

Section 12 31 00 – 12 36 00

Laboratory Grade Solid phenolic panels for durable lab & healthcare designs

1. Part – General

1.01 Section includes

- A. Solid composite panel suitable for use on laboratory grade casework, countertops and as shelving, backsplash/curb, wall cladding, drawer fronts, cabinet doors, partitions and other structural components including work-surfaces.

1.02 Related Sections:

- A. Documents affecting work in this section include but is not limited to the General Conditions, Supplementary Conditions and Sections in Division 1 – General Requirements of these specifications:
 - Section 064100 – architectural wood cabinets
 - Section 062000 – Finished Carpentry
 - 10500 - Lockers
 - 10670 – Shelving
 - 12300 - Laboratory Casework and fixtures (12 3100 through to 12 3500)

1.03 References:

- A. SEFA 3-2010 Recommended practices for laboratory work surfaces
- B. SEFA 8PH – 2014 Recommended Practices for Lab Grade phenolic casework
- C. International Standards:
 - ASTM D3023 & C1378 – Stain Resistance
 - ASTM D696 – Thermal Co-efficient of Expansion
 - ASTM E1428 / JIS Z 2801:2012 (mod) – Bacteria Resistance
 - EN 438-2:12 – Boiling water absorption
 - EN 438-2:16 – Standard Test Method for Resistance to Dry Heat
 - EN 12721 – Standard test method for resistance to wet heat
 - EN 438-2:17 Dimensional stability in elevated temperature (ASTM D648 – Heat distortion)
 - EN 438 – 2:21 – Impact resistance
 - EN 438 -2:25 – Standard Test Method for Resistance to Scratch
 - EN 438 – 2:27 – Light fastness
 - EN ISO 178/ASTM 790-08 – Elasticity and flexural strength
 - EN ISO 1183 – Density
 - ASTM e-84 – Surface burning / flame spread
 - ISO 9001 – Quality management systems
 - ISO 14001: 2015 – Environmental management system

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- ISO 50001:2018 – Energy Management System
- ISO 45001:2018 - Occupational health and safety management system

1.04 Submittals

1. Submittals for Review in accordance with Section:

A. Shop drawings:

Submit plan, section, elevation and perspective drawings necessary to describe and convey layout, profiles and product components, including edge conditions, joints, fitting and fixture locations, anchorage, accessories and finish colors.

Verify actual measurements by field measurements before fabrication; show-recorded measurements on shop drawings.

Co-ordinate field measurements and fabrication schedule with construction progress to avoid construction delays

B. Product data:

Manufacturer's data sheets on each product used, including preparation instructions/installation instructions and recommendations; storage & handling requirements.

C. Samples

Selection Samples: for each product specified, submit a complete set of color samples representing manufacturer's full range of standard colors

Verification samples: Submit four samples 4"x4" representing each color and thickness of material used

2. Quality Control Submittals

- ##### A. Test Reports – independent/certified test reports showing compliance with specified performance characteristics and physical properties

3. Sustainable Design Submittals

- ##### A. Low Emitting Materials: provide certification of VOC content
- ##### B. EPD: provide independent Environmental Product Declaration
- ##### C. HPD: provide Health Product Declaration
- ##### D. Recycled Content: provide recycled content declaration

4. Close out submittals

- ##### A. Maintenance Data

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- i. Provide maintenance, cleaning and life cycle information
- ii. Include recommended cleaning materials and procedures including a list of materials detrimental to Fundermax Max Compact Interior Plus

1.05 Quality Assurance

- A. Manufacturer qualifications
 - i. Primary product furnished by a single manufacturer with a minimum of 35-years (documented) experience in work of this section
 - ii. Products manufactured in an ISO 9001 certified facility
- B. Mockup (optional):
 - a. Before construction of casework construct a mock-up to verify selections made under approved submittals and to demonstrate typical joints, surface finish, texture, tolerances, attachments, methods of installation, connections to adjacent materials and standard and quality of workmanship. Build mock-up to comply with the following requirements using materials indicated for completion of the Work:
 - b. Mock-up shall be a minimum of ____ and shall demonstrate substrate surface preparation, typical joints, tolerances, and connections to adjacent materials.
 - c. If Architect determines that the field constructed mock-up does not meet Project requirements, reinstall mock-up until approved.
 - d. At the architect's discretion, the mock-up may be part of the finished work.

1.06 Delivery, Storage and Handling

- A. Delivery
 - Package materials to prevent damage during shipping and handling
- B. Storage
 - Use pallets larger than sheets during transportation
 - Deliver and store in manufacturers original protective packaging until ready for installation
 - Store panels using protective dividers to avoid damage
 - Do not store vertically
 - Store material in an enclosed shelter to provide protection /exposure to the elements
- C. Handling

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- Remove protective peel once panel has been installed
- Handle panels individually to prevent damage
- Remove adhesive stickers immediately after installation
- Do not use work surfaces as a workbench, seating or stand on

1.07 Co-ordination and Project conditions

- A. Do not install products under environmental conditions outside of manufacturer's recommended limits
- B. Secure field measurements before preparation of shop drawings and fabrication.
- C. Furnish anchorage and top connection devices or material as specified

1.08 Warranty

Material should hold a warranty for an extended period of 10 years. The warranty to include the specified physical and chemical properties. The manufacturers authorized fabricator and/or casework manufacturer and/or product installer and panel manufacturer must sign the warranty documents and submit a copy to the contractor.

2. Products

2.01 Manufacturer

Contract documents/specification is based on raw material panels manufactured by Fundermax and provided by Fundermax GmbH, located at IZ NOE-Sued Strabe 3, Objekt1`, 2351 Wiener Neudorf, Austria. Approved fabricators and/or casework manufacturers that provide products that comply with this specification section, as judged and approved by the architect, may be acquired from the above.

Source Limitations: Obtain HPL compact panels from a single source Manufacturer who has a minimum of 35 years of experience in the manufacturing of high pressure Compact Laminate or an accessory Manufacturer who is certified by the HPL panel Manufacturer. Panels to be manufactured in accordance to EN 438-4 type CGS and in a plant certified to ISO9001 and ISO14001.

2.02 Materials

Max Compact Interior is a phenolic high pressure compact laminate (HPL), manufactured in accordance with EN 438-4, type CGS. The layers of recycled kraft paper impregnated with phenolic resin coupled with its scientifically developed surface Max Compact Interior resists permanent humidity, easy to clean (even graffiti) wear and scratch resistant. This innovative material significantly extends the life cycle of the laboratory casework. It is suitable for use in high traffic areas and can be used as internal lining for cleanrooms, and is ideal for use as laboratory grade casework, lockers,

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wall cladding, shelving, and countertops. The double-sided material is color matched to the top and bottom surface with over 150 decors to select from.

Basis of Design: Fundermax Max Compact Interior with a double sided finish and a minimum of 60% recycled post-consumer content.

Basis of Design Product: Subject to compliance with requirements, provide phenolic Max Compact Interior with a double sided surface finish top and bottom and containing up to 60% recycled Kraft paper as manufactured by Fundermax GmbH, or a comparable product by one of the following:

- Fundermax GmbH / Fundermax North America LLC

Substitutions: Must be submitted as an equal to product no less than ten days prior to bid deadline.

2.03 Material Properties

- A. Work surfaces – shall be constructed of chemical resistant panels that are double sided and color matched top and bottom.
- B. Thickness – As specified on drawings or by Architect
- C. Cabinets – shall be constructed as per the cabinet manufacturer’s specification with chemical resistant panels that are double sided with a urethane acrylate surface
- C. Color – As specified on drawings or by Architect
- D. Surface – Melamine
- E. Chemical resistance

Evaluation of chemical resistance based on SEFA 8PH-2014 Section 8.1 list of 49 chemicals / concentrations, their required methods of testing (1-hour surface test) and evaluate after 24 hours. Results should exceed the acceptable results as a means of establishing an acceptable level of performance for all exposed and semi-exposed surfaces

Rating Scale:

Level 0 - No detectable change.

Level 1 - Slight change in color or gloss.

Level 2 - Slight surface etching or severe staining.

Level 3 - Pitting, cratering, swelling, or erosion of coating. Obvious and significant deterioration.

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The chemical resistance performance should be as follows:

CHEMICAL/REAGENT	TEST METHOD	RATING
ACETATE, AMYL	A	0
ACETATE, ETHYL	A	0
ACETIC ACID - 98%	B	0
ACETONE	A	0
ALCOHOL, ETHYL	A	0
ALCOHOL, METHYL	A	1
ALCOHOL, BUTYL	A	0
AMMONIUM HYDROXIDE, 28%	B	0
BENZENE	A	0
CARBON TETRACHLORIDE	A	0
CHLOROFORM	A	0
CHROMIC ACID - 60%	B	0
CRESOL	A	0
DICHLORACETIC ACID	A	0
DICHROMATE ACID 5%	B	1
DIMETHYLFORMAMIDE	A	0
DIOXANE	A	0
ETHYL ETHER	A	0
FORMALDEHYDE, 37%	A	0
FORMIC ACID - 90%	B	1
FURFURAL	A	1
GASOLINE	A	0
HYDROCHLORIC ACID 37%	B	0
HYDROFLUORIC ACID, 48%	B	2
HYDROGEN PEROXIDE, 30%	B	0
IODINE, TINCTURE OF	B	1
METHYL ETHYL KETONE	A	0
METHYLENE CHLORIDE	A	0
MONOCHLOROBENZENE	A	0
NAPHTHALENE	A	0
NITRIC ACID 20%	B	0
NITRIC ACID 30%	B	0
NITRIC ACID 70%	B	2
PHENOL, 90% (WT)	A	0
PHOSPHORIC ACID 85%	B	0
SILVER NITRATE, SATURATED	B	0
SODIUM HYDROXIDE FLAKE	B	1
SODIUM HYDROXIDE, 10% (WT)	B	0
SODIUM HYDROXIDE, 20% (WT)	B	0

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SODIUM HYDROXIDE, 40% (WT)	B	0
SODIUM SULFIDE SATURATED	B	0
SULFURIC ACID, 33%	B	0
SULFURIC ACID, 77%	B	0
SULFURIC ACID, 77% & NITRIC ACID, 70% EQUAL PARTS	B	2
SULFURIC ACID, 96%	B	2
TOLUENE	A	0
TRICHLOROETHYLENE	A	0
XYLENE	A	0
ZINC CHLORIDE, SATURATED	B	0

F. Physical Properties

- 1) Density DIN 52350 / ISO 1183: $\geq 1,35\text{g/cm}^3$ / $\geq 84\text{lbs/ft}^3$
- 2) Modulus of elasticity EN ISO 178: $\geq 9000\text{MPa}$ / $\geq 1,305,340$ psi
- 3) Flexural Strength EN ISO 178: ≥ 80 MPa / $\geq 11,603$ psi
- 4) Tensile Strength EN ISO 527-2: ≥ 60 MPa / $\geq 8,702$ psi
- 5) Resistance to Scratching EN 438-2 point 25: 4 N
- 6) Resistance to Impact EN 438-2 point 21: $\geq 8\text{mm}$ / $\geq 1/3''$
- 7) Resistance to stress Abrasion EN 438-2 point 10: ≥ 150 U (rotations)
- 8) Dimensional stability measured at elevated temperatures with moisture change EN 438-2, point 17: $\leq 0.10\%$ length : $\leq 0.21\%$ width (CGS)
- 9) Resistance to boiling water EN 438-2, point 12: 0.5% (CGS/CGF) 1.5 (BCS)
- 10) Co-efficiency of thermal expansion DIN 52328: 20×10^{-6}
- 11) Resistance to dry heat EN 438-2, point 16: 4
- 12) Resistance to staining EN 438-2, point 26 (group 1-2): 5 no visible changes, no blisters or cracks
- 13) Light fastness EN 438-2 point 27: 4 or 5
- 14) Non porous and non-microporous surface and edges
- 15) Surface will not support bacteria growth
- 16) Will not support oxidation of material surface
- 17) Both sides decorative and chemical resistant
- 18) Environmental standards: FSC / PEFC certification ; Environmental Product Declaration (EPD) ; Manufacturer recycles waste and cutoffs to produce green electricity
- 19) Fire Rating –
 - a. Flame Spread Index: ≤ 25
 - b. Smoke Developed Index: ≤ 150

2.04 Quality Control

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- B. Panels shall be of material specifically designed for laboratory and/or healthcare. Fabricated work surfaces / countertops shall comply with all current codes and regulations
- C. Panels to be UL Greenguard and FSC certified and labeled for quality consistency
- D. Environmental Product Declaration (EPD) provided by the manufacturer
- E. SEFA 8PH – 2014 Section 8.1 independent (SEFA approved) test certificate to be provided meeting conditions outlined above.

2.05 Fabrication

Fabricate panels as per shop drawings

- A. Fabricator Qualifications: A shop that employs skilled workers who custom fabricate HPL Compact or countertop or casework systems to those required for this Project and whose finished products have a record of successful in-service performance and who is approved / authorized by the HPL manufacturer. If shop drawings are required for the Project the shop drawings are to be drawn and coordinated by the approved fabrication company.

3. Execution

3.01 Examination

- Do not begin installation of work surfaces/countertops until cabinets have been installed - Confirm that surfaces to receive tops are plumb, level with a maximum deflection of ¼" in 20'

3.02 Preparation

- Prepare surface as per methods recommended by manufacturer

3.03 Installation

- Install in accordance with approved shop drawings and manufacturer's instructions
- For work surface installation:
 - Adhere to adjacent surfaces in accordance with manufacturer's recommendations
 - Fasten tops to supporting construction with adhesive appropriate for use with adjoining construction and as recommended by the manufacturer
 - Form field joints using manufacturer's recommended adhesive. Joints to be inconspicuous and nonporous
 - Install (laboratory shelving / pegboards/ reagent racks using fasteners and adhesive appropriate for use with adjoining construction and as recommended by the manufacturer

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A. Adhesive options

- For installation of materials in permanent location bond joints with a high chemical resistant sealant with color similar to base material

3.04 Protection

Following installation, the General Contractor shall ensure the casework, work surfaces/countertops are protected from damage. The material shall be kept free from paint, plaster, cement scratches or any other destructive forces.

<ENDS>