

SPECIFICATIONS

1. INTRODUCTION:

Bharat Petroleum Corporation Limited (BPCL) is a Fortune 500 company and a leading Maharatna Public Sector Enterprise with PAN India presence, engaged in Refining, Marketing and Distribution and Exploration of Petroleum products. BPCL is in the process of commissioning Bio-Ethanol Refinery for production of Ethanol. Bio-Ethanol Refinery is being constructed at Baulsingha Village, Tehsil Bhatli, District Bargarh in the state of Odisha.

The purpose of this Tender is for Supply of Furnitures for Laboratory at BPCL's Bargarh Biorefinery (BBR) at Baulsingha Village, Bargarh District, Odisha.

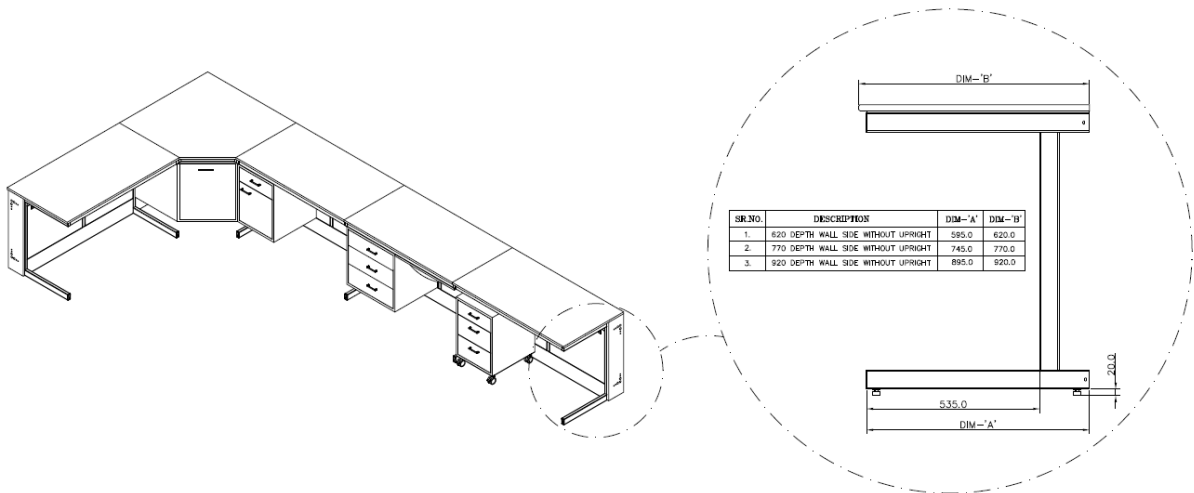
2. TECHNICAL SPECIFICATIONS FOR LABORATORY FURNITURE

a. Technical Specifications BOQ Item No: 1 to 7

C-FRAME SYSTEM

All C-Frames assemblies should be manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components should be of CRCA confirming to IS Code 513:1994.

The suspended under-bench welded units should be supported on heavy-duty steel frames fully carrying the load of worktops. Its superior strength combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame should be constructed from a rectangular pipe with a cross section of 60mm x 30mm and should be 2 mm thick and should be without a vertical front leg to give a clean look. This shall provide more knee space or leg space and would facilitate uninterrupted lateral movement of the under-bench units within the bench run. The C-frame legs should be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus.



Drainage gradient should be well adjusted throughout the length of table and should have horizontal supports for drainage systems. The structure should have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. It should be suitable for sitting and standing nominal heights of 750mm & 900mm respectively. The nominal table depths should be 620 mm, 770 mm and 920 mm for wall side and 1240mm,

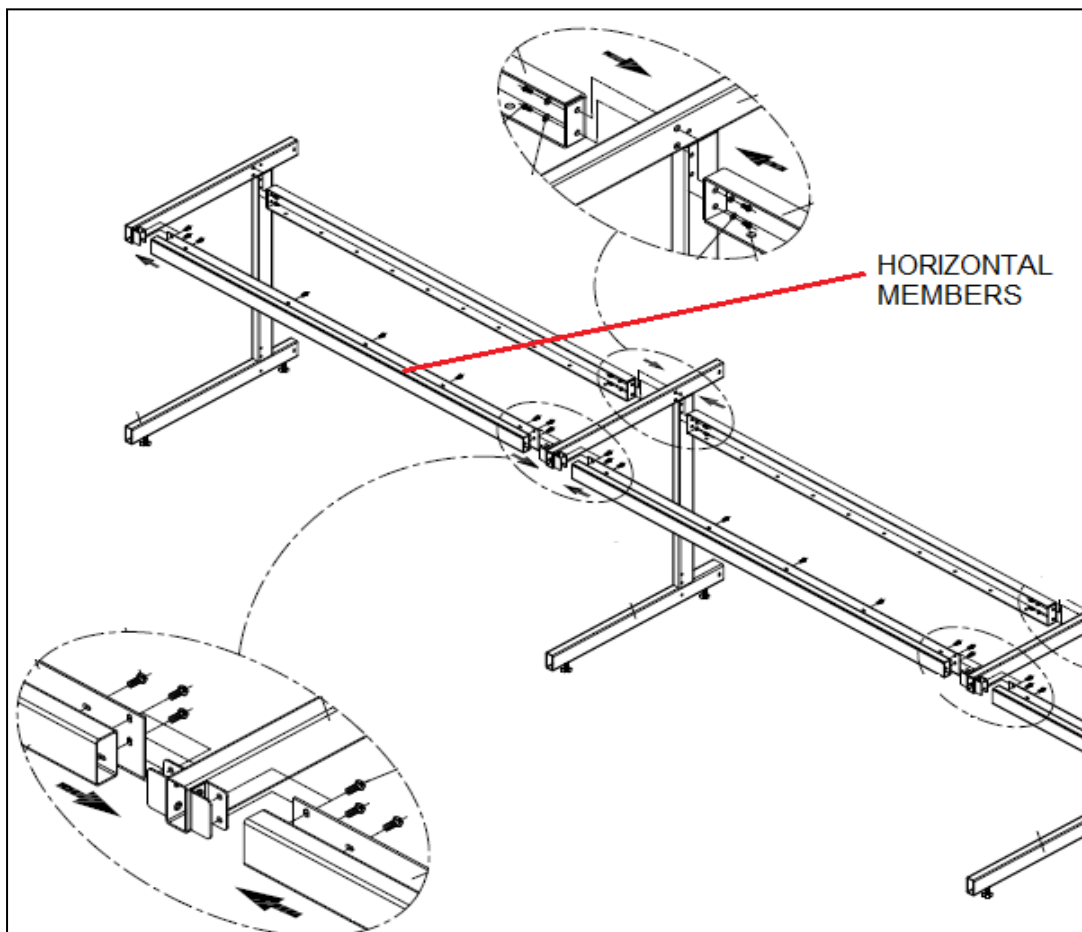
1540mm, 1840mm for Island tables. The Corner Units shall fit well with 770mm & 920mm table depths. All frame-work is should be pre-treated with superior pure epoxy powder coated finish. The C-Frames should be for suspended storage cabinets or for cabinets that can slide through-and-through from one end of the workbench to the other through C-Frames (configuration depends upon the Schedule of Quantities)

All frameworks should undergo 9 tank pretreatment process including 3 stages iron phosphating process with superior pure epoxy powder coated finish of thickness 60-80 microns.

(Process names: 1. Hot Water Rinse -> 2. Knock off Degreasing -> 3. Degreasing I -> 4. Degreasing II -> 5. Water rinse I -> 6. Water rinse II -> 7. Iron Phosphating -> 8. Water rinse III -> 9. Passivation)

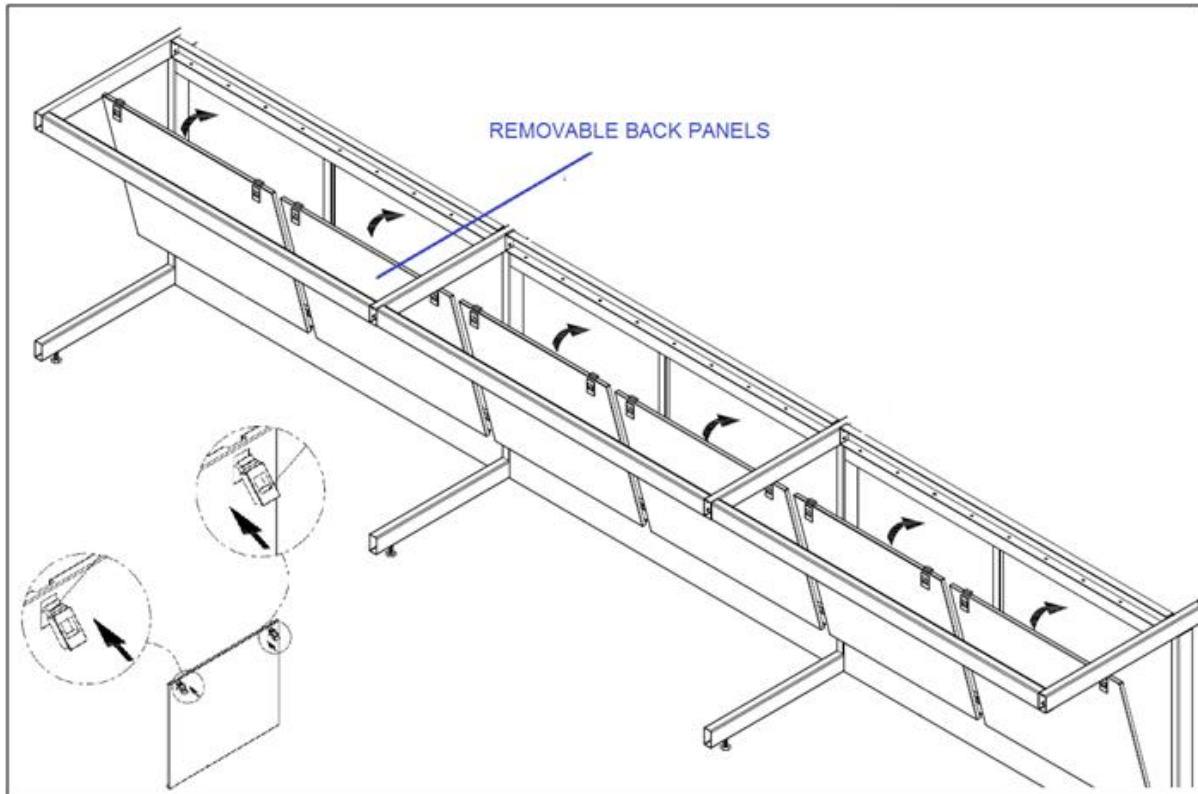
HORIZONTAL MEMBERS

These should be made from rectangular pipes of 2mm thickness. Cross-sectional dimensions of the pipe should be 60 x 30 x 2 mm. They should be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the C-Frames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They should be available in various widths of 600, 750, 900, 1050, 1200, 1350, 1500, 1650, and 1800



Removable Back Panels

These cover panels cover the service lines that run behind them. These should be easily removable (unclipped) and the service line be accessed for maintenance. This allows the equipment on workbench to remain undisturbed They should be made of CRCA MS with pure epoxy powder coating and are of 1mm thickness



COVER PANELS

All side cover panels and back panels, filler panels should be made from CRCA MS panels of 1.0mm thickness with pure epoxy powder coating

MASTER UPRIGHT

Master Upright should be of the dimensions: 300 x 150 x 1.2 mm. It should be made from 1.2mm thick CRCA MS with pure epoxy powder coating. It should have an open-able door for easy service maintenance and should extend till the false ceiling

VERTICAL UPRIGHT

The Upright system will form the back-bone for internal distribution of GDS, Electrical supply systems Shelves and Top Units and should be constructed from 16 gauge CRCA formed steel panels with removable covers. Shelf height should be adjusted with an increment of 1inch / 25mm. Upright should also provide support to Top Units for hanging thus eliminating the danger of fixing the Top Units on non-rigid partition wall / panels. Uprights should be supplied with adjustable feet from -5mm to +20mm.

REAGENT SHELVES

Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces (as per requirement in BOQ)

ADJUSTABLE REAGENT SHELVES

Depending upon BOQ requirement, height adjustable shelves should be provided between uprights with 1" of height adjustability. Complete modular design consisting of 2 stage horizontal storage shelves. The ends and intermediate vertical supports should be 2mm thick aluminum extrusion with MS brackets of 2 mm thick. Toughened glass should be put-on over these shelves for taking care of bottle marks/corrosion

WELDED UNDER-BENCH STORAGE CABINETS

Welded cabinet body should be of flush face construction with intersection of vertical and horizontal members like LH and RH side panel along with front horizontal channel, back panel and bottom panel. It should be relocated anywhere easily as it is an independent unit. Cabinet should be of square non-sharp edge construction. Doors should be assembled with SS-304 hinge assembly. Removable back panel should be provided to easily access the service lines running behind the cabinet benches. Intermediate horizontal channels should be provided between door and drawer. Shelf should be eight bend panel with 20mm height. Drawer tray should be of single piece construction. Drawer should be well supported on LH and RH ball slide suspension system. Steel door and drawer front is of double wall construction with sound dampening material filled inside. Doors should be easily removable and hinges should be easily replaceable. Knee space panel should be in 22-gauge construction.

Under bench storage cabinets should be fully welded. Riveted cabinets are not allowed.

Storage Units to be of the following types:

1. Suspended Type
2. Sliding Type
3. Castor-based Mobile Type

(depending upon the requirement in the schedule of quantity)

Dimensions: W=300/450/600/750/900 mm, D = 530mm, H = 635/485 mm. **Configurations:** 1 Shutter/ 2 Shutters + No Drawer/1 Drawer/2 Drawers/3 Drawers, **MOC:** MSCRCA: IS – 513 (1994), **Thickness:** LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel should be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel should be of 0.8mmthk. **Finish:** Powder coating pure epoxy, thickness 40-50 microns. **Handle:** Anodized Aluminum Recessed-Type, **CTC:** 160.0mm. **Lock:** Units have a locking facility with 180° and 10 lever cam lock mechanism (except for sink and corner unit). **Hinge:** Knuckle-butt type SS Hinge. **Screw:** SS304. Shutter should be of twin-type construction with sound dampening effect using profeel. Shutter cover should be equipped with Bump on for sound dampening. Ball Slide: 500mm Length (required only for drawer unit). Shutter should have provision of roller catch

WELDED OVER-HEAD STORAGE CABINETS

The construction should be the same as the under-bench cabinets. The height of these cabinets should be around 635mm while the depth should be around 340mm. The shutters should be available in two options: Metal shutters and Metal frame with inserted glass. There should be one height-adjustable shelf inside each cabinet. Other construction should be similar to under-bench cabinet

SERVICE FITTINGS AND ACCESSORIES

Service fittings should be laboratory grade, and water faucets and valve bodies should be cast red brass alloy or bronze forgings, all fittings should be powder plated unless specified otherwise. **Service Indexes:** Fittings should be identified with service indexes in the color coding as per DIN 12920.

ELECTRICAL TRUNKING

Used for housing electrical switches and sockets, data and voice points, its top panel, bottom panel of the trunking should be made from 1.0 mm thick CRCA MS panel. It should be available in both, single sided and double sided configurations. It should be made from CRCA MS with pure epoxy powder coating. The front surface that houses the electrical points should have a slope

LABORATORY SINK AND ACCESSORIES

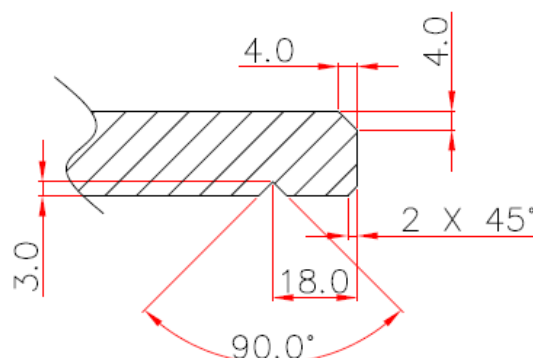
Polypropylene Molded Sinks: Made up of 5 mm thick high density and elastic poly propylene with good resistance to organic solvents. Standard bowl size (L x W x D) is 560 x 355 x 300 mm. Faucet should be 1-way type faucet of approved make

PEG BOARDS

These should be Single faced high grade stainless steel pegboard having a tray hole for water drainage and detachable pegs. The essence should be made up of 1 mm thick stainless steel (SS 304) whereas the pegs should be made up of polypropylene and should be adjustable with a minimum 10mm distance between each peg

WORKTOP

It should be 19mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop should be chamfered and smoothed. The bottom of the worktop should be polished and there should be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness. A representation the worktop edges is shown as under



3. TECHNICAL SPECIFICATIONS FURNITURE

a. Technical Specification of Finesse Table with ERU Table BOQ Item No: 08

Finesse Table - 5026 size shall be 1500 Width mm x 750 Depth mm x 740 Height mm. Tabletop shall be 25 mm thick plain particle board (PPB) Clad with 0.6 mm thick post formed laminate and 1 mm thick backing laminate (bdl). Flat edge Duly sealed with 2 mm thick PVC beading. The modesty shall be 18 mm thick plain particle board () PPB Clad with 1.0 mm thick decorative laminate (DL) on both sides. Edge Sealed with 2 mm thick PVC beading.

Finesse ERU -3616 LHS size shall be 1050 Width x 450 Depth x 705 Height. The top of Finesse ERU - 3616 LHS shall be 25 mm thick plain particle board (PPB) Clad with 0.6 mm thick post formed laminate and 1 mm thick Backing Laminate (BDL). Flat Edge duly sealed with 2 mm thick PVC beading. The Modesty shall be 18 mm thick plain particle board (PPB) Clad with 1.0 mm thick Decorative Laminate (DL) on both sides. Edge sealed with 2 mm thick PVC Beading.

b. Technical Specifications Regency Visitor Chair (BOQ Item No: 09)

1.SEAT/BACK ASSEMBLY: The seat/back shall be made up of 1.2 ±0.1cm thick hot-pressed plywood and upholstered with fabric and moulded Polyurethane foam together with moulded seat and back covers. The back foam shall be designed with contoured lumbar support for extra comfort. The dimensions of back shall be-(W)50.0 cm x (H)49.0 Cm and of seat shall be-50.0 cm (W) x 46.5cm. (D). 2.HIGH RESILIENCE(HR) POLYURETHANE FOAM: The HR Polyurethane foam shall be moulded with density 45±2kg/m³-and Hardness load 16 ±2 kgf for 25% compression. 3.SEAT/BACK COVERS: The seat cover shall be injection moulded in black co-polymer polypropylene and back cover should be vacuum formed from ABS sheets. 4.ARMRESTS: The one-piece armrests shall be made of black integral skin polyurethane with 50-70 Shore 'A' Hardness and reinforced with M.S. insert. The armrests shall be scratch and weather resistant tant. The armrests shall be fitted to the seat with seat/armrest connecting strip assembly made of 0.5 ±0.05-cm. thick HR steel.5. TUBULAR UNDERSTRUCTURE: The tubular frame shall be cantilever type & made of 0 2.54±0.03cm x 0.2 ±0.016cm.thk M.S. E.R.W tube and black powder coated (DFT 40-60 microns)

c. Technical Specifications Regency Midback Chair (BOQ Item No: 10)

1.SEAT/BACK ASSEMBLY: -The seat/back shall be made up of 1.2 ±0.1cm thick hot pressed plywood method described in and upholstered with fabric and moulded Polyurethane foam together with moulded seat and back covers. The back foam is designed with contoured lumbar support for extra support BACK SIZE: 50.0cm X 49.0 cm (H) SEAT SIZE: -50.0 cm (W) x 46.5cm. (D). 2.HI RESILIENCE(HR) POLYURETHANE FOAM: The HR Polyurethane foam should be moulded with density 45±2kg/m³-and Hardness load 16 ±2 kgf for 25% compression.3. SEAT/BACK COVERS: The seat cover shall be injection moulded in black co-polymer polypropylene and back cover should be vacuum formed from ABS sheets. 4.ARMRESTS: The one-piece armrests shall be made of black integral skin polyurethane with 50-70 Shore 'A' Hardness and reinforced with M.S. insert. The armrests shall be scratch and weather resistant. The armrests shall be fitted to the seat with seat/armrest connecting strip assembly made of 0.5 ±0.05-cm. thick HR steel. 5.CENTER TILT MECHANISM: The centre tilt mechanism shall be designed as-360° revolving type, 17° ±2° maximum tilt on pivot at centre, Upright position locking, Tilt tension adjustment.6. PNEUMATIC HEIGHT ADJUSTMENT: The pneumatic height adjustment shall have an adjustment stroke of 12.0 ±0.3cm. 7. TELESCOPIC BELLOW ASSEMBLY: The bellow shall be 3-piece telescopic type and injection moulded in black Polypropylene. 8.PEDESTAL ASSEMBLY: The pedestal shall be injection moulded in black 33% glass-filled Nylon-66 and fitted with 5 nos. twin wheel castors. The pedestal shall be 66.3 ±0.5cm. (76.3±1.0 cm with castors) 9. TWIN WHEEL CASTORS: The twin wheel castors shall be injection moulded in Black Nylon.

d. Technical Specifications Revolving Stool for Laboratory (BOQ Item No: 11):

The seat is made up of 1.2+/-0.1cm thick flat plywood with moulded polyurethane foam (Density = 45+/-2 kg/m³ and are upholstered with replaceable synthetic leather covers. The manual height adjustment should be very easy to operate with help of a knob. It can be easily locked at the most comfortable position. It should have twin wheel castors, injection moulded in black nylon.

e. Technical Specification for MS Apparatus Storage Cabinet (BOQ Item No: 12 & 13):

- It is used for storages of equipment, consumables, files and any non-chemical (powder based) components. The cabinet can be provided with a ventilation system to enable exhaust of localized fumes emanating from the stored.
- It comes with a top cover, in case there no requirement of the cabinet to get connected to a duct.
- The material used is 1.2 mm CRCA MS with pure Epoxy Powder coating.
- It is fitted with a float glass to enable visibility inside the cabinet.
- It also has louvers/perforations for air supply.
- Load bearing capacity of shelf: 40 KGs
- The overall dimensions can be provided in:

MS Apparatus Storage Cabinet [with top cover plate] 900W X 560D X 1800H and 600W X 560D X 1800H as per BOQ.

f. Technical Specifications Almirah (BOQ Item No: 14):

Almirah shall have an overall size of 916mm(W)x486mm(D)x1981mm(H) with welded construction. It should have the shelf thickness of 0.7 mm, Back thickness of 0.8mm, Door thickness of 0.8mm (high yield strength) and all other components shall have a thickness of 0.9mm. These components shall be made of CRCA 'D' grade high yield strength as per IS:513. Almirah should have a Mazak handle and Three-way locking mechanism with Shooting Bolts. It should have a height wise adjustable shelf mounting which shall have a Uniformly Distributed Load Capacity of max 40 Kg. It should also have a M10 Screw type Leveller with Hex plastic base. The finishing shall include Epoxy powder coated to the thickness of 50 microns (+/- 10). Plenty of colour options and shelving options shall be available.

g. Technical Specifications of High Back Wheelchair (BOQ Item No: 15):

SEAT/BACK ASSEMBLY: The seat is made up of 1.2 + 01cm thk hot pressed plywood measured. The Back is made up of injection moulded glass filled nylon & upholstered using Micro mesh fabric with high tenacity yarn with 28 density foam Sandwich in lumbar area.

* SEAT SIZE (Larger Seat Depth): 47.0 cm. (W) x 51.5 cm (D)

HIGH RESILIENCE (HR) POLYURETHANE FOAM The HR poly methane seat foam is moulded with density 45+/-2 kg/m³ and hardness 16 + 2 kgf as per IS:7888 for 25% compression.

ARMRESTS: The adjustable armrest is designed with the following features

» Up-Down adjustment— 8 steps (8. 0+0.5cm range)

- Height adjustable armrest structure which is Powder Coated & fitted with an armrest top.
- Fixed Armrest Top is PU moulded over metal insert.

LUMBAR SUPPORT ASSEMBLY: The Lumbar support consists of polypropylene pad The Height of Lumbar pad can be adjusted through two projecting knobs provided on the rear side of the pad Lumbar pad has an adjustment of 8 0 + 0.5 cm in height. FRONT PIVOT SY!'JCHRO MECHANISM:

The adjustable tilting mechanism is designed with the following features.

- 360° revolving type.
- Single point control.
- Front pivot for tilt with feet resting on ground ensuring more comfort
- Tilt tension adjustment.
- 4-position locking with anti-shock feature

- Seat/back tilting ratio of 1:2.

PNEUMATIC HEIGHT ADJUSTMENT: Pneumatic height adjustment has an adjustment Stroke of 10.0±0.3 cm

PEDESTAL ASSEMBLY: The pedestal is injection moulded in black 3G% glass-filled Nylons and fitted with 5 nos. twin wheel castors. The pedestal pitch-centre dia is 66.1 + 0.5 cm (76.1 + 1.0 cm. with castors).

TWIN WHEEL CASTORS: The twin wheel castors are injection moulded in black Nylon.

Headrest Specs-

NECKREST - The Necklets assembly consist of polypropylene pad with moulded polyurethane foam & covered with polyester fabric. neck rest is fixed to Back Assembly through neck rest connector. neck rest assembly has height adjustment of 4.2 + 0.5 cm and rotation adjustment of overall 76°±2°. The complete neck rest assembly is retro fit to the main chair

***Note: Lab Furniture shall be fabricated after taking as built dimensions of lab. The dimensions provided in tentative drawings may vary by ±100mm. Vendor to quote rates accordingly.**