

RESOPAL® REAL METALS

TECHNICAL DATA SHEET

1. MATERIAL DESCRIPTION AND COMPOSITION

RESOPAL® Real Metals is a decorative high-pressure laminate (HPL) board in accordance with EN 438 and ISO 4586.

RESOPAL® Real Metals consists of layers of fibrous cellulose (normally paper) impregnated with thermoset synthetic resin, and a thin aluminium layer. These layers are joined to one another in a high-pressure compression process.

The process of simultaneously applying heat (≥ 120 °C) and high specific pressure (≥ 5 MPa) allows the thermoset synthetic resin to flow and then harden, creating a homogenous and pore-free material (≥ 1.35 g/cm³) with the desired surface.

More than 60% of RESOPAL® Real Metals is comprised of paper. The remaining 30-40% is comprised of cured phenol-formaldehyde resin for core layers (kraft papers) and aluminium for the surface layer (decorative surface).

The aluminium layer is anodised or coated with a protective lacquer. This coating provides permanent protection against corrosion and oxidation.

The "TO" surface for horizontal applications may contain slight irregularities (or slight structuring). This surface finish is approved for contact with food.

The Traceless Metal (TM) surface has a special radiation-cured coating, thus offering a fingerprint-resistant effect.

RESOPAL® Real Metals boards are available in a variety of dimensions, thicknesses and surfaces.

Due to its composition, the material is flame retardant.

2. AVAILABLE PRODUCTS

Size (mm)	3050×1220
Thickness (mm)	0,8 - 0,9 (3917-FG; 3907-HG; 3909-HG)
Surface finishes	Brushed, Matte, Brushed for Horizontal, Traceless Metal, Gloss
Protective film	yes
Decors	Depends on Collection - see Infobook

3. TECHNICAL DATA

3.1 Technische Eigenschaften gemäß EN 438-8 (RESOPAL® Real Metals)

		QUALITY		
		Inherently flame-retardant (standard core)		
		DECORS / SURFACES	Alle außer TO	TO
		THICKNESS	0,8 - 0,9 (3917-FG; 3907-HG; 3909-HG)	
		CLASSIFICATION	MTS	MTS
PROPERTY	TEST METHOD	UNIT		
Physical and dimensional properties				
Density	EN ISO 1183-1	g/cm ³	≥ 1,35	
Length and width tolerance	EN 438-2-5	mm	± 0,15	
Thickness tolerance	EN 438-2-6	mm	- 0 / + 10	
Edge straightness	EN 438-2-7	mm/m	≤ 1,5	
Edge squareness	EN 438-2-8	mm/m	≤ 1,5	
Evenness / flatness	EN 438-2-9	mm/m	100	
Dimensional stability at elevated temperatures				
- longitudinally	EN 438-2-17	%	≤ 0,75	≤ 0,75
- transverse			≤ 1,25	≤ 1,25
Mechanical properties				
Resistance to boiling water (only delamination of the core is standardised)	EN 438-2-12	Pass / fail	Passed	Passed
Susceptibility to cracks	EN 438-2-23	Grad ^(a)	4	4
Minimum bending radius (convex and concave)	Interne Prüfung	mm	200	200
Minimum postforming radius	EN 438-2-31/32	mm	not postformable	not postformable
Surface properties				
Surface defects according to EN 438-2-4 - test conducted at a distance of 1.50 m				
- round (one spot or spread over several)	EN 438-2-4	mm ² /m ²	≤ 1	≤ 1
- linear (one spot or spread over several)		mm/m ²	≤ 10	≤ 10
Resistance to surface abrasion (initial abrasion point)	EN 438-2-10	Revolutions	n/a	n/a
Resistance to water vapour	EN 438-2-14	Rating ^(a)	3	3
Resistance to scratching	EN 438-2-25	Rating	1 (continuous scratches with 1 N)	4 (continuous scratches with 6 N)
Resistance to staining				
- Groups 1 & 2	EN 438-2-26	Rating ^(a)	4	4
- Groups 3			4	4
Additional properties for horizontal applications (apart from requirements of EN 438-8)				
Resistance to impact by small-diameter ball	EN 438-2-20	N	< 10	< 10
Resistance to impact by large-diameter ball	EN 438-2-21	Drop height mm	600	600
Resistance to dry heat	EN 438-2-16	Rating ^(a)	2	5
Resistance to humid heat	EN 438-2-18	Rating ^(a)	4	5

MTS: thin metal plate, standard quality

^(a) Rating: 1 = 1 = surface damage; 2 = obvious change; 3 = moderate change; 4 = slight change (visible only from certain angles); 5 = no visible change. .

	QUALITY		Inherently flame-retardant (standard core)	
	DECORS / SURFACES		Alle außer TO	TO
	THICKNESS		0,8 - 0,9 (3917-FG; 3907-HG; 3909-HG)	
	CLASSIFICATION		MTS	MTS
PROPERTY	TEST METHOD	UNIT		
Fire performance				
Fire performance	NFP 92-501	Classification M	M1	M1
	EN 13501-1	Euro class	B-s2,d0	B-s2,d0
Thermal value	EN ISO 1716	MJ/kg	18 - 20	18 - 20
Health and environment				
Declaration of harmlessness (contact with food)	DIN EN 1186 / 13130 / CEN/TS 14234	Pass	No	Yes
Formaldehyde emission	EN 16516	Classification	E1	E1
Emission of volatile organic compounds (VOC)	ISO 16000-9	Classification	A+	A+

MTS: thin metal plate, standard quality

Metal is subject to slight natural fluctuations in colour and structure, as well as an iridescent effect in certain decors. This is not a reason for complaint.

RESOPAL® Real Metals should not be exposed to direct sunlight. This can lead to a slight change in the colour of the tinted surface coating. This does not constitute a product defect.

3.2 Additional technical properties and safety information for RESOPAL® Real Metals

	QUALITY		Inherently flame-retardant (standard core)	
	DECORS / SURFACES		All	
	THICKNESS		All	
	CLASSIFICATION		MTS	
PROPERTY				
Physical and chemical properties				
Physical state	Solid			
Solubility	Insoluble in water, oil, methanol, diethyl ether, n-octanol, acetone.			
Boiling point	None			
Outgassing	None			
Melting point	RESOPAL® Real Metals does not melt.			
Thermal value	18 - 20 MJ/kg			
Heavy metals	RESOPAL® Real Metals HPL contains no toxic compounds based on antimony, heavy metals, barium, cadmium, chromium III, chromium VI, lead, mercury, selenium.			
Asbestos	RESOPAL® Real Metals contains no asbestos.			
Pentachlorophenol (PCP)	RESOPAL® Real Metals contains no PCP (pentachlorophenol).			
ROHS	RESOPAL® Real Metals meets the requirements of ROHS guideline 2011/65/EU from 8 June 2011 and guideline 2015/863 from 31 March 2015.			
Safety data sheet	RESOPAL® Real Metals does not comprise hazardous substances within the meaning of the Chemicals Act; no special labelling or safety data sheet is required.			
Stability and reactivity information				
Stability	RESOPAL® Real Metals is stable; it is neither reactive nor corrosive			
Dangerous reactions	None			
Incompatibility	Strong acids or alkaline solutions may damage the surface			

QUALITY		Inherently flame-retardant (standard core)	
DECORS / SURFACES		All	
THICKNESS		All	
CLASSIFICATION		MTS	
PROPERTY			
Fire and explosion protection data			
Ignition temperature		approx. 400 °C	
Flashpoint		None	
Thermal decomposition		Possible above 250 °C. Toxic gases (e.g. carbon monoxide, carbon dioxide, ammonia) may arise depending on the fire conditions (temperature, oxygen content, etc.).	
Smoke and toxicity		HPL can be used in areas where smoke and toxicity is controlled (e.g. railway construction and shipbuilding)	
Flammability		RESOPAL® Real Metals is classified as non-flammable. It only burns in real fires in which open flames are present.	
Extinguishing agent		Class A	
Dust class		ST-1.	
Maximum dust concentration		60 mg/m³	
Protection against explosion and fire		In the event of fire, HPL should be treated like wood-based materials. There is a risk of sparks when cutting metal surfaces. Switching off the dust suction system to prevent the risk of fire from wood dust is recommended.	
Electrostatic behaviour			
Electrostatic behaviour		RESOPAL® Real Metals minimises the generation of electrostatic charges through contact changes or friction with other materials. It does not need to be grounded. The surface resistance is 10 ⁹ - 10 ¹² Ohm and the charging capacity pursuant to CEI IEC 61340-4-1 is V < 2 kV. Thus, RESOPAL® Real Metals is an antistatic agent.	

4. ZERTIFIZIERUNG UND PRÜFBERICHTE

QUALITY		Inherently flame-retardant (standard core)	
DECORS / SURFACES		All except TO	TO
THICKNESS		0,8 - 0,9 (3917-FG; 3907-HG; 3909-HG)	
CLASSIFICATION		MTS	MTS
PROPERTY	TEST METHOD	UNIT	
Physical and dimensional properties			
Fire performance: structural engineering	NFP 92-501	Classification	M1
	DIN EN 13501-1	Class M	B-s2,d0
Fire performance: transportation trains	EN 45545	Classification	n/a
Fire performance: marine equipment directive (MED)	MED	Certification	Module B & D
Emission of volatile organic compounds (VOC)	ISO 16000-9	Classification	A+
Formaldehyde	EN 16516	Classification	E1
Greenguard	UL 2818	Certification	n/a
Declaration of harmlessness (contact with food)	DIN EN 1186 / 13130 / CEN/TS 14234	Pass	No Yes
Antibacterial effect	JIS Z 2801	% reduction	n/a
PEFC		Certification	No
FSC		Certification	upon request

5. STORAGE AND TRANSPORT

RESOPAL® Real Metals must be stored in a closed storage area under normal indoor conditions (10-30°C and 40-65% relative humidity). In addition, RESOPAL® Real Metals must be protected against moisture and mechanical damage. When storing in stacks, the surfaces should be completely covered and the edges should be flush. Plates should be stored horizontally on a flat pallet covered by a protective sheet. Plus, the top sheet in a stack must be covered with a protective film and weighted down by a cover plate. These storage conditions must also be maintained whenever one or more sheets is removed from the stack.

If being stored for a longer time, it is important to ensure that RESOPAL® Real Metals is stored flat to prevent warping or deformation. If horizontal storage is not possible, we recommend storing in an inclined position at an angle of 80° with full-surface support and a counter bearing on the floor to prevent slipping.

In addition, RESOPAL® Real Metals must be transported on a horizontal, level surface of sufficient size (e.g. pallet) to prevent the panels from slipping.

In order to avoid damage to the surface, all RESOPAL® Real Metals are equipped with a colourless, removable PE protective film. This protective film should be removed from the surface of RESOPAL® Real Metals after six months at the latest.

6. HANDLING AND MACHINING OF RESOPAL® REAL METALS

RESOPAL® Real Metals is suitable for vertical applications (furnishings, splashbacks, etc.). RESOPAL® Real Metals with the "TO" surface are also suitable for horizontal applications (table tops and worktops). It should be noted that dents can occur if objects fall on the surface when the product is used horizontally.

Before being processed, RESOPAL® Real Metals, the substrate and the adhesive system should be conditioned for two days on a flat surface under the following conditions: temperature between 18-25°C, relative humidity between 50-65%. A normal interior climate (18-25°C and 50-65% relative humidity) is recommended for application.

Major changes in the indoor climate or extreme climate conditions must be taken into account. RESOPAL® Real Metals is not for areas with constantly high humidity or direct contact with water.

RESOPAL® Real Metals is a wood-based product and its dimensions can constantly adapt. The product can be machined with woodworking machines.

Because the product is directional, we recommend arranging the panels in the same direction.

All commercially available adhesives, that are also used to bond conventional decorative high-pressure laminate panels (HPL), are suitable for bonding: dispersion adhesives (PVAc), contact adhesives, reactive adhesives, and hot-melt adhesives.

When using flat presses for bonding, it is important that a temperature of 60°C and a contact pressure of between 0.15 and 0.2 N / mm² (1.5 - 2 bar) are not exceeded. We recommend using soft padding between the surface of the plate and the press.

RESOPAL® Real Metals with contact adhesives (solvent-based) or condensation adhesive (phenol-resorcinol resin-based) requires special care and compliance with the adhesive manufacturer's instructions.

When producing composite elements with RESOPAL® Real Metals, particular care must be taken to equalise tension with the help of a suitable backing. We therefore recommend the use of identical RESOPAL® Real Metals or selected backing.

In production of asymmetrical composite elements, responsibility lies with the processor. In such cases, we recommend using a substrate that is at least 18 mm thick and backing 3100-60 with the same thickness. Furthermore, we recommend conducting preliminary tests to determine the feasibility of the respective application.

Only the production of symmetrical composite elements is recommended for composite elements with substrates that are thinner than 18 mm.

RESOPAL® Real Metals can be cold bent both lengthways and widthways, both convexly and concavely with a minimum radius of 200 mm. RESOPAL® Real Metals are not postformable.

The protective film must be removed after six months at the latest.

More information about handling and processing RESOPAL® Real Metals can be found in chapter 3 (03 General Handling Recommendations for RESOPAL HPL) of the technical handbook.

7. CLEANING AND CARE

RESOPAL® Real Metals does not require further surface treatment (e.g. paint or other coating). The surface of RESOPAL® Real Metals can be cleaned with a cloth or sponge and a mild soap solution or conventional glass cleaner. Do not use abrasive cleaning supplies, acids or lye. Wiping dry with a soft cloth is recommended.

The extent to which decorative HPL shows changes to the surface (e.g. scuffs, scratches, nicks and dents, stains) depends on the texture and colour of the surface.

8. SUSTAINABILITY AND THE ENVIRONMENT

RESOPAL® Real Metals is produced in plants that are ISO 14001 and 50001 certified.

RESOPAL® Real Metals is a cured and therefore inert duroplast. The release of formaldehyde from RESOPAL® Real Metals (< 0.05 ppm in testing according to EN 16516) is far below the legally permissible level (< 0.1 ppm according to the German chemical prohibition ordinance).

VOC test reports are available with the following classifications:

A+ with the test scenario for walls with a loading factor of 1.0 m²/m³

Only RESOPAL® Real Metals with the "TO" surface is approved for direct contact with all foods and can safely be used as intended in food processing.

RESOPAL® Real Metals is a product and not a chemical substance, so the REACH ordinance is not applicable. It is, however, important to ensure information is exchanged with raw material suppliers in regard to REACH-relevant components. Please refer to the REACH ordinance technical data sheet for more information.

9. DISPOSAL AND ENERGY RECOVERY

RESOPAL® Real Metals can be disposed of at controlled waste disposal facilities that comply with current national and regional regulations. RESOPAL® Real Metals is classified as AVV 200301 (mixed municipal waste) according to the directive on the European Waste Catalogue.

Due to its high thermal value (18 - 20 MJ/kg), RESOPAL® Real Metals is particularly well-suited for thermal recycling. When completely combusted at 700°C, the boards burn to water, carbon dioxide and nitrogen oxide. RESOPAL® Real Metals boards thus meet the requirements for energy recovery in accordance with § 8 of the German Recycling Management Act. The conditions for good combustion are met in modern, officially approved industrial incineration facilities. The ashes from these incineration processes can be brought to controlled landfills

All information contained in this data sheet is based on the current state of technical knowledge, but does not constitute a guarantee. There is no guarantee regarding suitability for particular uses or applications.

