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## Directory of services

# Laboratory

## MITRAS MATERIALS GMBH



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### **Notice:**

The test preparation depends on the delivery state of the specimen, as well as on its number and size, hence can only be given according to this information.

Should special chemicals be required, they are settled separately after arrangement.

Checks and tests are always done according to the current issue of the test norms.

## Directory of services

### 1. Physical measuring

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
tex	in according to DIN EN ISO 1889	app. 20 m
ash	AA 29L ISO 1887	section DIN A 4 reinforcing fibres app. 20 m
glass content	AA 03L AA 29L ISO 1887 AA 17L DIN EN ISO 1172	section DIN A 4
weight per unit area	AA 03L DIN EN ISO 10352	section DIN A 3
filler content	AA 03L DIN EN ISO 1172	section DIN A 4
water absorption	DIN EN ISO 62	section DIN A 5
volatile content	AA 53L	app. 100 g

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
density	AA 45L DIN EN ISO 1183-1	liquid: min. 100 ml section DIN A 4
salt spray test	DIN EN ISO 9227	test size to arrangement
flow characteristics of thermoplastics (MVR)	DIN EN ISO 1133-1	app. 10g
cross-cut test	DIN EN ISO 2409	test size to arrangement
microscopic measurements (for example: coating thickness measurement)	-	test size to arrangement
weathering properties (cyclic stress , immersions in water, heat ageing, condensed moisture test)	AA 59L AA 60L DIN EN ISO 6270-2	test size to arrangement
surface adhesion to immersion in water at 100°C	AA 58L in according to DIN 53 393	section DIN A4

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
chemical resistance (z. B. sulphuric acid test, condensed moisture test)	DIN EN ISO 175 AA 62L DIN 53 393 DIN EN ISO 6270-2 DIN EN ISO 2812-3	test size and medium to arrangement
resistance to changing climatic conditions	VDA 621-415	test size to arrangement
infrared-spectroscopy (material properties: organic and inorganic)	-	app. 50 g

## 2. Chemical analysis

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
butadiene content	AA 65L	app. 100 g (thermoplastic)
residual styrene content	AA 56L DIN 53 394	app. 100 g UP-cured polyester

### 3. Optical properties

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
colour measurement	DIN 5033 DIN EN ISO 11664-4	section DIN A 4 powder app. 100 g
lightfastness tests - wollscale - grey scale	in according to DIN EN ISO 105-B 02 DIN EN 20105-A 02	section DIN A 4
artificial weathering of plastics - xenon-arc lamps - fluorescent UV lamps (QUV-A)	DIN EN ISO 4892-2 DIN EN ISO 4892-3	number to arrangement test size to arrangement 150 x 75 mm
gloss measurement	AA 35L DIN EN ISO 2813	section DIN A 4
damage to the surface (z.B. degree of rusting, degree of blistering)	DIN EN ISO 4628	test size to arrangement

#### 4. Fire behaviour

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
flammability test	UL 94 HB	section DIN A 4
	MVSS 302 DIN 75 200 ISO 3795	section DIN A 3
	UL 94 VO-V2	section DIN A 4
	DIN EN 60695-2-10	section DIN A 3
	DIN 4102 B2, B3 DIN 53 438	section DIN A 3



## 5. Electrical properties

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
resistance measurement: - surface resistance (method with silver strip and feather tongue electrode)  - contact resistance	DIN EN 62361-3-2          DIN EN 61340-2-3	section DIN A 4          section DIN A 4

## 6. Mechanical properties

Notice: Mechanical check in components occurs after arrangement (maximum component size: app. 60 x 75 cm).  
 The information of the specimen size and number are defaults. Modification according to arrangement.

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
flexural test (RT till 100 °C) 3-point-procedure / 4-point-procedure - flexural stress - flexural strength - outer fibre strain - deflection - flexural modulus 3 Pkt. / 4 Pkt.	DIN EN ISO 14125 DIN EN ISO 178 ASTM D 790	section DIN A 4
tension test: (RT till 100 °C) - compressive stress - compressive strength	DIN EN ISO 604	section DIN A 4
impact test (- 50 °C till 150 °C) • Charpy - impact strength - notched impact strength	DIN EN ISO 179-1	section DIN A 4
Hardness test: - ball indentation - Shore A - Shore D	- DIN EN ISO 2039-1  - DIN ISO 7319-1	section DIN A 5

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
tensile test - tensile stress - tensile strength - tear strength - yield stress - x ./. – offset yield stress - modulus - elongation at break - elongation at yield stress - elongation at x ./. – offset yield stress - tensile modulus  - tensile shear strength - climbing drum peel test	DIN EN ISO 527-1 DIN EN ISO 527-2 DIN EN ISO 527-4 DIN EN ISO 527-5 ASTM D 638          DIN EN 1465 DIN EN 1464	section DIN A 3
electronical penetration test (- 40°C till 150°C) - fracture - fracture force - fracture deformation - fracture energy - penetration energy	AA 70L DIN EN ISO 6603-2	two sections DIN A 3

## 7. Thermo-mechanical properties

Kind of test	Instruction (AA) test norm	Quantity and kind of test specimen
Dimensional stability - Vicat A - Vicat B  - deflection temperature under load	DIN EN ISO 306   DIN EN ISO 75 T 1-3	section DIN A 5

## 8. Standards index

DIN	Edition	title
4102-1	1998 - 05	Fire behaviour of building materials and building components
5033	2009 - 05	Colorimetry
53 393	1976 - 03	Testing of Textile Glass-reinforced Plastics; Behaviour under the effect of Chemicals.
53 394	1974 - 02	Testing of plastics; determination of the percentage of styrene in unsaturated polyester resin moulding material in the moulded state, test method with Wijs-solution
53 438	1984 - 06	Testing of combustible materials; response to ignition by a small flame; edge ignition / surface ignition
75 200	1980 - 09	Determination of burning behaviour of interior materials in motor vehicles

DIN ISO	Edition	title
7619-1	2012 - 02	Rubber, vulcanized or thermoplastic – Determination of indentation hardness Part 1: Durometer method (Shore hardness)

<b>DIN EN</b>	Edition	title
1464	2010 - 06	Adhesives – Determination of peel resistance of high-strength adhesive bonds Floating roller method
1465	2009 – 07	Adhesives – Determination of tensile strength of bonded assemblies
20 105-A 02	1994 - 10	Textiles – Test for colour fastness – Part A02: Grey scale for assessing change in colour
60695-2-10	2001 – 11	Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods; Glow-wire apparatus and common test procedures
61340-2-3	2016 - 10	Electrostatics – Methods of test for determining the resistance and resistivity of solid planar materials to avoid electrostatic charge accumulation
62631-3-2	2016 - 10	Dielectric and resistive properties of solid insulating materials – Part 3-2: Determination of resistive properties (DC Methods) – Surface resistance and surface resistivity

<b>UL</b>	Edition	title
94	2013 - 03	Test for flammability of plastic materials for parts in devices appliances

<b>MVSS</b>	Edition	title
302	2012 - 10	Determination of burning behaviour of interior materials in motor vehicles

<b>DIN EN ISO</b>	Edition	title
62	2008 - 05	Plastics – Determination of water absorption
75-1	2013 – 08	Plastics – Determination of temperature of deflection under load
75-2	2013 – 08	Part 1: General test method
75-3	2004 - 09	Part 2: Plastics and ebonite
		Part 3: High-strength thermosetting laminates and long-fiber-reinforced plastics
105 – B 02	2014 – 11	Textiles – Tests of colour fastness; Colour fastness to artificial light
175	2000 – 10	Plastics – Methods of test for the determination of the effects of immersions in liquid chemicals
178	2013 – 09	Plastics – Determination of flexural properties
179-1	2010 – 11	Plastics – Determination of Charpy impact properties
306	2014 – 03	Plastics – Thermoplastics materials – Determination of Vicat softening temperature (VST)

527-1 527-2 527-4 527-5	2012 – 06 2012 – 06 1997 – 07 2010 – 01	Plastics – Determination of tensile properties – Part 1: General principles Part 2: Test conditions for moulding and extrusion plastics Part 4: Test conditions for isotropic and anisotropic fibre-reinforced plastic composites Part 5: Test conditions for unidirectional fibre-reinforced plastic composites
604	2003 – 12	Plastics – Determination of compressive properties
1133-1	2012 – 03	Plastics – Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics
1172	1998 - 12	Textile-glass-reinforced plastics – Prepregs, moulding components and laminates – Determination of the textile-glass and mineral-filler content; calcinations methods
1183-1	2013 – 04	Plastics – Methods of determining the density of non-cellular plastics – Part 1: Immersion method, liquid pyknometer method and titration method
1889	2009-10	Reinforcement yarns – Determination of linear density
2039-1	2003 – 06	Plastics – Determination of hardness – Part 1: Ball indentation method
2060	1995 - 04	Textiles – Yarn from packages – Determination of linear density (mass per unit length) by the skein method
2409	2013 - 06	Paints and varnishes – Cross-cut test
2812-3	2012 - 10	Paints and varnishes – Resistance to liquids – Part 3: Method using an absorbing medium
2813	2015 - 02	Paints and varnishes – Determination of specular gloss of non-metallic paint films at 20°, 60° and 85°



4628-2	2016 – 07	Paints and varnishes – Evaluation of degradation of coatings – Part 2: Assesment of degree of blistering
4628-3	2016 - 07	Paints and varnishes – Evaluation of degradation of coatings – Part 3: Assesment of degree of rusting
4892-2	2013 – 06	Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps
4892-3	2016 – 10	Plastics – Methods of exposure to laboratory light sources – Part 3: Fluorescent UV lamps
6270-2	2005 – 09	Paints and varnishes – Determination of resistance to humidity – Part 2: Procedure for exposing test specimens in condensations-water atmospheres
6603-2	2002 – 04	Plastics – Determination of puncture impact behaviour of rigid plastics – Part 2: Instrumented puncture test
9227	2017 – 07	Corrosion tests in artificial atmospheres – Salt spray tests
11664-1	2012 – 06	Colorimetry – Part 1: CIE standard colorimetric observers
14125	2011 - 06	Fibre-reinforced plastic composites – Determination of flexural properties

ISO	Edition	title
1887	2014 – 09	Textile glass – Determination of combustible-matter content
3795	1989 - 10	Determination of burning behaviour of interior materials

<b>ASTM</b>	Edition	title
D 638	2014	Standard test method for tensile properties of plastics
D 790	2017	Standard test method for flexural properties of unreinforced und reinforced plastics and electrically insulating materials

<b>VDA</b>	Edition	title
621 - 415	1982 - 02	Check of the corrosion prevention of vehicle sprayings with cyclically varying demand.