

LABORATORY CASEWORK Section 12345

PART 1 - GENERAL

1.01 SCOPE

A. The casework contractor shall furnish all material, equipment, tools, labor and insurance required to perform a complete installation in accordance with the specification and applicable drawings.

1.02 WORK INCLUDED:

A. Furnish all laboratory casework and equipment; deliver to the job-site, assemble, level, scribe and secure to floors or walls as required.

B. Furnish and deliver to the mechanical and electrical contractors all sinks, troughs, outlets, overflows traps, fixtures, switches and receptacles as specified and called for on the drawings.

1.03 WORK BY OTHERS

A. Furnish, deliver and install all work, conduit, wiring, mechanical service piping, shut off valves, drain lines, vents, re-vents, special piping to meet local codes, vacuum breakers, ductwork and fume hood blowers.

B. Receive, store, distribute, install and connect all electrical service fixtures, plumbing service fixtures, drain fittings traps, cup sinks and sinks supplied by the casework contractor. All framing, bucks, plaster grounds and reinforcement of walls, floors, and ceilings to support the casework.

1.04 MANUFACTURES

A. All laboratory casework covered by this specification shall be the product of one manufacturer. Manufacturers furnishing equipment shall have been engaged in work of this type, for at least five years and shall have completed five installations of equivalent size.

B. Approved laboratory casework manufacturers are:

1. CSi Lab Systems

1.05 SAMPLES

A. All bidders, upon request shall be required to submit a sample cabinet made in accordance with this specification. Samples shall be delivered, at NO cost to the Architect or Owner, to a destination set forth by the Architect, seven days prior to bid date as a condition of approval of each bidder.

Samples shall be full size, production type samples with the approximate dimensions of 24"w x 30"h x 22" d, with one drawer and one door.

Samples may be held by the owner or Architect to insure that all equipment delivered conforms in every respect to the sample.

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1.06 DRAWINGS

A. The casework contractor shall furnish three sets of drawings for approval, describing and/or illustrating all equipment covered by this contract. Fabrication must not be started until prints with the Architects "Final Approval" stamp affixed thereon, have been returned to the manufacturer.

1.07 GUARANTEE:

A. The casework contractor shall guarantee all materials and workmanship of equipment provided under this contract for a period of one year

PART 2 – METAL CASEWORK CONSTRUCTION

2.01 MATERIALS:

A. All materials shall be of the highest quality, whether they are finished parts used in Assembly, raw material, or materials and workmanship furnished by others, as part of the completed product.

B. All steel used in the manufacture of metal casework shall be cold rolled, prime grade, or better. Steel shall be inspected prior to fabrication and certified to be free of rust, pits, scratches, or any other defect(s) which prevent parts from being made to blueprint specifications.

2.02 GAUGES:

Gauge specifications for individual steel parts shall be as follows:

Aprons	18 GA.
Back Panels	20 GA.
Bottom Panels	18 GA.
Door & Drawer Outer Pan	20 GA.
Door & Drawer Inner Pan	20 GA.
Drawer Bodies	20 GA.
Legs, 2" Square	18 GA.
Shelves	18 GA.
Side Panels	18 GA.
Tables Frames	18 GA.
Shelf Support Brackets	14 GA.

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2.03 CONSTRUCTION:

A. Cabinets:

Cabinets shall be constructed of prime 18 gauge steel for the sides, backs, and toe space. 1" X 18 gauge steel tubing shall be used for the top front and back rails. Each front joint is to be welded and ground flush to provide a smooth surface. A 4' high X 3' deep toe space shall be standard. Four corners are to be fitted with a stamped and welded 14 gauge leveling gusset plate, and a plated leveling screw. Leveling screws are provided with a slot for easy adjustment, and non marking nylon glides. Removable back panels shall be furnished on all cabinets. Cabinet bottom will be panned up to contain spills and removable for easy cleaning and maintenance.

B. Doors – Base Cabinet Doors:

Doors shall be double pan construction, with insulating material fastened to the inside for sound deadening, and strength, to prevent panning and bending. Hinges are five knuckle gauge stainless steel, fastened to both the door and cabinet frame with zinc plated steel screws. Door catches plated, friction roller type. Door closes onto nylon bumpers for noise dampening, and over nylon spacers for alignment.

C. Drawers:

Drawer bodies shall be one piece 20 gauge construction, fully coved on all four sides horizontally and formed out of one sheet of steel.

D. Drawer Suspension:

Drawers shall operate on full extension, ball bearing, zinc plated, drawer suspension rated to withstand 10,000 cycles at 100 lbs.

E. Shelves:

Shelves shall be constructed of 18 gauge steel, with channels formed on both the front and back edges. K & V shelf clips are made from 14 gauge steel, and are to be adjustable vertically in 1" increments. Sliding shelves shall use the same ball bearing slides as drawer units.

F. Fabricated Accessories

All accessories required for specific installations shall be fabricated and finished to the same material and quality standards as the base units they will be made to compliment.

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G. Wall Cabinets:

Wall Cabinets shall be made to the same quality standards as base units. Material used, as noted above. Shelve hangers are to be constructed of 14 gauge steel, and to easily adjust vertically in one inch increments.

Shelves are to be constructed with channel type fronts and backs, as well as flanged ends with nylon button glides. Wall units to have open fronts, slid glass, framed glass sliding and swinging, or sliding and swinging steel doors as specified. Glass is plate, ground on all exposed.

Sliding door units to be furnished with extruded top and bottom channels as well as ball bearing rollers.

All wall units are to be furnished with hanger brackets for ease of installation.

H. Floor Units:

Floor Units shall be made to the same quality standards as base units. Material used, as noted above.

Shelves and shelf hanger construction, same as wall units.

Floor unites to be furnished with the same front and door configurations as the above described wall units.

2.04 FINISH:

A. All surfaces shall be painted or plated, whether they are exposed or not. Paint is to Be a chemically resistant baked on epoxy powder coat enamel, conforming to CSi Lab Systems standards.

General

This specification establishes the performance and appearance requirements for the interior decorative coatings and used on laboratory products. The material to be used for the coating will be applied dry over metallic substrates. The material must be available in a number of colors matched to CSi Lab Systems (Metal-Arc) standards.

Manufacturability

The material shall be such that it can be applied in multiple coatings where needed, without intercoat sanding. The shelf life of the material shall be (six (6) months) at not more the 77 degrees without deterioration of properties.

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APPEARANCE

Description	Test Procedure	Requirement
A. Color	AES-C-0100	Pass
B. Light Resistant	QUV A Apparatus	48 hours w/o change in color or gloss
C. Thickness	Mill Gage	See pages 12345-2 & 3
D. Glass	ASTM D523-8030	Degree + 5 Matte
	60 Degrees Glossmeter	20 Degree + 5 Black
Performance	Test Procedure	Requirement
A. Hardness	ASTM D3363-74 (no indeptation)	3-H Min.
B. Impact Resistance	ASTM D2794-69	120 in-lbs w/o cracking
C. Flexibility	ASTM D522-60	No cracking or loss of adhesion at bend
D. Abrasion	Tabor abrasor CS 10 Wheel	14 mg. max weight loss per 100 cycle
E. Humidity of	ASTM D2247	288 hours exposure with no loss adhesion or blistering
F. Salt Spray	ASTM B117-64	144 hours exposure with no rust.
	ASTM D1654-79	Max 1/8" rust creep from scribe line
G. Adhesion		90 of the squares show finish.

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Performance H. Chemical Resistance

Test Procedure A door shall be removed from the cabinets and laid flat and level on a horizontal surface. Chemical spot tests shall be made by applying 10 drops (approximately 0.5 cm³) of each reagent listed in Table 1 to the surface to be tested. Each reagent spot shall be open to the atmosphere. Ambient temperature shall be 68-72 degrees F (20-22 degrees C). After one hour, chemical shall be flushed away with cold water and the surface washed with detergent and warm water at 150 degrees F (65 degrees C). Surface shall then be examined under 100 degree foot candles of illumination.

Requirement A max of three failure classifications shall be acceptable.

Reagent **Concentrations by Weight**

Acetic Acid	98 %
Acetone	--
Formic Acid	88 %
Hydrochloric Acid	37 %
Ethyl Acetate	--
Nitric Acid	25 %
Ethyl Alcohol	--
Nitric Acid	60 %
Ethyl Ether	--
Phosphoric Acid	75 %
Formaldehyde	37 %
Sulfuric Acid	25 %
Hydrogen Peroxide	5 %
Sulfuric Acid	85 %
Methyl Ethyl Ketone	--
Ammonium Hydroxide	28 %
Phenol	85 %
Sodium Hydroxide	10 %
Xylene	--
Sodium Hydroxide	25 %

Performance	Test Procedure	Requirement
I. Scratch Resistance	Hoffman Scratch Hardness Tester	No Substrate Appearance with 1000 gram load

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Application

Surface "A"

Description: Most critical of all areas. Completely exposed surface. No defects listed on page 12345-3 allowed.

Surface "B"

Description: Not as critical as surface "A". Sometimes exposed interior and exterior surfaces.

Surface "C"

Description: Hidden surfaces; areas that will not be seen in normal use.

APPEARANCE SURFACE	MIN. MILLAGE	SURFACE CLASS
Fillers	1.2	A
Front of Cabinet or Case Including Drawer and Door	1.2	A
Fronts	1.2	A
Shelf Tops	1.2	B
Top of Wall and Floor Cases	1.2	B
Cabinet and Case Floors	1.2	B
All other than above interior and exterior vertical surfaces	1.0	B

NON-WORKING SURFACES

All other than above unexposed surfaces	0.75	C
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CONDITION	SURFACE "A"	SURFACE "B"	SURFACE "C"
Blemish on surfaces easily detected from at arms length	No	Not permitted on	Yes
Water Spot surfaces easily detected from at arms length	No	Not permitted on	Yes
Sag	No	Slight	Yes
Over Cure	No	No	Yes
Under Cure	No	No	Yes