the surface of the sample, start the timer. Hold the draining cup not more than six inches above the liquid level in the container.**
5. **Stop the timer at the first definite break in the stream at the base of the cup. The efflux time, or time for the cup to empty, constitutes its viscosity.**
6. **Report cup number, temperature and time in seconds**
7. **Following each determination, clean the cup with a suitable solvent and a soft cloth or soft brush. Use no metal tools to clean the cup as even minor nicks or wear of the precision drilled orifice can result in substantial variations in readings.**
8. **Fluids can vary dramatically with temperature. It is not unusual even with standard oils to experience changes of 18% per degree centigrade. If it is not practical to control temperature to tight tolerances, the temperature of the fluid must be noted and reported. It is suggested that for each type of material you test a temperature correction chard developed by plotting Zahn seconds at various temperatures. This diminishes the need to attempt to control temperature yet provides a reasonable method of comparison. Zahn Cups can be used to quickly measure the viscosity of liquids such as Paint, Ink, Varnishes, Syrup and Oil; It is produced according with ASTM D 816, ASTM D 1084, ASM D 4212.The Stainless Steel Cups are molded precisely and the orifices are precision drilled using high-speed CNC drilling. Each cup has a 12-inch loop handle to allow the cup to be dipped by hand into a liquid container. At the center of this handle is a finger-ring for holding the cup in a vertical position during use. Its orifice diameters adjusted at the factory for appropriate results with applicable NIST traceable Newtonian oils.**

Conformance to International Standards:

ASTM D4212-93, ASTM D 816, ASTM D 1084, ASM D 4212

Technical Specifications:

Model:	ZFC1	ZFC-2	ZFC-3	ZFC-4	ZFC-5
Volume of cup (ml):	44	44	44	44	44
Dia. of flow orifice (mm):	1.93	2.69	3.86	4.39	5.41
Range of measurement (cSt):	5-60	20-250	100-800	200-1200	400-18000
Efflux time (sec):	35-80	20-80	20-80	20-80	20-80

Stop Watch (SW)

Applications:

Precision instruments required for efflux time determination and many other application.

Features:

- **Time/calendar display: hour, minute, second, month, day, date**
- **Stopwatch: 1/100 second for 30 minutes, 1second up to 24 hours**
- **12/24 hour display mode**
- **Water resistance, supplied with neck cord**

Digital Rotary Viscometer (DRV series)

Introduction:

Depending on the method, from traditional scale readings to scientifically defined geometries, rotational viscometers apply a controlled stress to the material under test using defined operating conditions. The resultant data can be then be plotted as a function of the selected criteria.
Max Technics provide extended information, as the product under test is submitted to variable stress conditions, depending on the spindle design.
Units are expressed in P (Poise), or cP (mPa.s), or converted into other scales; i.e. Krebs units or torque.
Single-speed instruments equipped with rotor, ball, or vane spindle such as the Krebs Viscometers, Rotothinner, or Gel Strength Tester are commonly used worldwide by numerous industries, to instantly evaluate the flow behavior according to conventional scale.
Multi-speed viscometers equipped with different spindle sizes offer flexible investigations and cover a wider range of applications. They operate with variable dynamic stress and shear rates and can also be configured for absolute measurements, when available, depending on the specific spindle geometry.

Applications:

New DRV series allows accurate viscosity measurements to be made quickly and efficiently. The combination of the different-selected speeds (adjustable variable speed) and the spindle set provides flexibility in operation, complying with numerous requirements of product analysis and industrial quality control.

Conformance to International Standards:

ASTM D789, ASTM D1824, ASTM D2196, ASTM D2393, ASTM D2669, ASTM D2983, ASTM D4878, ISO 1652, ISO 2555

Technical Specifications:

Model:	DRV-1	DRV-2	DRV-3
Measuring Range (cP):	10-600,000	10-6,000,000	10-80,000,000
Rotate speed: (adjustable variable speed)	0.1-99.9		
Accuracy:	±2.0% of full scale (Newtonian fluids)		
Repeatability:	±0.5%		
Electrical power:	220V/50Hz		
Weight (Kg):	10		
Dimensions (mm):	308mm×300mm×450mm		

Krebs Viscometer (KSV)

Introduction:

The Digital Krebs Viscometer is used for measuring the viscosity of Newtonian and non-Newtonian fluids. The viscosity of a non-Newtonian material varies depending on the rate of shear, but the Krebs viscometer measures the viscosity at a set speed shear rate which provides a consistent standard.

Procedure:

1. **Samples are tested in standard paint industry cans (1 pint, 1/2 pint, or 1 quart) held by a centering and retaining fixture. The container is filled to within 3/4" (20mm) of the top and located on the viscometer base**
2. **The operating lever has three positions:**

- **Up - Spindle stationary, drive motor off**
- **Down - Spindle rotating, sample being measured**

Note:

The cP reading from the KU-2 will not necessarily agree with cP values measured with other instrumentation due to:

- **Unique shear rate of the KU-2 paddle spindle**
- **Uniqueness of the Krebs unit scale (The centi poise value should not be used for purposes of calibration)**

Conformance to International Standards:

ASTM D562, ASTM D856, ASTM D1131

Technical Specifications:

Model:	KSV
Paddle size(mm):	54×7.9×0.8
Size of cup (mm):	Ø85×85
Poise (g):	32 ... 1099
Range of KU value:	40.2 ... 141
Range of cP:	27 ... 5250
Paddle speed (200rpm):	0.5
Weight (Kg):	7
Dimension(mm):	180×210×470

Temperature Profile

Temperature Tracker (SMT Series)

Introduction:

Max Technics thermographs – incorporating analysis software, and designed specifically for use in the general coating and finishing industry – is a complete system for monitoring the temperature profiles of products within your oven; accurate data acquisition and powerful analysis techniques are combined with flexibility and ease of use. The SMT system's power and flexibility make it a perfect tool for process temperature monitoring, from commissioning and troubleshooting to process optimization, ensuring consistent quality of product and maximum efficiency.

Current temperature characteristics can quickly be compared with previously stored reference curves to detect operating abnormalities – and innovative analysis techniques help in identifying problems, fine tuning the process and reducing running costs. A powerful and flexible printing option allows the user to generate and customize reports, including any or all of the analysis results or raw temperature data.

SMT-4 (4-Channel)

Basic Specifications:

- Number of Channels: 4
- Thermocouple Type: K
- Accuracy: 0.5%
- Sampling Rate: 1s to 60s (programmable)
- Readings: 16000 for each Channel
- Thermal Barrier Dimension: 125×110×300mm
- Duration: 45min@300°C or 60min@250°C
- Communication with Computer: USB communication Protocol
- Start/stop Method: Press REC button to start/stop recorder data

Analysis Software:

- Peak Temperature shows the maximum temperatures at the precise time they were reached.
- Time at Temperature shows the time spent above predetermined temperature thresholds.
- View Data shows the raw temperature and time data for each thermocouple throughout the run.
- Rates of Heating and Cooling: This analysis mode calculates the rates of heating and cooling for each probe over user-defined temperature ranges, and the time the temperature is within each range.

Standard Disposition:

- SMT-4 Temperature Profile
- 4set of K type Thermocouple
- USB Communication Cable

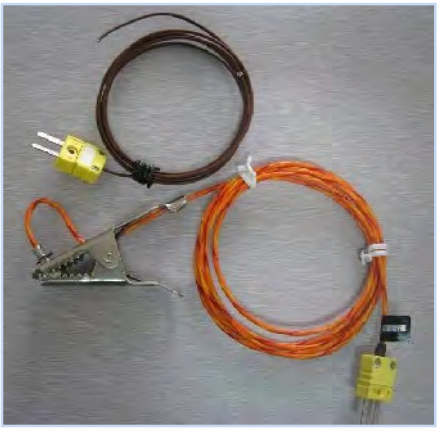
- Setting Software and Analysis Software
- Thermal Barrier
- Operating Manual

SMT-7 (7-Channel)

Basic Specifications:

- Number of Channels: 7
- Thermocouple Type: K
- Temperature Range: 0 ... 500°C
- Resolution: 0.5°C
- Accuracy: 0.5%
- Sampling Rate: 1s to 60s (programmable)
- Readings: 16000 for each Channel
- Thermal Barrier Dimension: 280×120×100mm
- Duration: 60min@300°C or 120min@200°C or 600min@100°C
- Memory: 128 K
- Communication with Computer: USB communication Protocol
- Start/stop Method: Press REC button to start/stop recorder data

Thermocouple Probes:



Thermocouple probes utilize the See beck effect which, discovered in the 19th century, results in a voltage proportional to temperature being produced at the junction of any two dissimilar metals.
The actual voltage measured is proportional to the temperature difference between the thermocouples "Hot" and "Cold" junctions, the "Hot" junction being the measurement junction, and the "Cold" junction being the junction of thermocouple and measurement instrumentation.
The practical implementation of thermocouples requires sophisticated electronics to eliminate potential measurement errors. These potential errors include poor linearity over the measurement range, and inaccuracy due to temperature variations at the Cold reference junction.
To accommodate these electronics in the measuring system must simulate a temperature of zero degrees at this second junction, as well as compensating for any non-linearity over the range of the thermocouple operation.

Thermocouple Specifications:

Over the years, 'standard' thermocouples have been developed using materials chosen for sensitivity (voltage change per temperature change), linearity, (consistency of sensitivity over the useful temperature range), price and availability. Current standards include types K, N, R, S and T, each type being identified by the color of the connector. The 'standard' thermocouple probe for oven operation is the type K.

Thermocouple Probes for Oven Operation:

Type K thermocouple probes having a hot junction combining Nickel Chromium Alloy and Nickel Aluminum Alloy are the standard probes for oven operation. They are available with a variety of mounting configurations including magnetic, clip on, adhesive and washer.

International specifications for type K define a sensitivity and linearity over the range 0 °C to +1250 °C (32 °F to 2282 °F). Their practical operating range is limited by the properties of the cable insulation and sheathing.

Position of Thermocouple Probes:

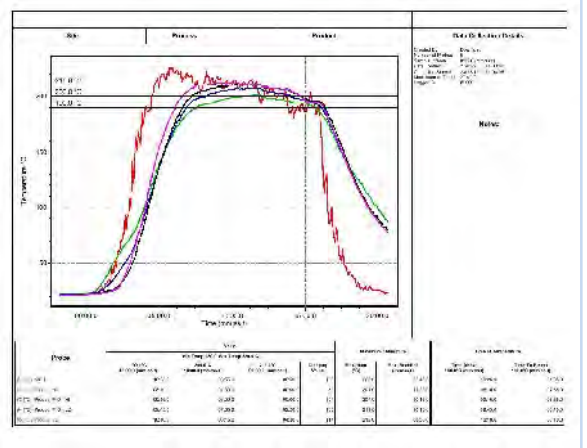
Type and position of the probes influence the product temperature. The product or object to be measured determines the type and size (material mass) of the probes used.
Depending on the thickness and magnetic properties of the object, either magnetic probes, clamps or adhesive probes are used. The thermocouple probes are always plugged into the data logger from jack 1 to x.

Trend Reader V1.22:

- Select or unselect each channel with Yes or NO
- Verify the accuracy separately for each channel
- Easy to choose sample rate
- Switch ON/OFF

Analysis Software (Trend Reporter V1.0):

- Display temperature data
- Calculate heating rate between two temperature level
- Calculate total time above two different temperature
- Calculate Peak Temperature
- Compare different temperature profile
- Print Report



Care and Maintenance:

- Cooling Down the Protective Parts
- Place hot thermal barriers on heat-resistant spacers, a ceramic fiber blanket or refractory material to ensure uniform cooling. Placing a hot thermal barrier directly onto a cold surface may cause the housing to deform due to the different cooling rates of the surfaces.
- Do not remove the cover before the thermal barrier is in place.
- Since the heat absorbed by the thermal barrier continues to affect the temperature of the heat sink and data logger, remove these parts from the thermal barrier as soon as the test is completed. Allow them to cool down before further use. In most cases cooling overnight is sufficient.

Examination:

Always take the heat sinks out of the thermal barrier. Shake the heat sinks to find out whether the cooling agent has changed from solid to liquid state. If the cooling agent is still in a solid state, the heat sinks need to cool down for 8 hours at a temperature lower than+10 °C. If the cooling agent has remained solid, it is sufficient to cool down the heat sinks for 8 hours at a temperature lower than +20 °C.
Make sure that mechanically damaged heat sinks don't leak.
Contact Max Technics if the heat sink phase change material leaks. It is a non-toxic wax like substance that dries hard powdery white and has a slight acidic smell. Wait until it is dry before scraping of any material that has leaked onto the surface of the barrier.
Examine the cooled thermal barrier and heat sinks for damage before storing in a dry environment to avoid the ceramic insulation absorbing water.
Check the thermal barrier's seals and closing mechanism, rectify any damage before further use.

Ultraviolet Light Accelerated Weathering Cabinet

UV-3

Introduction:

Sunlight and moisture cause millions of dollars of material damage every year. The UV3 Accelerated Weathering Tester reproduces the damage caused by sunlight, rain and dew. In a few days or weeks, the UV3 can reproduce the damage that occurs over months or years outdoors.

Applications:

The UV3 tests materials by exposing them to alternating cycles of UV light and moisture at controlled, elevated temperatures. The UV3 simulates the effects of sunlight with fluorescent ultraviolet (UV) lamps, and it simulates dew and rain using condensing humidity and/or water spray. Types of damage include color change, gloss loss, chalking, cracking, crazing, hazing, blistering, embrittlement, strength loss and oxidation.

The UV3 is legendary for its ease of use and reliability. The UV3 is designed to eliminate the perennial complaints against complicated weathering testers: confusing to operate, too many subsystems to break down, too much downtime, difficult maintenance and troubleshooting, expensive parts and service calls.

With thousands of testers in service worldwide, the UV3 is the world standard for accelerated laboratory weathering.

The UV3 complies with a wide range of international, national and industry specifications, ensuring the reliability and reproducibility of your test program.

The UV3 gives excellent, relative predictions of the damage materials will experience when exposed outdoors. The UV3 with the UVA-340 lamp provides the most realistic simulation of sunlight in the short wavelength portion of the spectrum.

The UV3 is surprisingly economical, both to purchase and to operate.

This is a result of the UV3's efficient design, which incorporates low cost fluorescent UV lamps for sunlight simulation and ordinary tap water for condensation.

The UV3's simple, yet sophisticated design is easy to install, easy to use, and almost maintenance-free. The UV3 operates completely automatically, 4 hours a day, 7 days a week.

- **Microprocessor for easy programming**
- **Exposure conditions are displayed continuously**
- **Self-diagnostic warnings and service reminders**
- **Quick calibration with SUV radiometer**

UV & Sunlight Simulation:

UV light is responsible for almost all photo-degradation to durable materials exposed outdoors. The UV3's fluorescent lamps simulate the critical short-wave UV and reproduce the physical property damage caused by sunlight. Several different types of UV lamps are available for different applications.

Max Technics Lamps

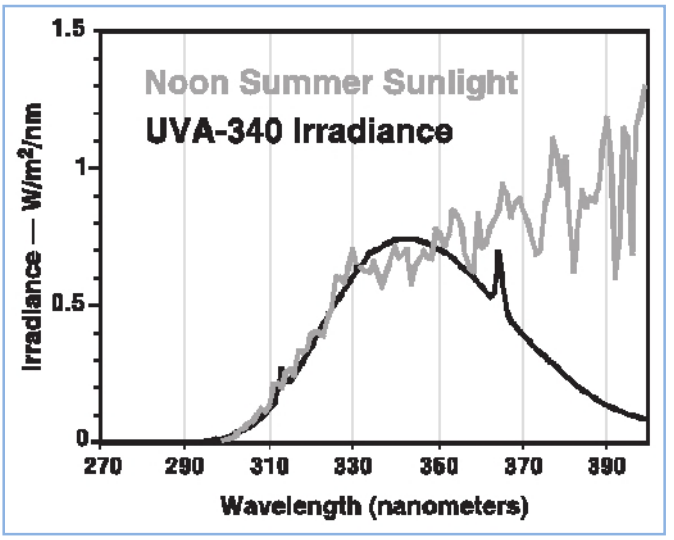
Your exposure application determines which type of UV lamps should be used. All of the UV3's lamps emit mainly ultraviolet rather than visible or infrared light. All are electrically equivalent to an ordinary 40-watt fluorescent. However, each lamp type differs in the total amount of UV energy emitted and in its wavelength spectrum. Fluorescent UV lamps are usually categorized as UVA or UVB lamps, depending on the region into which most of their output falls.

UVA Lamps

UVA lamps are especially useful for comparing different types of polymers. Because UVA lamps do not have any UV output below the normal solar cutoff of 295 nm, they usually do not degrade materials as fast as UVB lamps. However, they usually provide better correlation with actual outdoor weathering.

UVA-340 The UVA-340 provides the best possible simulation of sunlight in the critical short wavelength region from 365 nm down to the solar cutoff of 295 nm. Its peak emission is at 340 nm. UVA-340 lamps are especially useful for comparison tests of different formulations.

UVA-351 The UVA-351 simulates the UV portion of sunlight filtered through window glass. It is most useful for interior applications, especially reproducing polymer damage which can occur in a window environment.

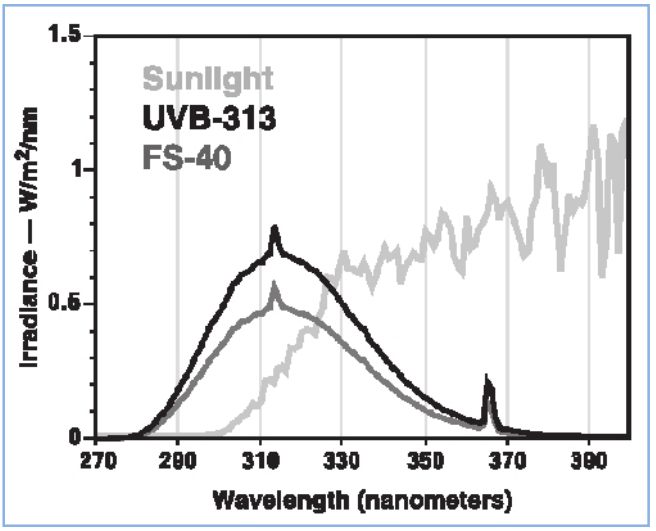


The UVA-340 spectrum is the best available simulation of sunlight in the UV region, where most of the damage to durable materials occurs

UVB Lamps

UVB Lamps are widely used for fast, cost-effective testing of durable materials. Two types of UVB lamps are available. They produce the same UV wavelengths, but differ in the total amount of energy produced. All UVB lamps emit short wavelength UV, below the solar cutoff of 295 nm. Although this short wave UV accelerates testing, it can sometimes lead to anomalous results.

UVB-313EL The UVB-313EL is the most widely used UV3 lamp for UVB exposures. It is especially useful to maximum acceleration when testing very durable products like automotive coatings and roofing materials. UVB-313EL lamps are also frequently used for QC applications.



UVB-313 exposures may be useful for testing very durable materials, such as automotive coatings or roofing materials

QFS-40 This type of the lamps has been UV output and faster test results. When used in a UV3 fitted with used for many years and are still specified in many test methods, particularly for automotive coatings.

Using the UVB-313EL to Mimic the QFS-40:

Compared with the QFS-40 lamp, the UVB-313EL produces substantially higher UV output and faster tests results. When used in a UV3 fitted with a Solar Eye Irradiance Control System, the UVB-313EL can be operated at the same irradiance level as a QFS-40. This provides long lamp life and minimizes lamp replacement costs.

Components and Controls

Solar Eye Irradiance Control:

A weathering tester must control irradiance to achieve reproducible test results. Changes in light intensity may affect the speed of material deterioration. Changes in spectrum may affect both speed and type of degradation.

The Solar Eye System:

The UV3 is equipped with Solar Eye Irradiance Control. The Solar Eye is a precision control system that automatically maintains light intensity through a feedback loop.

The controller monitors UV intensity and compensates for lamp aging or any other variability by adjusting power to the lamps. The Solar Eye system allows better reproducibility and repeatability than manual irradiance control systems.

The Solar Eye's UV sensors are located in the specimen mounting plane

1. **Controls Irradiance**
   - **Monitors light intensity**
   - **Maintains preprogrammed intensity**
   - **Maximizes repeatability & reproducibility**
2. **Extends Lamp Life**
   - **Operates lamps until set point cannot be maintained**
   - **Reduces maintenance**
3. **Accelerates For Fast Results**

- Maximizes acceleration with high irradiance
- Operates at 75% higher than noon, summer sunlight

Moisture Simulation:

The UV3 allows two approaches to moisture simulation. For most applications, condensing humidity is the best way to simulate outdoor moisture attack. All UV3 models allow a programmed condensation cycle. Because certain applications also require water spray to achieve realistic results, the UV3 model can produce both condensation and water spray.

Condensation:

In many outdoor environments, materials are wet more than 1 hour each day. Research indicates that the main cause of this outdoor wetness is dew, not rain. The UV3 simulates this using a unique condensation mechanism. During the condensation cycle, a water reservoir in the bottom of the test chamber is heated to produce vapor. The hot vapor maintains the chamber at 100% relative humidity, at an elevated temperature.

The UV3 is designed so that when the test specimens are in place they form the sidewall of the chamber.

Thus, the reverse side of the specimens is exposed to ambient room air. This room-air cooling causes the test surface to drop a few degrees below the vapor temperature, assuring that water continually condenses on the specimen surface. The resulting condensate is very stable, pure distilled water.

Water Spray:

In some actual service environments, sudden temperature changes can occur when heat builds up over the course of a sunny day then is rapidly dissipated by a sudden rain shower. The resulting thermal shock is a challenge for many materials. The UV3 water spray is useful for introducing thermal shock and/or mechanical erosion.

The UV3 reproduces the damaging effects of thermal shock and mechanical erosion

Spray System:

The sprays allow specimen wetting and simulated water erosion. De-Ionized water is emitted through stainless steel nozzles that are mounted to two stainless steel tubes. The spray system is inoperative during UV and condensation cycles.

Reservoir Cover Panels:

These two plates are long tray-like sections of stainless steel that separate the test chamber from the water reservoir. When properly installed, the three tabs on the bottom of each plate should be resting on their lower support rail (located below the lower specimen support rail).The large lip should be facing up and its lower face should be resting against the air inlet tube.

Air Heater:
The air heater warms the incoming ambient air as it flows into the test chamber. The heater is automatically controlled by the test program and is either on at 100% output, or off.

Test Chamber Water Level Float Valve:
The test chamber float valve controls the water level the test chamber reservoir. When the water level declines due to evaporation absorption by test specimens, the float valve opens allowing water to enter the test chamber until the proper level is attained.

Water Heater:
The water heater operates during condensation cycles and is automatically controlled by the test program. The water heated must always be covered with water when operating.

Water Level Switch:
This switch is activated when the water level in the test chamber declines below the minimum necessary to fully cover the water heater element (in the vent that the water supply is off or the water inlet valve is clogged). If activated, it sets the instrument into Equalize Mode and causes the message "Water level is low" to appear on the Main screen of the touch screen. The switch is located behind the left side door at the lower right corner.

Chamber Water inlet Port:
The plumbing connection to the water inter inlet float valve assembly is located behind the left side door at the lower right corner.

Water Control Valve:
The water control valve shuts off the water supply to the optional spray system and to the chamber reservoir inlet valve. Turn it counterclockwise to open it and clockwise to close it.

Water Flow Rate Meter:
The water flow rate meter displays flow rates of 0-8 L/min. Adjust the flow rate to 7 L/min for normal operation of the optional spray system.

Temperature
The UV3 precisely controls temperature to enhance accuracy and accelerate test results.

Black Panel Sensor:
The Black Panel Sensor is a platinum (Pt-100), resist temperature device (RTD) mounted on a black metal backing plate. The sensor has a resistance 100 ohms at 0 ℃ (32 ℉) and 138.5 ohms at 100 ℃ (212 ℉). The sensor output is displayed the control panel touch screen.

UV Cycle
Although temperature does not normally affect the primary photochemical reaction, it does affect the rate of any subsequent reactions. Therefore, the UV3's ability to control temperature is essential during UV exposure.

Moisture Cycle

Because of materials can stay wet outdoors for an average of 8-1 hours per day, it is difficult to accelerate moisture attack in a laboratory tester. The UV3's moisture cycles are conducted at elevated temperatures to increase the severity and accelerate the damaging effects of moisture.

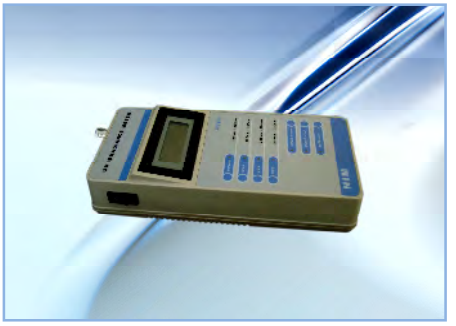
Calibration

Calibration Schedule:

UV3 has four subsystems which require regular calibration or adjustment:

Control System:	Calibration interval
Irradiance:	400 hours and at lamp replacement
Black Panel Sensor:	6 months
Optional Water Spray System:	Annually

Irradiance Calibration:



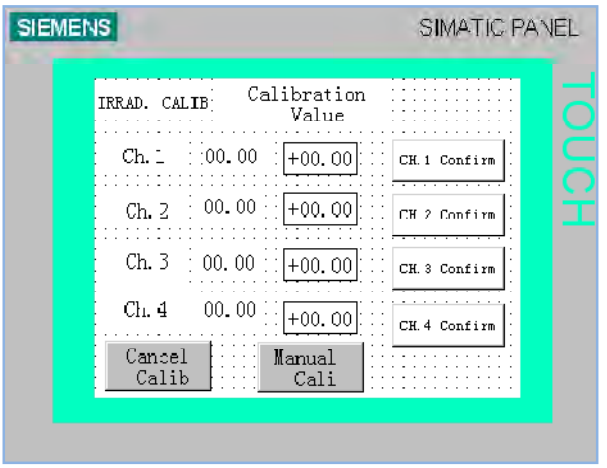
Calibration of the UV3 irradiance and temperature sensors must be performed at regular inter-to ensure accurate operation of control systems. The spray pattern on the specimens also be checked and the water pressure regulated as required. Conduct these producers at the intervals recommended by the calibration schedule.

SUV Calibration Radiometer:

The SUV is an essential accessory to the UV3's Solar Eye system because it ensures the accuracy of the Solar Eye and, ultimately, the UV3 test results. One SUV radiometer can calibrate any number of UV3s.

Auto Cal Menu:

With Auto Cal, calibrating the Solar Eye system takes only seconds and is so easy to perform that there is little chance for operator error. A warning light shows when it is time to calibrate. The patented Auto Cal system automatically transfers the calibration information from the radiometer to the UV3's Solar Eye controller.



SUV Recalibration:

The SUV should be sent back to Max Technics Co. for recalibration annually to ensure NIST traceability and ISO compliance.

1. **Easy to Operate**
- **Fully automatic operation**
- **User-friendly programming**
- **Built-in microprocessor**
- **Continual irradiance monitoring and control**

2. **Easy to Maintain**
- **Fast, error-free Auto Cal calibrations**
- **SUV recalibration ensures accuracy**

3. **Easy to Service**

- **User-serviceable, no need for expensive service calls**
- **Self-diagnostic error checking**
- **Continuous system monitoring**
- **Easy-to-read status messages**

Black Panel Sensor Calibration:

The Black Panel temperature sensor circuit must be calibrated every six months. Periodically you may check the operating tolerance of the circuit through the use of optional check resistors-These resistors are designed to provide non-NIST-traceable temperature readings of 0°C and 100℃ (±2 ℃).lf the temperature reading is outsides of the allowable tolerance, the traceable calibration procedure must be performed using the ice and hot water baths.

Specimen Mounting

Specimen Holders:

- **flat panels per holder**
- **Standard size 3" x 6" (75 mm x 150 mm)**
- **Mount 3-D parts with special holders**
- **4"x 6" (100 mm x 150 mm) also available**

Specimen Capacity:

- **48 standard size specimens**

Test Methods & Material Standards Specifying the UV3 (Partial List):

- **ISO 4892-1 Plastics- Methods of exposure to laboratory light sources-Part 1: General Guidance**
- **ASTM G-151, Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices**
- **that Use Laboratory Light Sources**
- **ASTM G-154, Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure**
- **of Non-Metallic Materials**
- **British Standard BS 2782: Part 5, Method 540B (Methods of Exposure to Lab Light Sources)**
- **SAE J2020, Accelerated Exp. of Automotive Exterior Malts Using a Fluorescent UV/Condensation Apparatus**
- **JIS D 0205, Test Method of Weatherability for Automotive Parts (Japan)**

Coatings:

- **Korean Standard M5982-1990, Test Method for Accelerated Weathering**
- **Spanish Std, UNE 104-281-88 Accelerated Testing of Paints and Adhesives with Fluorescent UV Lamps**
- **Israeli Standard No. 330, Steel Windows**
- **Israeli Standard No. 385, Plastic Windows**
- **Israeli Standard No. 935, Road Marking Paint**
- **Israeli Standard No. 1086, Aluminum Windows**
- **NISSAN M0007, Fluorescent UV/Condensation Test**
- **JIS K 5600-7-8, Testing Methods for Paints**

- ASTM D-3794, Standard Guide for Testing Coil Coatings
- ASTM D-4587, Standard Practice for Light/Water Exposure of Paint
- ISO 11507, Paints & varnishes - Exposure of coatings to artificial weathering - Exposure to fluorescent UV and water
- US Government, FED-STD-141B
- US Govt., Federal Specification TT-E-489H, Enamel, Alkyd, Gloss, Low VOC Content
- US Govt., Federal Specification TT-E-527D, Enamel, Alkyd, Lusterless, Low VOC Content
- US Govt., Federal Specification TT-E-529G, Enamel, Alkyd, Semi-gloss, Low VOC Content
- US Govt., Federal Specification TT-P-19D Paint, Latex, Acrylic Emulsion, Ext. Wood & Masonry
- NACE Standard TM-01-84 Procedures for Screening Atmospheric Surfaced coatings
- GM4367M Topcoat Materials - Exterior
- GM 9125P Laboratory Accelerated Exposure of Automotive Material
- MS 133: Part F16, Methods of Test for Paints and Varnishes: Part F16: Exposure of Coatings to Artificial
- Weathering- Exposure to Fluorescent UV and Water (ISO 11507)
- prEN 927-6 Paints & varnishes – Coating materials and coating systems for exterior wood – Pt. 6: Exposure of wood
- coatings to artificial weathering using fluorescent UV and water

Adhesives:

- Spanish Std, UNE 104-281-88 Accelerated Testing of Paints and Adhesives with Fluorescent UV Lamps
- ASTM C-24.35.31, Specification for Structural Silicone Sealants
- ASTM C-1442, Standard Practice for Conducting Tests on Sealants Using Artificial Weathering Apparatus
- ASTM D-904, Standard Practice for Exposure of Adhesive Specimens to Artificial Light
- ASTM D-5215, Standard Test Method for Instrumental Evaluation of Staining of Vinyl Flooring by Adhesives
- American Plywood Assn., Approval Procedures for Synthetic Patching Materials, Section 6

Plastics:

- ISO 4892 Plastics - Methods of Exposure to Laboratory Light Sources-Part 3: Fluorescent UV Lamps
- DIN 53 384, Testing of plastics, Artificial Weathering and Exposure to Artificial Light
- Spanish Standard UNE 53.104 (Stability of Plastics Materials Exposed to Simulated Sunlight)
- Israeli Standard No. 385, Plastic Windows
- JIS K 7350, Plastics - Methods of Exposure to Laboratory Light Sources-Part 3: Fluorescent UV Lamps
- ASTM D-1248, Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
- ASTM D-4329, Standard Practice for Light/Water Exposure of Plastics
- ASTM D-4674, Test Method for Accelerated Testing for Color Stability of Plastics Exposed to Indoor
- Fluorescent Lighting and Window-Filtered Daylight
- ASTM D-5208, Standard Practice for Exposure of Photodegradable Plastics
- ASTM D-6662, Standard Specification for Plastic Lumber Decking Boards
- ANSI C57.12.28 Specification for Accelerated Weathering of Pad mounted Equipment

Enclosure Integrity

- ANSI, A14.5 Specification for Accelerated Weathering of Portable Reinforced Plastic Ladders
- Edison Electrical Inst. Specification for Accelerated Weathering of Pad mounted Equip. Enclosure Integrity
- Wisconsin Electric Power Specification for Polyethylene Signs

Roofing:

- British Standard BS 903: Part A54 Annex A & D, Methods of Testing Vulcanized Rubber
- CGSB-37.54-M, Canadian General Standards Board Spec. for PVC Roofing & Waterproofing Membrane
- DIN EN 534, Corrugated bitumen sheets
- EOTA TR 010, Exposure procedure for artificial weathering
- RMA Specification for Reinforced Non-Vulcanized Chlorosulfonated Polyethylene Sheet for Roofing Membrane
- ASTM D-4799, Test Method for Accelerated Weathering of Bituminous Roofing Materials
- ASTM D-4811, Standard Specification for Non-vulcanized Rubber Sheet Used as Roof Flashing
- ASTM D-3105, List of Test Methods for Elastomeric and Plastomeric Roofing & Waterproofing
- ASTM D-4434, Standard Specification for PVC Sheet Roofing
- ASTM D-5019, Standard Specification for Reinforced Non-Vulcanized Polymeric Sheet Used in Roofing Membrane
- ANSI/RMA IPR-1-1990 Req. for Non-Reinforced Black EPDM Sheet for Roofing Membrane
- ANSI/RMA IPR-2-1990 Req. for Fabric-Reinforced Black EPDM Sheet for Roofing Membrane
- ANSI/RMA IPR-5-1990 Req. for Non-Reinforced Non-Black EPDM Sheet for Roofing Membrane
- ANSI/RMA IPR-6-1990 Req. for Fabric-Reinforced Non-Black EPDM Sheet for Roofing Membrane

Textiles:

- AATCC Test Method 186, "Weather Resistance: UV Light and Moisture Exposure"
- ACFFA Test Method for Colorfastness of Vinyl Coated Polyester Fabrics

Miscellaneous:

- Israeli Standard No. 385, Anodic Coatings on Aluminum

Technical Specifications:

Model:	**UV3**
Temperature range: **Black panel temperature (BPT)**	**30-100℃**
Temperature stability:	**±2℃**
Irradiance controlling mode:	**exchange the lamps regularly**
Condensation mode:	**Nickel-Chrome alloy's electricity-water heating**
Total power:	**2KW**
Lamps:	**UVA or the UVB fluorescent ultraviolet light**
Power:	**40W**
Interior of cabinet material:	**Stainless steel -SUS 304 material**
Exterior of cabinet material:	**Stainless steel -SUS 304 (sand light) material**
Heat insulation layer material:	**Hard foam**
Fluorescent ultraviolet lamps:	**8 pieces, UVA or UVB**
Insolating area:	**5175cm2/828in2**
Sample capacity:	**24 pieces of standard specimen (75×150mm standard samples) or15 pieces of 100×300mm**
Testing method and procedure:	**Automatic control after setting procedure**
Samples temperature:	**can be controlled automatically and displayed directly**
Condensation control:	**can be controlled automatically and displayed directly**
Cycle mode:	**Sunlight, Condensation and Spray can be shown directly and controlled automatically**
Sunlight irradiance:	**The sunlight irradiance time can be set**
Spray:	**can be adjusted , shown and controlled automatically and the spray time can be set**
Warning function:	**Automatic warning**
Supplying water	**Automatic**
Protecting device:	**Creep-age protection, water-breaking protection, overloading protection, security door protection, over-temperature protection switch**
Dimension(mm):	**1200×1500×450**
Source:	**220VAC±10%50/60 Hz**

Complete Kit Includes:

UV3 Device with Calibration radiometer & Temperature plugs (0°C and 100°C): 1 Unit
UV Lamps (UVA or UVB): 8 Pieces
User's manual: 1 Piece
Traceable certificate: 1 Piece

Spare Parts:

UVA-340nm Lamps (set of 12 pieces) – (UV3/340A), UVA-351nm Lamps (set of 12 pieces) – (UV3/351A)
UVB-313nm Lamps (set of 12 pieces) – (UV3/313B), QFS-40 Lamps (set of 12 pieces) – (UV3/FS40)

Xenon Light Stability & Weathering Test Cabinet

XTC Series (XTC-1 & XTC-2)

Introduction:

Max Technics are world leaders in the design, manufacture and supply of inspection equipment for coatings and concrete. Our products cover all aspects of coating inspection, from development through application to post application inspection.

This unit suitable for speed up weathering test through light, water exposed to predict the relative durability of paint, coating, plastic, such non metal, especially suitable to view the physical performance breakdown of special durable material such as gloss reduction, fog image, deterioration of strength , powdering cracking, bubbling, embrittlement and fading, etc.

Same as other fast test in lab, you can't apply the test result of this unit to replace the natural expose to judge the actual year of durability of the material, but the contrast test condition provided by this unit is relative practical for fast assessing the weathering resistance of material, screening or improve the new & old formula, monitoring the quality of products.

As the weathering test cabinet is the main lighting factor to cause the deterioration of durability for outdoor products plus the relative stable distribution of light spectrum energy Xenon test cabinets become the most widespread kind of weathering test in the world by its advantage of fast, convenient and economy.

Because the water is the important breakdown factor for fast aging, so this unit adopts the water condensation mode to imitate the influence of moisture. To set the condensation time you can compare the environment condition which approached some final application, such as the mechanical corrosion caused by severe temperature change or raining flush. To meet the application requirement of strong and durable of weathering tester, this unit adopts the corrosion-proof stainless steel for construction parts to make simple construction design for the convenience of application and maintenance. So just pay the relative low cost you can find out in a short time the material damage formed under the natural condition for long time, to judge the difference of quality between the tested products and samples.

Max Technics pioneers innovative ways for companies to test the weatherability of their products. From our industry-leading accelerated weathering equipment to the consulting services of our expert laboratory staff, our approach to the market is clear: Provide our customers with superior, easy-to-use technology and advanced testing solutions to determine how long their products will last. As a result, they will reach their ultimate goals – a quality product, a competitive edge, and a faster time to market.

Producing the very best instruments is not something we take lightly. Every instrument must pass customer specified test parameters and we visually inspect all xenon lamps and optical filter glass per strict quality procedures. We test every instrument for material compliance before being shipped. The XTC series meet relevant CE, UL, CSA, ISO and EN safety and electrical standards for both machinery and laboratory test equipment.

We've overhauled the XTC cabinet to include a new simplified operating system and an incredibly fast, fully-digital architecture to produce the most reliable and efficient instrument we've ever made. It all adds up to the most advanced and easy-to-use xenon weathering test instrument the industry has ever seen.

Simplified Control Navigation:

The new digital control system makes access to its most sophisticated features available to operators. The XTC cabinet delivers exceptionally precise and reliable control of all test parameters for repeatable, reproducible and reliable results.
Incredibly Efficient Xenon Lamp cooling the dramatically improved on-board xenon lamp cooling system can yield a significant reduction in cooling-water usage.

Which Light is Right?

Choosing the "right light" is one of the first steps in creating an accurate and reliable weathering test program. The XTC cabinet simulates solar radiation using xenon lamps and advanced filter systems specifically designed for weathering. Max Technics xenon lamps are developed exclusively for weathering to meet high performance criteria for their spectral power distribution, lifetime irradiance stability and lot-to-lot uniformity.
The XTC cabinet uses interchangeable glass filters that tailor the xenon light spectrum to match light conditions in your products' end user environment.

Applications:

The XTC cabinet is perfectly suited for testing:

- **Automotive Materials**
- **Plastics**
- **Inks**
- **Paints and Coatings**
- **Packaging**
- **Photovoltaic**
- **Textiles including Industrial and Geo textiles**
- **Pigments, Dyestuffs, Stabilizers and Additives**

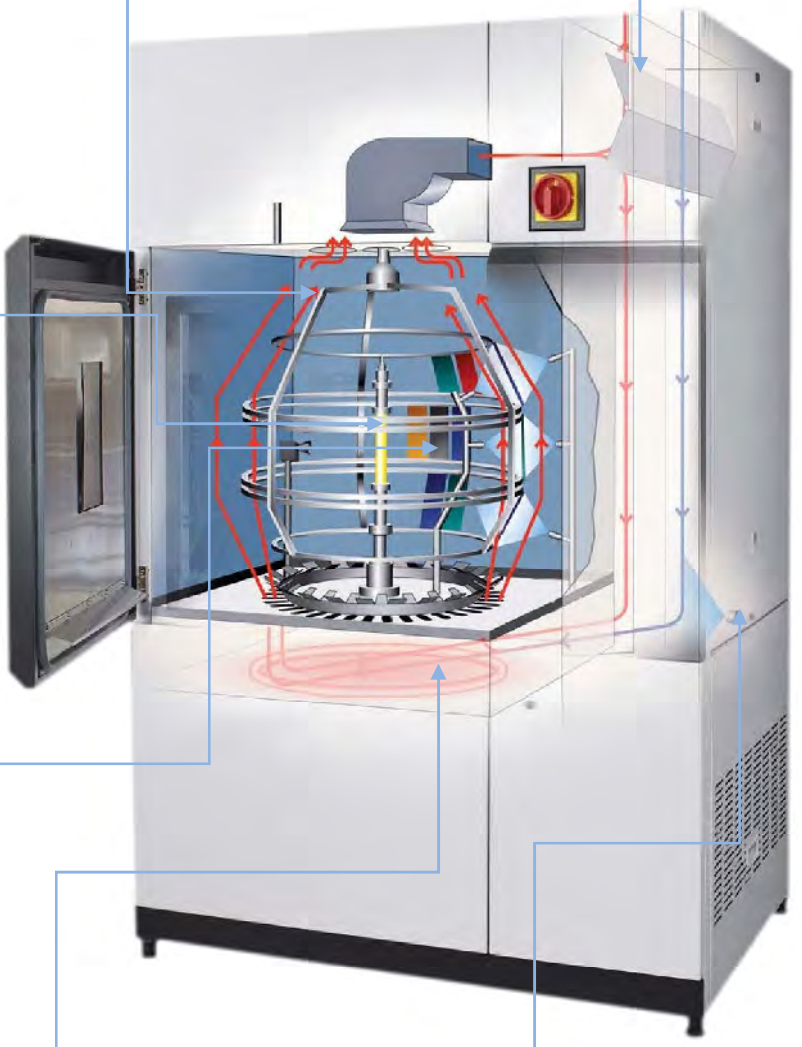
Features:

A higher order of weathering testing performance through superior science;
The XTC Weather-O-meter, with its new advanced digital control system, represents monumental achievement in applying digital and optical technologies in an easy-to-use laboratory weathering instrument. The XTC cabinet is approved by many OEMs in the automotive, paints & coatings and plastics industries as the exclusive platform to deliver accurate, reproducible and repeatable results for predicting service life. The XTC cabinet has been certified CE, UL, CSA, ISO and EN compliant.

Smart Damper
Reduces test variability in chamber temperature and humidity and compensates for changes in ambient laboratory conditions

Rotating Sample Rack
Maximizes exposure uniformity over all specimens

Controlled Irradiance
Up to 2 sun levels for higher acceleration based on your test requirements. Narrow band (340 nm or 420 nm), broad band (300-400 nm) or illuminance control/Lux (400-750 nm) with optional monitoring at a second wavelength to meet global test requirements



ASTM Black Panel Thermometer or ISO/DIN Black Standard Thermometer
Controls and monitors temperature at specimen level to ensure test repeatability

Test Chamber Temperature
Closely simulates your material's end user environment

VibraSonic Humidity Control
Accurately replicates humidity levels to meet stringent global test requirements

Additional Features:

- Xenon Lamp Cooling System
- The XTC cabinet is equipped with a new, ground-breaking xenon lamp cooling system that dramatically reduces the amount of cooling water used
- Smart Light Monitor
- Verifies that the correct light capsule is installed
- Water Purity Indicator
- Signals when incoming water quality falls below the factory set point

Control

Enhanced control system enables complex, custom test programs or simple, preprogrammed test operation

Easy to understand icons simplify navigation;
New icons make getting to the information you need fast and easy

- **Large, Touch Sensitive Buttons**
- **Clear, Easy-to-See Icons**

Two simple-to-read pages and on-screen trend plot monitor all critical status information

- **Monitor and/or plot all critical set points and compare with real time readings for:**
- **Rack Temperature:**
- **Black Panel Temperature (BPT), Black Standard Temperature (BST) or both**
- **Chamber Temperature**
- **Relative Humidity**
- **Irradiance**
- **Incoming De Ionized**
- **Water Quality**
- **Lamp Cooling**
- **Water Temperature**
- **Countdown in Time or Radiant Exposure**
- **Phase Type and Duration**

Space for Four Custom Test Programs

Existing test methods can be copied and edited for custom applications

Simplified setup of elective control features

Set variance level notification for critical variables on one screen

- **Irradiance**
- **Chamber Temperature**
- **Rack Temperature (BPT, BST or both)**
- **Relative Humidity**

Automated 2-point irradiance calibration

Simple procedure allows user calibration and eliminates duplicate information

- **Enter Lamp and Certificate Data**
- **Install the Calibration Lamp**
- **Press the RUN Button**
- **Calibration is Done Automatically**

Light

Long Arc Xenon is the Closest Simulation of UV, Visible and IR Solar Radiation

Rotating Sample Rack

The rotating rack delivers the best exposure uniformity
Samples are rotated continuously during test.
No need to manually rotate test samples Uniform specimen and chamber temperature, RH, irradiance and spray allows for even and consistent airflow over sample surfaces can accommodate three dimensional samples;
– Small Components
– Finished Products
– Bottles

Intelligent Controlled Irradiance (XTC) System

A closed loop system automatically adjusts lamp output in real-time delivering the most stable radiant exposure

- **Narrow band (340 nm or 420 nm), broad band (300-400 nm) or illuminance control/Lux (400-750 nm)**
- **Irradiance defined by user during test programming or by factory programmed test methods**
- **Intelligent control will only allow the user to select an irradiance that matches the defined test method**
- **Wattage regulating system**

Consists of:
Light rod, All Wavelengths of Radiation, Sensor Housing, Sensor Housing, Filtered Radiation, Signal Control System, Photo Detector

Climate Control

The XTC cabinet offers thorough climate control to best replicate your materials' end user environment

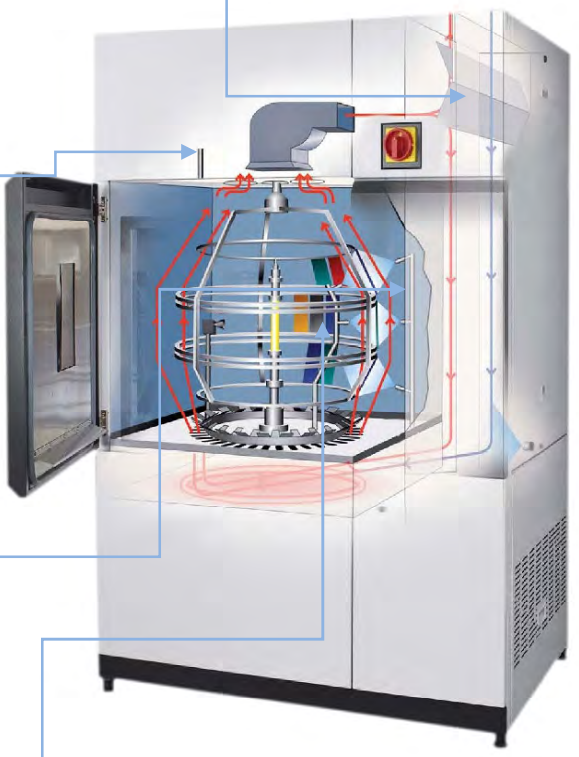
Temperature Control

Consistent, Controlled Temperature Delivers Repeatable and Reproducible Results

Smart Damper
Balances test chamber temperature, BPT or BST and humidity levels and compensates for changes in ambient laboratory conditions
Re-circulates chamber air, introduces ambient air or a combination of the two

Precise Humidity Control
The electronic sensor provides direct and accurate measurements of relative humidity and enables automatic control at the specimen level

- 10% RH to 75% RH in light cycles
- Up to 100% in dark cycles



Specimen and Rack Spray
Custom designed precision nozzles provide uniform spraying of samples with de Ionized water

- The specimen spray applies water to the exposed surface of the sample which simulates rain to induce temperature shock and erosion effects
- The rack spray applies water to the back of the sample to cool the specimen temperature below the dew point during dark cycles causing condensation on the exposed surface

ASTM Black Panel Thermometer (BPT) or ISO/DIN Black Standard Thermometer (BST)
Controls and monitors temperature at specimen level to ensure test repeatability
Control of one sensor type while simultaneously monitoring the other

BPT/BST Temperature vs. Chamber Temperature (CHT)
BPT and BST sensors simulate an estimate of the maximum temperature on a sample's surface
CHT measures the temperature of the air circulating within the chamber
Controlling both sample and air temperature delivers maximum uniformity and can closely match the samples end user environment

Simultaneous Control of BPT/BST and CHT

- Advanced PID algorithms allow for discrete manipulation of test parameters
- Smart Damper, variable speed blower and chamber heater are independently controlled
- Instrument performance envelope is optimized allowing maximum flexibility in custom tests applications

Options

Hybrid Cooling System

Improved xenon lamp cooling system dramatically reduces water consumption

- **Expanded liquiair options include onboard mounting**
- **Reduces water consumption up to 100%**

Six Channel Chart Recorders

Plot up to six variables each in its own color. Record any of the following:

- **Black Panel Temperature**
- **Relative Humidity**
- **Irradiance**
- **Chamber Temperature**
- **Black Standard**
- **Temperature or Second Irradiance**
- **Lamp Power**

Irradiance Calibration Device

For independent irradiance calibration and measurement at the sample plane
Available with different wavelength sensitivities:

1. **X-Cal BB 300 – 400 nm**
2. **X-Cal WB 300 – 800 nm**
3. **X-Cal NB 340 nm and**
4. **X-Cal NB 420 nm**

Additional Options

Auxiliary Filter Lantern

For meeting special test requirements

Refrigeration System

Option for lower test temperature applications

Sample Holders

This chart is a representative sample of specimen holders available for the XTC Weather-O-meter. For specific information about specimen holders that best meet your needs, please contact your local Max Technics representative.

Test Methods & Material Standards Specifying the XTC (Partial List):

- AATCC TM16-2003; Colorfastness to Light
- ASTM G155; Standard practice for operating Xenon Arc Light apparatus for exposure of non-metallic materials
- ASTM D6695; Standard practice for Xenon-Arc exposures of paint and related coatings
- ASTM D6551; Standard practice for accelerated weathering of pressure-sensitive tapes by Xenon-Arc exposure apparatus
- ASTM D5071; Standard practice for exposure of photodegradable plastics in a Xenon Arc apparatus
- ASTM D4798; Standard test method for accelerated weathering test conditions and procedures for bituminous materials (Xenon-Arc method)
- ASTM D4459; Standard practice for Xenon-Arc exposure of plastics intended for indoor applications
- ASTM D4355; Standard test method for deterioration of geo textiles from exposure to ultraviolet light and water (Xenon-Arc type apparatus)
- ASTM D4303; Standard test methods for light fastness of pigments used in artists' paints
- ASTM D3424; Standard test methods for evaluating the relative light fastness and weather-ability of printed matter
- ASTM D904; Standard practice for exposure of adhesive specimens to artificial light
- ASTM C1442; Standard practice for conducting tests on sealants using artificial weathering apparatus
- ISO 3917; Road vehicles - safety glazing materials - test methods for resistance to radiation, high temperature, humidity, fire and simulated weathering
- ISO 105-B02; Textiles - tests for color fastness - part b02: color fastness to artificial light: Xenon Arc fading lamp test
- ISO 105-B04; Textiles - tests for color fastness - part b04: color fastness to weathering: Xenon Arc test
- ISO 105-B06; Textiles - tests for color fastness - part b06: color fastness and ageing to artificial light at high temperatures: Xenon Arc fading lamp test
- ISO 4892-1; Plastics - methods of exposure to laboratory light sources - part 1: general guidance
- ISO 4892-2; Plastics - methods of exposure to laboratory light sources - part 2: Xenon-Arc sources
- ISO 12040; Graphic technology - prints and printing inks - assessment of light fastness using filtered Xenon Arc light
- JASO M346; Light-exposure test method by Xenon-Arc Lamp for automotive interior part
- SAE J2412; Accelerated exposure of automotive interior trim components using a controlled irradiance Xenon-Arc apparatus
- SAE J2527; Accelerated exposure of automotive exterior materials using a controlled irradiance water cooled Xenon-Arc apparatus
- VDA 621-429; Tests for automotive coatings - weathering test for color fastness
- VDA 621-430; Tests for automotive coatings - test for resistance to cracking of 2 layer metallic clear coats VDA 75202; Automotive interior materials - colorfastness and ageing test against light at high temperatures: Xenon Arc
- PV 1303; Non-metallic materials - light fastness test for interior parts
- PV 3929; Non-metallic materials - weather ageing in dry, hot climate
- VW PV 3930; Non-metallic materials - weathering in moist, hot climate
- AATCC TM16-1998; Color fastness to light
- AATCC TM169; Weather resistance of textiles: Xenon Lamp exposure
- ASTM G151; Standard practice for exposing nonmetallic materials in accelerated test devices that use laboratory light sources
- FLTM BI 160-01; Test method
- GME 60292; Designation of color fastness and resistance to artificial light
- GMW 3414; Test method for artificial weathering of automotive interior trim materials
- ISO 11341; Paints and varnishes - artificial weathering and exposure to artificial radiation - exposure to filtered Xenon-Arc radiation

- MIL-STD 810F; Environmental engineering considerations and laboratory tests - part 2: laboratory test methods - 505.4: solar radiation (sunshine)
- D27 1389; Revetements de peintures, caotchchoucs et plastiques, vieillissment artificiel au weather-o-meter
- D27 1911; Revetements de peintures caoutchouc et plastiques vieillissment artificiel au weather-o-meter

Standard Features:

1. TFT full color 10.4" touch screen control panel display of all test parameters
   - Direct setting and control of irradiance
   - Direct setting and control of BPT/BST
   - Direct setting and control of relative humidity
   - Direct setting and control of specimen and chamber air temperature (Dry bulb)
   - Display of diagnostic messages
   - 14 factory pre-programmed test methods
   - Space for 4 custom programs
2. Smart damper
3. Smart light monitor
4. Streaming data output via smart media card or RS232 or both simultaneously
5. Air heater
6. Main power disconnect switch
7. Xenon lamp cooling system
8. Air intake dust filter
9. Three-tier specimen rack
10. Water purity indicator
11. Calibrated Xenon reference lamp
12. Chamber viewing door
13. 304 grade stainless steel test chamber
14. Universal electrical configurations to meet local frequency, voltage, and electrical requirements meets CE, UL, CSA, ISO and en compliance

Optional features:

1. 6 channel printing chart recorder
2. Dual ASTM/BPT and DIN/BST black panel temperature measurement/control including
3. ASTM/BPT and DIN/BST sensors
4. Monitoring of second wavelength
5. Liquiair

Technical Specifications:

Model:	XTC1	XTC-2
Water-cooled xenon lamp:	6500W	4500W
Maximum exposure area:	6500cm2	2188cm2
Irradiance control range:	Automatic control at 340nm or 420nm or 300-400nm	Automatic control at 340nm or 420nm or 300-400nm
Irradiance calibration:	✓	✓
Sunlight irradiance:	The sunlight irradiance power and time can be set	The sunlight irradiance power and time can be set
Calibration xenon reference lamp:	✓	✓
Normal Lamp Life:	2,000 hours	2,000 hours
Filters:	can select different type inner or outer filters	can select different type inner or outer filters
Micro-computer control:	✓	✓
Instrument control program :	✓	✓
LCD Type:	LCD touch screen display of all test parameters, menu-driven control with user friendly touch screen entry	LCD touch screen display of all test parameters, menu-driven control with user friendly touch screen entry
Display:	TFT full color10.4" touch screen control panel	TFT full color10.4" touch screen control panel
Display and set all kinds of testing methods:	Instruments control and display all test parameters; Monitoring the water quality and giving alarm, Direct setting and control of irradiance, black panel temperature, relative humidity and chamber air temperature	Instruments control and display all test parameters; Monitoring the water quality and giving alarm, Direct setting and control of irradiance, black panel temperature, relative humidity and chamber air temperature
Warning function:	Automatic warning	Automatic warning
Sample capacity:	65 pieces of standard specimen (70×145mm standard samples)	65 pieces of standard specimen (70×145mm standard samples)
Temperature:	BPT: 40-110°C BST: 40-120°C	BPT: 40-110°C BST: 40-120°C
Calibration:	The testing temperature can be calibrated automatically with Auto Cal (irradiance and temperature) calibrator	The testing temperature can be calibrated automatically with Auto Cal (irradiance and temperature) calibrator
External calibrator:	Supplies with standard system (Auto Cal)	Supplies with standard system (Auto Cal)
Black panel calibrator:	Supplies with standard system (Auto Cal)	Supplies with standard system (Auto Cal)
Auto-control and monitor the temperature of sample shelf:	✓	✓
Auto-control and monitor the temperature of working room:	✓	✓
Automatic test time countdown in KJ/m2:	✓	✓

Control and monitor the cycle wind speed:	✓	✓
The rotate speed of specimen rack:	**1r/min**	**1r/min**
Water purity meter:	✓	✓
Supplying water:	**The water pressure: 138 ... 344Kpa /20 ...50psi, flux: 0.2L/min**	**The water pressure: 138 ... 344Kpa /20 ...50psi, flux: 0.2L/min**
Ventilation door controller:	✓	✓
Auto-control Light/Dark:	✓	✓
Spray sample/Spray sample shelf:	✓	✓
Measurement and auto-control of relative humidity:	✓	✓
Humidity range:	**Light Cycle: 10%-75%, Dark Cycle: 10%-100%**	**Light Cycle: 10%-75%, Dark Cycle: 10%-100%**
Ultrasonic humidification system:	✓	✓
Alarm function:	✓	✓
leakage protection switch for total power and sub-power:	✓	✓
Minimum equipping zero:	✓	✓
Refrigeration equipment of working room:	**Optional**	**Optional**
Lamp cooling refrigeration:	**Optional**	**Optional**
Date Recorder:	**Optional**	**Optional**
Multiple rack mounted temperatures sensors:	**Optional**	**Optional**
Monitoring of second wavelength:	**Optional**	**Optional**
Interior of cabinet:	**Stainless steel -SUS 304 material**	**Stainless steel -SUS 304 material**
Exterior of cabinet:	**Stainless steel -SUS 304 (sand light) material**	**Stainless steel -SUS 304 (sand light) material**
Dimension:	**1300×1050×1900mm (W×H×D)**	**990×900×1900mm (W×H×D)**
Nett weight:	**632 kg (440 lbs)**	**458 kg (440 lbs)**
Mar source:	**220VAC ± 10%, 50 ... 60Hz**	**220VAC ± 10%, 50 ... 60Hz**

Thermal Shock Cabinet

Thermal Shock Cabinet (TSC)

Introduction:

This cabinet is mainly test materials resistance in extremely high temperature or extremely low temperature. This situation is similar to non-continuously being low temperature or high temperature; thermal shock tester can make various products accomplish test in shortest time.
Chemical change or physical injury made by heat shock is caused by thermal expansion and contraction change or other physical nature change; use TST system to achieve entire trust for various products. Effect of heat shock is including finished products cracked or broken layer, and electrochemical change caused by replacement.
All-digital automatic control of TST system makes you easy and handy operation.

Technical Specifications:

Model:	TCS
Interior Dimension (cm):	40×50×40
Temperature Range of Test Area:	High temperature: +60℃ ... +150℃ Low temperature: -10℃ ... -65℃ (Option A : -45℃, Option B : -55℃, Option C : -65℃)
High Temp. Area Heating Time:	Room Temp ... 200℃ (approx 30 min)
Low Temp. Area Cooling time:	Room Temp ... -70℃ (approx 90 min)
Temp. Recover Time:	in 5 min
Temp. Stability :	±0.2℃
Insulation Material:	Thermo stability, high density amino acid ethyl ester foam insulation material
System:	P.I.D+S.S.R+ microcomputer balance thermostat control system
Refrigeration System:	Semi-sealing two-stage compressor (water-cooling style)
Protection Device:	Breaker, compressor high & low pressure protection switch, refrigerant pressure protection switch, failure warning system, electronic siren
Accessories:	2pcs of upper and lower adjustable interlayer
Power:	3 ×220 VAc ±10%; 50/60 Hz 3 × 380 V/ 415 VAC ±10%; 50 Hz

Corrosion

Temp & Humidity Cabinet (THC)

Applications:

Our new programmable cabinet with a precise system of temperature and humidity control, which provide various necessary environmental simulative conditions for industrial researches and biotechnology tests. Widely applied in sterile tests and stability check-up of pharmaceuticals, textile and food processing as well as tests in material performance, packing and lifetime of industrial products.

Features:

- **Special stainless-steel chamber, semicircular arcs at corners for easy cleaning, and the space between the shelves in the chamber is adjustable**
- **Micro-processer controller for temperature and humidity ensures or precise and reliable control**
- **Independent alarm system for temperature-limiting ensures experiments run safely and no accident would happen**

Technical Specifications:

Model:	THC
Interior Dimension (W × H × D):	40×50×40 cm
Exterior Dimension (W × H × D):	95×130×80
Heating Up Speed:	-40℃ ... 100℃ (approx 45 min)
Cooling Down Speed:	20℃ ... 0℃ (approx 20 min) 20℃ ... -20℃ (approx 45 min) 20℃ ...-40℃ (approx 60 min)
Temp. Range:	-40℃ ... +150℃
Temp. Uniformity:	±1℃
Humidity Uniformity:	±2.5%
Temp. Stability:	±0.3℃
Humidity Stability:	±2.5%
Humidity Range:	20% ... 98% RH (available customized low humidity degree to 5% RH)
Programmable Mode:	Use high stability platinum temperature resistant materials, LCD English touch-screen, 120 sets 1200 seconds program, 999 cycles circulation setting, and enclose multiple sets of PID control function and RS-232 computer connection interface control
Heating System:	SUS#304, stainless steel heater

Humidification System:	**Surface evaporative type, enclose protection of hydroponic, interrupt of power supply and superheat for humidifier**
Dehumidification System:	**Frozen & latent heat dehumidification method**
Cooling System:	**Adopt unary type full-closed air-cool refrigeration system above -20℃, adopt binary type full-closed air-cool refrigeration system below -40℃**
Water Supply System:	**Circulating water supply system, together with hydroponic warning device**
Inner & Outer Material:	**SUS#304, stainless steel of whole machine**
Insulation Material:	**Rockwool and rigid polyurethane foam insulation**
Safety Device:	**Breaker, compressor overload, ultra-temperature, power failure, temperature limit protection and fault alarm**
Temp. & Humidity Regulation:	**Balance adjustment temperature & humidity method**
Standard Accessories:	**Automatic demist fogging glass window, 2 sets of adjustable upper and lower interlayer, cable plot, chamber lamp, mobile wheels**
Power:	**220 Vac / 380 V ±10%, 50/ 60 Hz**

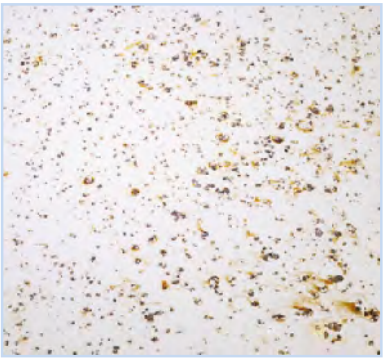
Salt Spray Cabinet (SSC series)

Introduction:

This type of test is most often used to check the effectiveness of a manufacturing process, such as the application of a surface coating. By exposing samples taken from such a process, to the controlled corrosive atmosphere created inside a salt spray cabinet, it can be determined whether or not the process is meeting expectations, in terms of corrosion resistance.
This type of corrosion test is known variously as "salt spray tests", "salt fog tests", "salt mist tests". For all practical purposes all these terms are equivalent and mean the same.

Feature:

- **The inner and outer are all made of PVC harden-plastic which have a good corrosion resistance and age resistance, surface is clean and shining**
- **Interior viewing window; for visual access to the cabinet interior and samples under test**
- **Equipped with resist-crystallization glass nozzle**
- **Spray: Continuous or periods spray**
- **High precision digit display temperature controller, import executive parts**
- **3 protectors: Over temperature protector , tri-phase fault protection, Lack of water protector**
- **Spray Method: airflow spray to keep the salt spray sedimentation uniform**
- **Latest PID controller**



Conformance to International Standards:

ASTM B117, ASTM B287, ASTM B368 , ASTM G43, ASTM G85 annex A1, 2, 3, 5, ASTM G5894, BS2011 Part2.1 Ka, BS2011 Part2.1 Kb, BS 3900 Part F4, BS 3900 Part F12, BS 5466 Part 1, BS 5466 Part 2, BS 5466 Part 3, BS 7479, BS EN ISO 7253, BS EN 60068-2-11 , BS EN 60068-2-52 , DIN 50 021-SS, DIN 50 021-ESS, DIN 50 021- CAS

Technical Specifications:

Model:	SSC-1	SSC-2	SSC-3
The scope of adjustable temperature:	+5℃ to 50℃		
Fluctuating degree of temperature:	≤ ± 0.5℃	≤ ± 0.5℃	≤ ± 0.5℃
Homogeneous degree of temperature:	≤ 2℃	≤ 2℃	≤ 2℃
Deviation of temperature:	≤ ± 2℃	≤ ± 2℃	≤ ± 2℃
Sedimentation speed of salt fog:	1-2ml / 80cm2.h	1-2ml / 80cm2.h	1-2ml / 80cm2.h
Cubage:	0.1cm3	0.25cm3	0.75cm3
Interior dimension(mm):	580×450×400	1000×640×500	1100×740×500
Overall dimension(mm):	720×1010×1080	950×1550×1290	1680×950×1450
Total power:	1.2 KW	3 KW	5KW
Gloss weight:	175Kg	300Kg	500 Kg

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Xenon Light Stability & Weathering Test

Y

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Standards:

ASTM

B117, 368 Corrosion
B499, 530 Coating Thickness
C346, 584 Appearance - Gloss
D333 Fineness of Grind
D522 Deformation - Cylindrical Mandrel
D523 Appearance - Gloss
D562 Viscosity - Krebs
D823 Application
D1064 Viscosity - Flow Cups
D1084 Viscosity - Flow Cups
D1186 Coating Thickness
D1200 Viscosity - Flow Cups
D1210 Fineness of Grind
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D1400 Coating Thickness
D1475 Specific Gravity / Density
D1737 Deformation - Conical Mandrel
D2134 Hardness - Pendulum
D2197 Hardness - Scratch Tester
D2246 Condensation Humidity
D2457 Gloss
D2486 Washability
D2794 Deformation
D3002 Adhesion
D3359 Adhesion - Cross Cut
D3363 Hardness
D3450 Washability
D4138 Coating Thickness - Destructive
D4212 Viscosity - Flow Cups
D4213 Washability
D4366 Hardness - Pendulum
D4541 Adhesion
D4414-A Coating Thickness - Wet Film
D4828 Washability
D5125 Viscosity - Flow Cups
D5178 Abrasion
D5895 Drying Time
D7091 Coating Thickness
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E313 Appearance - Gloss
E376 Coating Thickness
E1164 Appearance - Gloss
G12 Coating Thickness
G43 Corrosion
G85 Corrosion

BS

1006 Corrosion
3900:A6 Viscosity - Flow Cups
3900:A19 Specific Gravity / Density
3900:A22 Specific Gravity / Density
3900:C5 Coating Thickness
3900:C6 Fineness of Grind
3900:D5 Appearance - Gloss
3900:E1 Adhesion - Mandrel Bend
3900:E4 Adhesion - Cupping Tester
3900:E5 Hardness - Pendulum
3900:E6 Adhesion - Cross Cut
3900:E10 Adhesion
3900:E11 Deformation - Conical Mandrel
3900:E13 Deformation - Impact
3900:E19 Hardness - Pendulum
3900:F4 Corrosion - Salt Spray
3900:F17 Washability
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7719 Washability

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2409 Adhesion - Cross Cut
2431 Viscosity - Flow Cups
2813 Appearance - Gloss
7253 Corrosion
24624 Adhesion

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50021 Corrosion
50907 Corrosion
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50984 Coating Thickness
50986 Coating Thickness
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53799 Abrasion - Taber
55669 Deformation - Impact
67530 Appearance - Gloss

ECCA

T1 Coating Thickness
T2 Appearance - Gloss
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T5 Deformation - Impact
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T7 Deformation - Cylindrical Mandrel
T8 Corrosion - Salt Spray
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T12 Hardness - Scratch Tester

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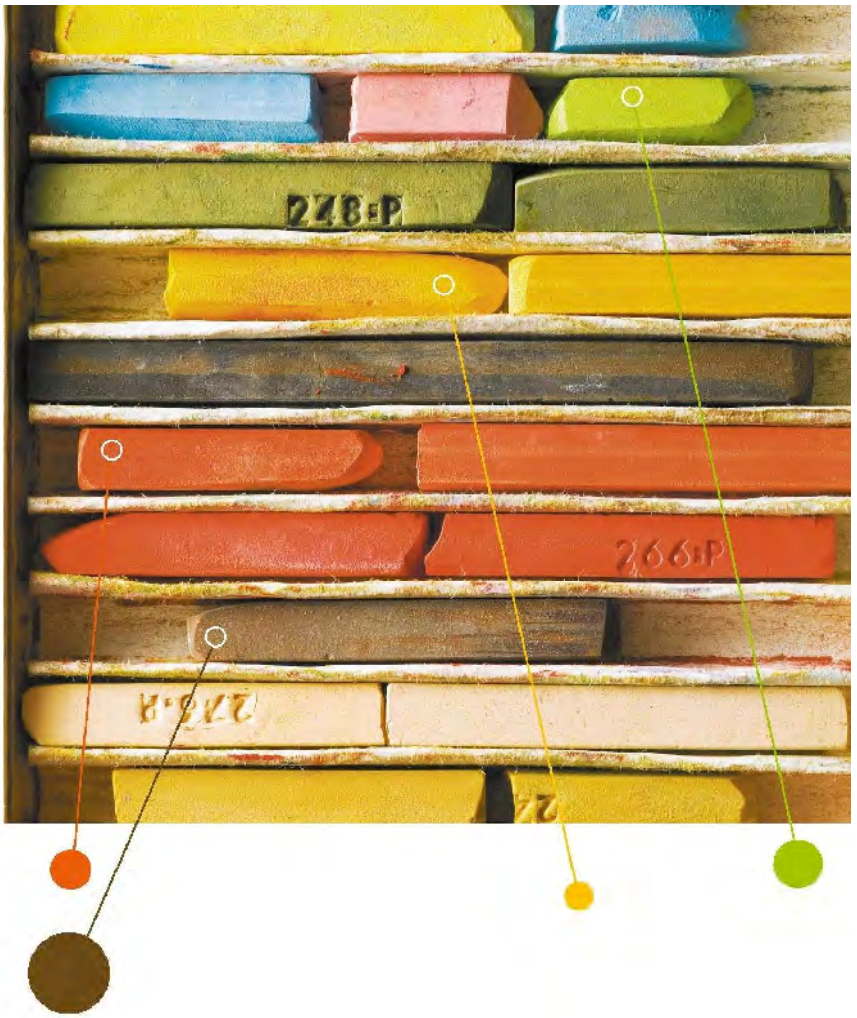

Product Range:

- Color
- Gloss
- Opacity
- Hiding Power
- Application
- Drying Time
- Adhesion
- Deformation
- Hardness
- Washability
- Thickness
- Fineness of Grind Gauge
- Density
- Weighing
- Viscosity
- Accelerated Weathering Test
- Corrosion

Local Agent: