

Forte Inset product line

12 35 53.13 Metal Laboratory Casework

1. General

1. Conditions

2. Scope of Work

1. This section covers all materials for the supply of laboratory furniture and all required accessories as specified below.
2. Work Includes:
 - A. Steel case work.
 - B. Fume hood base cabinets (if applicable).

3. References

1. **SEFA 8 M-2010** — *Recommended Practices for Metal Laboratory Grade Furniture, Casework, Shelving and Tables.*
2. **NFPA 30 Standard**—*Flammable and Combustible Liquids Code.*
3. **OSHA** applicable standards.
4. **UL 1275/1275C** for *Flammable cabinet certification.*
5. **UL962A / CSA22.2# 203** for *Pump cabinet certification.*

4. Qualifications

1. These specifications are based on Bedcolab's products and shall be considered the minimum quality criteria.
2. The supplier must be a recognized laboratory furniture manufacturer with a minimum of 5 years experience in the industry.
3. The supplier shall meet all recommended practices of the Scientific Equipment & Furniture Association (SEFA).

5. Warranty

1. Bedcolab certifies that all components of the laboratory furniture included in this section are guaranteed for a period of one (1) year starting on the date of complete goods shipping.
2. Refers to Bedcolab's warranty document for complete details and limitations.

6. Product Handling

1. The manufacturer must provide proper packaging in order to ensure product integrity up to the final destination.

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2. The minimum packaging requirements are as follows:
 - A. Each cabinet shall be placed on a pallet suitable for forklift handling.
 - B. Each pallet shall be covered with a plastic wrap.
 - C. Cabinets may be stacked to a maximum of two cabinets in height. Each stacked component shall be separated with a protective separator, cardboard corners and a plastic wrapping.

2. Products

1. Materials

1. Commercial quality cold rolled steel sheets as per **ASTM A366-85, class 1**
2. Stainless steel sheets, type **304 or 316 with # 4** satin finish, per **ASTM A240, A480, A666, A262**
3. Polished glass as per **CAN/CGBS-12.3**, 3 mm (1/8") thickness
4. Polished laminated glass as per **CAN/CGSB.12.1**, first quality, 6 mm (1/4") total thickness
5. Polished tempered glass as per **CAN/CGSB.12.1**, first quality, 6 mm (1/4") total thickness
6. High Density Polyethylene (HDPE), **CAS no. 9002-88-4**
7. Insulation board **CB 110/CB-300** glass fibers bonded together with a thermoset binder; **Material** as per **CAN/ULC S-702** Type 1, ASTM C553, ASTM C612, CAN/CGSB-51.10-92, **Fire Resistance** as per **UL723, CAN/ULC-S102, Thermal Performance** as per ASTM C177 or C518, **Acoustical Performance** as per ASTM C423.

2. Painted Steel Cabinet Construction

1. The laboratory furniture shall be constructed as per Bedcolab's *Forte Inset Casework System*.
2. The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
 - A. 11 gauge (3.2 mm), for the cabinet's top front rails
 - B. 14 gauge (1.7 mm), for all leveling devices and drawer suspension tracks
 - C. 20 gauge (1.0 mm), for all drawer boxes
 - D. 18 gauge (1.2 mm), for all of the other cabinet's components including cabinet frame and shelves.
3. Cabinets shall have successfully passed all required physical and chemical resistance tests as per **SEFA 8 M-2010** specifications. Manufacturer shall supply proof of test results.
4. Casework shall feature an all-welded construction. All cases shall be rigid, self-supporting and fabricated to allow individual unit relocation at any time. Screws and bolts are acceptable only if they are to be used on removable pieces.
5. All welds shall be ground smooth. Spot weld will not be noticeable.

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6. Each unit shall have non-exposed top, front and bottom rails to ensure cabinet rigidity. The vertical posts and the horizontal rails must form a rigid square assembly to house the doors and drawers. The doors and drawers fitment will be such to prevent a sight line within the cabinet and to prevent dust penetration.
7. The cabinet side panels including front and back vertical rails must be formed in one piece. All front vertical posts shall be pre-punched to accommodate left or right door hinging as well as any combination of drawers, doors and shelves. In addition, front vertical rails shall be reinforced with a U-shaped channel for added strength. All rear vertical posts shall be pre-punched to receive any standard type drawer suspension tracks and shelf clips.
8. All parts and subassemblies including doors, drawers, drawer suspension tracks, front center posts and removable back panels, shall be interchangeable in the field without the use of special tools.
9. Each corner, under the cabinet floor, shall be equipped with a 3/8" (10 mm) diameter steel threaded bolt type leveling device. Levelling devices are to be adjustable with slot screwdriver from inside the cabinet and shall provide travel up to 1-1/2" (38 mm). Black nylon hole plugs shall be supplied to cover the leveling device access holes once installed and leveled. In order to properly support the weight exerted by the leveler, a full-depth formed box shall be spot welded to the side wall as well as the bottom of the cabinet.
10. To allow full access to the storage area, all double door cabinets must be free of a center post. The cabinet shall be constructed in such a way as to allow the retrofitting of a center post for future installation of a different door and drawer combination.
11. All base cabinets shall be provided with a continuous enclosed 4" (102 mm) high by 3" (51 mm) deep toe space along the entire working area.
12. The front top portion of the side panels shall be welded to an 11 gauge U-shaped channel to form a rigid square assembly to properly support the countertop.
13. No exposed horizontal structural members between doors and drawers shall be accepted.
14. Perforations or mechanical fixations are not permitted on visible cabinet sides.
15. All base cabinets, with the exception of the drawer units, shall be supplied with a back panel which shall be removable, without the use of tools. Back panels shall extend full height and width between the structures of the cabinet. Sink cabinets shall have a partial back panel, 9" (227 mm) high, to accommodate plumbing requirements.
16. All cabinet boxes must be fabricated to allow any future door and drawer arrangement. Front center posts or any other separators must be removable or can be added at any time, without having to make additional perforations or modifications to the cabinet.

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17. Shelving:

- A. Shelves shall be cold rolled steel 3/4" (19 mm) thick with all four sides bent down and shall have 3/4" (19 mm) return flanges on the front and back.
- B. Shelves shall be adjustable in 1/2" (13 mm) increments and shall be full depth and width of the cabinet's interior.
- C. Each shelf shall be supported by four zinc plated shelf clips.

18. Doors:

- A. Hinged metal doors shall consist of an inner and outer panel (painted inside and out) with sound deadening material CB-110 covering the entire inside surface of the door.
- B. The two top corners of the doors must be welded the full-door thickness and ground smooth.
- C. The inside panel shall be removable and be mechanically fastened to the front panel by two fasteners at the bottom of the door to form a rigid 3/4" (19 mm) thick door. Assembly shall be rigid enough to prevent vibrations during the opening and the closing of the door.
- D. The hinged side shall be reinforced adequately to ensure firm fastening and prevent sagging.
- E. Handles must be installed vertically in the upper section of the door opposite to the hinges, allowing an easy and natural opening.

19. Drawers:

- A. The drawer bottom flanges shall be bent upward on four sides for easy cleaning.
- B. Drawer fronts shall consist of an inner and outer panel (painted inside and out) with CB-110 sound-deadening material covering the entire inside surface of the drawer front.
- C. The outside panel shall be removable and be mechanically fastened to the front panel to form a rigid 3/4" (19 mm) thick facade.
- D. Drawer sides shall be structurally reinforced around the top edge by a 1/2" (13 mm) return flange with a 1/4" (6 mm) seam bend to the inside. The front and back drawer panels shall be reinforced by 3/4" (19 mm) flanges all around and shall be welded to the sides to form a rigid drawer unit.
- E. Drawers shall operate on 1" (25 mm) diameter nylon rollers with steel ball bearings. One such roller shall be on each drawer slide and one on each drawer suspension tracks.

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- F. The following drawer widths: 15" (381 mm), 18" (457 mm), 21" (533 mm), 24" (610 mm) and 30" (762 mm) will be provided with a 75% opening self-closing drawer track. The track shall be designed to prevent metal to metal contact and shall incorporate a self-closing action for at least the last 7" (178 mm) of drawer travel.
 - G. Drawers 36" (914 mm), 42" (1 067 mm) and 48" (1 219 mm) wide shall be supplied with full extension drawer tracks.
 - H. All file drawers shall be supplied with full extension drawer tracks.
 - I. The drawer slides shall have built-in stops to prevent unintentional removal of the drawers and shall be designed so that the drawers can be removed from full open position by lifting the front of the drawers and pulling out. The closing action of the drawers shall be cushioned by two rubber bumpers and the drawers shall be designed to operate freely and quietly even when loaded.
 - J. One handle shall be supplied horizontally in the upper front center of each drawer, except for drawers 30" (762 mm) or wider which require two handles.
20. Wall Storage and Tall Case Cabinets:
- A. All wall and tall case storage cabinets shall be made of cold rolled steel and built using the same construction as the standard base cabinets.
 - B. Cabinet sides, bottom and top shall be 18 gauge (1.2 mm) steel panels with similar construction details on the front edge as the standard base cabinets.
 - C. Back panel shall be flanged 1/2" (13 mm) on all four sides and spot welded to cabinet sides, bottom and top. Back panel shall be reinforced with two hat channels welded vertically at 5" (125 mm) from each side and have two vertical rows of holes at 1/2" increments for shelf support clips.
 - D. The cabinet floor shall cover the full interior width and depth with return flanges bent down on all four sides. This panel shall be removable for easy access to wall fastenings.
 - E. Shelves shall be cold rolled steel 3/4" (19 mm) thick with all four sides bent down and shall have 3/4" (19 mm) return flanges on the front and back. Shelves shall be adjustable in 1/2" (13 mm) increments and shall be full depth and width of the cabinet's interior. Each shelf shall be supported by four zinc plated shelf clips.
 - F. Sliding glass doors shall be 1/4" (6 mm) glass fitted to a W-shaped extruded aluminum shoe running the full width of glass door bottom. The shoe shall be provided with two nylon roller assemblies. The door assembly shall run on an inverted W-shaped extruded aluminum track. One finger pull 5/8" x 3" (16 mm x 76 mm) per door shall be ground into glass on the side of the door.

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- G. Sliding metal doors shall be the same construction as the doors on the standard base cabinets but shall be guided at the bottom with a full width aluminum track and a black nylon track on top.
 - H. The wall and tall case storage cabinets should allow the addition of all of the following door arrangements without any modifications to the cabinet. Cabinets can be supplied open on the front or with the following types of doors:
 - i. Hinged metal doors shall be the same construction as the doors on the standard base cabinets.
 - ii. Hinged glass doors shall be 1/8" (3 mm) glass with a 2" x 3/4" (51 mm x 19 mm) metal frame all around the glass.
21. Corrosives Storage Cabinets:
- A. Corrosives storage cabinets will be of the same construction as the standard base cabinets, with the addition of a one-piece removable white chemical resistant high-density polyethylene (HDPE) interior box. Doors will be lined with the same material ¼" (6 mm) thick. Two integral shelf position supports are located on each side of the box. The bottom is equipped with an integral 1" (25 mm) high edge to prevent leakage to the exterior of the cabinet.
 - B. Air vents are provided at top and bottom of each door for air circulation.
 - C. Each unit comes with an adjustable white chemical resistant high-density polyethylene (HDPE) perforated shelf with stainless steel channel reinforcement.
 - D. Each unit shall be identified "ACIDS" or "BASES" or "CORROSIVES" with a blue self-adhesive label or silkscreen upon requirements.
 - E. Each unit shall be supplied with 1-1/2" (38 mm) vent connection located at the back of the cabinet.
 - F. All interior hardware is made of chemical resistant plastic.
22. Flammable Storage Cabinets:
- A. Construction shall meet **O.S.H.A. Standard 1910-106 (d)(3)**, comply with the **NFPA 30 Standard—Flammable and Combustible Liquids** and shall be **UL 1275/UL1275C** certified.
 - B. Cabinets shall be made of 18 gauge (1.2 mm) thick Cold Rolled Steel with double wall construction with fire-proof insulation in all walls, floor and top. The floor shall be made of galvanized steel and be recessed 2" (51 mm) below the front opening of the cabinet. The four corners shall be welded to form a liquid-tight pan.
 - C. The cabinets shall be equipped with four 3/8" (10 mm) diameter threaded bolt type steel levelers as on the standard base cabinets.

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- D. The back of each cabinet shall be supplied with two 2" (51 mm) fire baffle vents.
 - E. Each cabinet shall be equipped with an adjustable galvanized 16 gauge (1.5 mm) steel shelf with a 2" (51 mm) increment.
 - F. Each unit shall be identified "FLAMMABLE—KEEP FIRE AWAY" with a red self-adhesive label or silkscreen upon requirements.
 - G. Doors shall have a full-length piano hinge with a fire-resistant gasket all around the door opening for a tight closure. Handle shall have a three-point locking mechanism.
 - H. Upon request doors could be provided with a self-closing mechanism.
23. Pump Cabinets:
- A. Construction shall be **UL962A/CSA22.2# 203** certified.
 - B. Pump cabinets shall be of the same construction as the standard base cabinets. Inside cabinet (back, sides and top) shall be lined with CB-300 sound deadening insulation. To protect the sound deadening insulation, a perforated painted steel lining shall be welded to the cabinet doors, back, sides and top.
 - C. The cabinet shall be equipped with a 100 lb capacity full extension pull out pan installed at the bottom of the cabinet.
 - D. The cabinet shall also include the following electrical components with the required wiring to a junction box located at the back of the cabinet:
 - i. One duplex electrical outlet 120V/15–20 A located on the inside back of the cabinet.
 - ii. One 15A pump switch with a 4.90A thermal overload—located on the exterior top panel of the cabinet.
 - E. The cabinet should also have a 2" (51 mm) diameter vent port located at the top left corner of the cabinet's back and a 1 ½" (38 mm) pipe on the back right side of the cabinet top for end-user piping.
24. Furniture Hardware:
- A. Handles: all handles for metal doors and drawers shall be one of the following:
 - i. Recessed extruded black PVC 4" (102 mm) long
 - ii. Recessed extruded aluminum 4" (102 mm) long
 - iii. Brushed nickel wire pulls 4" (102 mm) long
 - iv. Stainless steel wire pulls 4" (102 mm) long

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- B. Hinges: Door hinges shall be 14 gauge (1.9 mm) steel, five knuckles type screwed into the door and fastened to the cabinet side with two countersunk screws. Hinges shall be one of the following options:
 - i. Vibra finish stainless steel
 - ii. Stainless steel
- C. Door catches: Shall be adjustable zinc plated steel, spring loaded with nylon rollers.
- D. Strike plate: shall be made of steel and part of the cabinet structure.
- E. Levelers: Levelers at the four cabinet corners shall be cadmium plated hex head 3/8" (10 mm) machine screws 2 1/2" (64 mm) long slotted on threaded end for screwdriver adjustment. Levelers can be supplied, as an option, with grey rubber caps.
- F. Hole plugs: Hole plugs for cabinet floors shall be black nylon.
- G. Shelf clips: Shelf clips shall be Roll-It # 101 with a zinc finish.
- H. Drawers and hinged door bumpers: Drawers and hinged door bumpers shall be clear rubber, self-adhesive type. Two bumpers per door or drawer.
- I. Drawer tracks: shall be one of the two following options:
 - i. 75% opening self-closing Bedcolab model # DT002 with 7" (178 mm) self-closing feature—150 lb capacity.
 - ii. 100% full extension opening—200 lb capacity.
- J. File drawer tracks for all drawers 36" (914 mm) wide and over: shall be full extension type, zinc finish. Weight capacity is 200 lbs. The drawer slide must be installed in such a manner that the drawer can be easily removed from the cabinet without the use of tools.

File hangers supplied with the file drawers shall be made of painted steel 1/8" x 3/4" (3 mm x 19 mm) and be adjustable to accommodate legal or letter size files.

25. Steel Furniture Finish:

- A. When fabrication of the unit is completed, all surfaces shall be free of scratches and imperfections. Welds will be ground smooth where necessary. The unit will be washed using a three-stage iron phosphate process for proper surface preparation and subsequently, dried in a dry off oven to remove all humidity traces.
- B. A high quality chemical resistant polyurethane paint will then be applied to all surfaces including the interior of door and drawer panels using an electrostatic spray process. The parts will be oven baked for the duration and temperature recommended by the paint manufacturer. Painted surfaces shall conform to **A.A.M.A. 2603**.

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- C. The painted surfaces shall meet or exceed the **SEFA 8** specifications for chemical resistance as specified by the Scientific Equipment and Furniture Association and shall contribute to LEED credits.
- D. Technical Performance:
 - i. Adhesion to substrate: 100% 5B (ASTM D3359)
 - ii. Hardness: 3H (ASTM D3363)
 - iii. Gloss: 60 +/- 5 units on 60°
 - iv. Flexibility: 1/4" Conical Mandrel (ASTM D522)
 - v. Impact resistance: 100 in-lb direct: 100 in-lb reverse (ASTM D2794)
 - vi. Corrosion resistance: 1000 hr less 1/16" in creepage over B-1000 treated test panels (ASTM B117)
 - vii. Humidity resistance: 1000 hr no blistering over B-1000 treated test panels (ASTM D2247)
- E. Colors: Twenty colors are available as per Bedcolab's color chart.