



BNAL
PREFABS PVT. LTD.

Transforming the way you Build

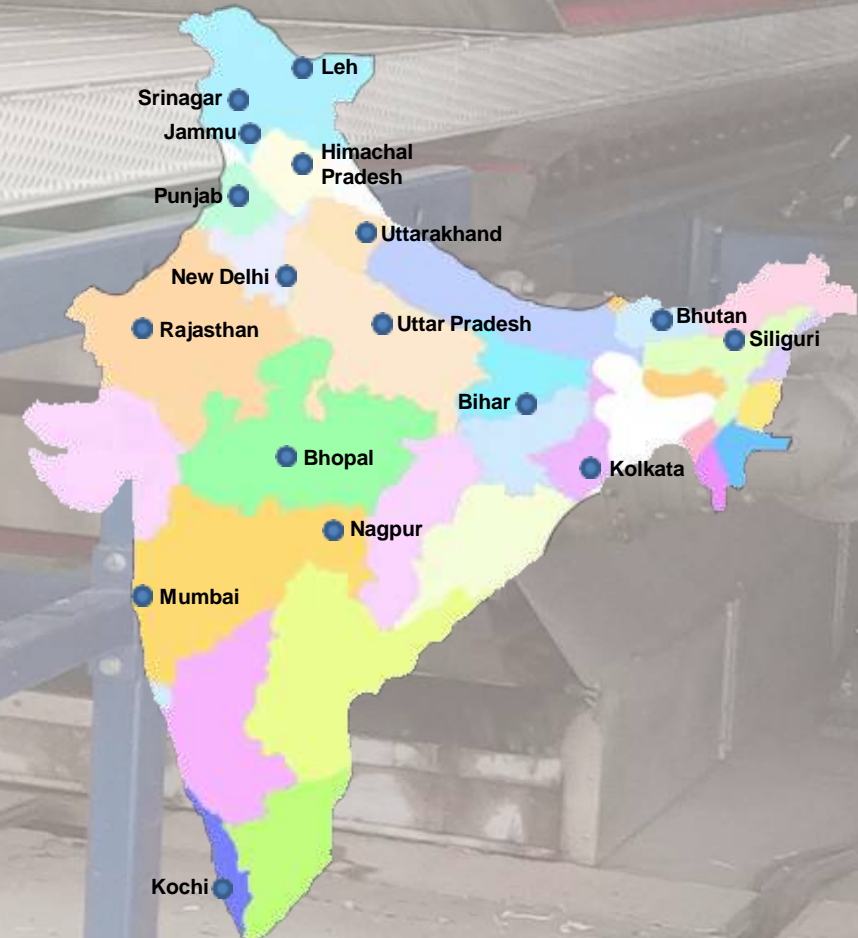
Continuous Line Puf Panels
Discontinuous Line Puf Panels

BNAL Prefabs Pvt. Ltd. – Company Overview

Consistent innovation and an unyielding commitment to providing impeccable quality standards

- Established in 1989, BNAL Prefabs Pvt. Ltd. is one of the largest manufacturers of PUF insulated sandwich panels in the country.
- Headquartered in Chandigarh and manufacturing facilities in Baddi - Himachal Pradesh and Barwala – Haryana spread over 10 acres of land with 150000 Sq – Ft covered area.
- Equipped with the latest and most modern plant and machinery for the manufacture of PUF panels both by Continuous and Discontinuous process.
- Installed capacity of 2.5 Million square meters of PUF panels per annum.
- PUF panels manufacturing capability from 30 mm to 180 mm thickness and up to any length as per requirement

Successfully executed numerous prestigious projects across India



BNAL PREFABS PVT. LTD.



BNAL PREFABS Pvt. Ltd. Is a registered MSME unit based out of Chandigarh with manufacturing facilities at Barwala – Haryana and Baddi – Himachal Pardesh.

BNAL Prefabs Pvt. Ltd. Manufactures a large range of PUF insulated sandwich panels with a variety of outer finishes and insulating core of Polyurethane Foam (PUF) of PUR/PIR Grade as per specification and requirement.

The steel skin on both the sides is pre-painted with a variety of finishes over hot dip galvanized / galvalume steel. Architectural coatings include polyester, poly vinyl di fluoride and many other options in a wide range of colors and finishes.

BNAL uses foaming systems that are 100% free from CFC and HCFC which are known Ozone depleting substances.

The latest manufacturing plant installed at our new unit at Barwala has the most modern and technologically superior five component foaming system with n-pentane as the blowing agent and thereby meeting the highest national and international regulations and safety standards

BNAL provides a comprehensive solution for all your PUF Panel requirements including design, detailing as well as installation of Panels. We also manufacture all flashings and joinery required for installation and finish of the Panels.

PRODUCTION PROCESS

Puf Insulated Sandwich Panels are manufactured by the following processes:

1. Continuous Line Production Process and 2 Discontinuous Type Production Process.

1. Continuous Line Panel Production:

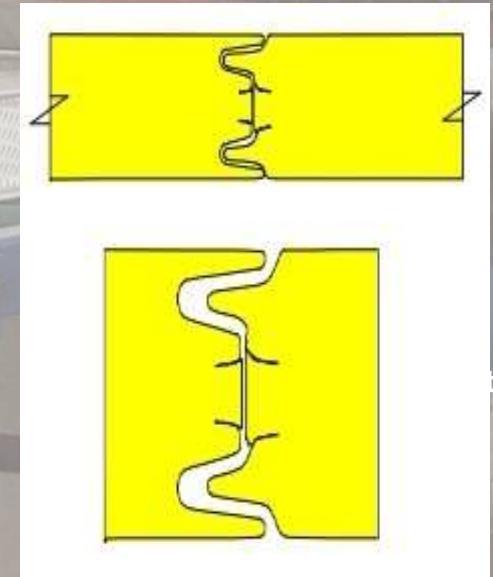
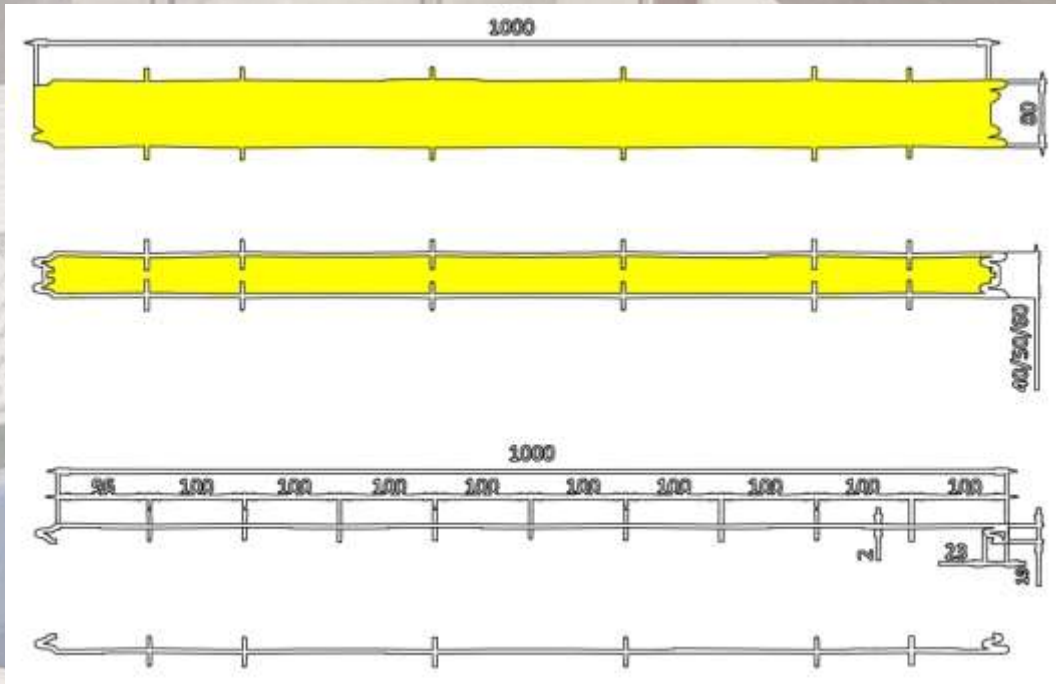
As the name suggests the Continuous Line Panel Production process involves all operations starting from forming sheet metal profiles required for both faces, panel to panel joining profile detail, Foaming, Panel Forming, Curing and final cutting of product to length in one continuous process.

At the start of the production process two number de coilers are loaded with Steel Coils of the required color and thickness. These Steel coils are then fed into two separate Roll formers for the forming of the sheet metal profiles and the panel joining profile. After the roll forming the two steel facings pass through the heating chambers and then move to the molding area. Next the Urethane Chemicals in liquid form are sprayed on to the lower steel sheet. Where needed, the inner surface of steel sheet is given a 'CORONA' treatment to improve the bonding strength. The chemical system is delivered in to the cavity by an oscillating manifold on which delivery nozzles are mounted at equal spacing. The chemical system starts reacting after the 'cream time' is reached. The foam then starts to rise, till the 'rise time' is completed. The top surface of the foam starts to adhere to the bottom surface of the top sheet after the 'tack-free' time is attained. All these reactions proceed even as the whole 'mould' is moving along.

The Pressure platten conveyors over the two sheets along with the side belts are long enough to keep the "Sandwich " in closed state for a sufficiently long duration so that the finished panel is fully cured in all respects before it emerges from the double belt area of the line. After this the panel is cut to the required size on the band saw cutting machine.

BNAL Poly Urethane Foam (PUF) Panels By Continuous Process

Wall Panel Profile and Joining Arrangement



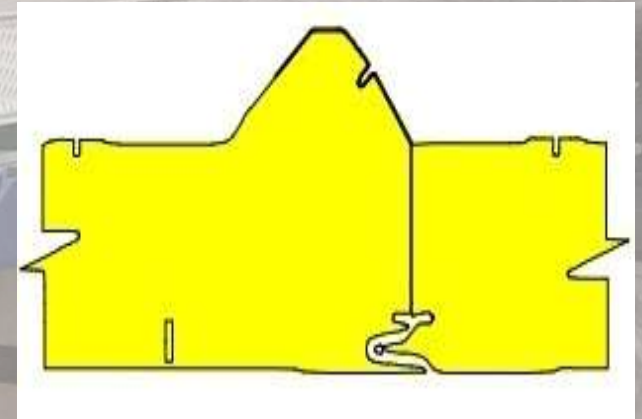
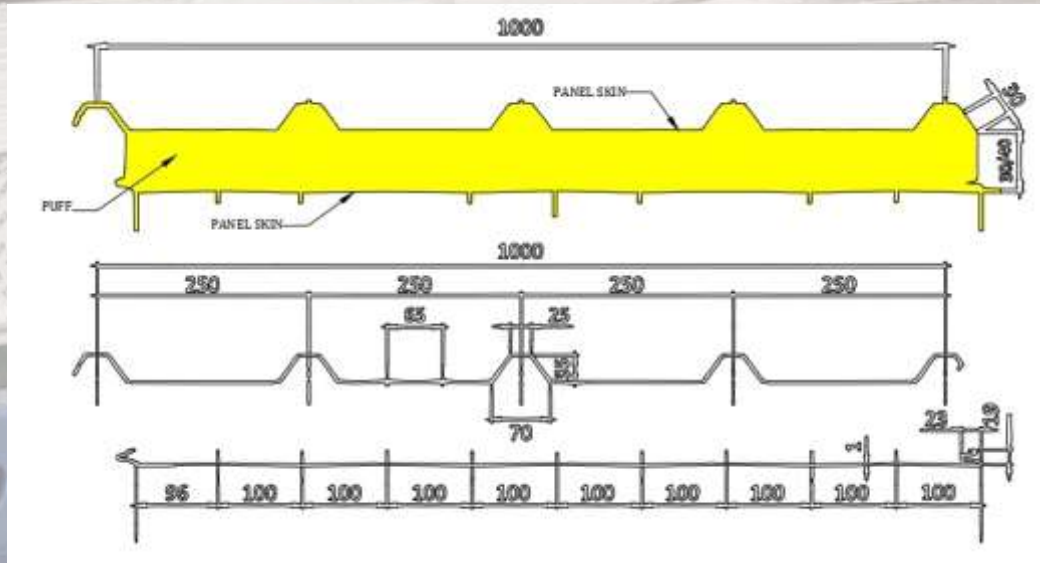
JOINING ARRANGEMENT

PANEL THICKNESS RANGE (mm) – 30,40,50,60,80,100,120,150,180.

INSULATION CORE – PUR AND PIR CORES.

BNAL Poly Urethane Foam (PUF) Panels By Continuous Process

Roof Panel Profile and Joining Arrangement



JOINING ARRANGEMENT

PANEL THICKNESS RANGE (mm) – 30,40,50,60,80,100,120,150

INSULATION CORE– PUR AND PIR CORES.

PRODUCTION PROCESS

2. Discontinuous Panel Production Process:

As the name suggests in this production process the panel is manufactured by different processes being carried out on different machines to get the final product.

The major equipment used for this process are the Foaming Machine and the Panel Press which features a vertical hydraulic ram of the length and width of the panel to be manufactured.

Profiling of the Metallic/FRP/Cement Board facing is done as an 'off line' processes and brought to and stacked on either end of the panel press

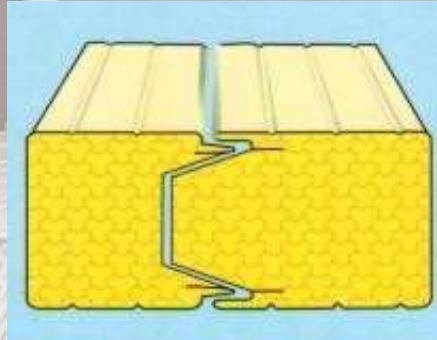
Then the mould is created as follows:

The base on which the bottom facing is placed is a precisely machined flat Platten equipped with a built in heating system. Sides of the mould are made of machined Aluminum extrusions (jigs), profiled to the male and female joint features desired. These jigs are specific to each thickness of panel being produced. Jigs also feature accurately positioned fixtures to mount Camlocks which get embedded in to the foam later. When the pre-profiled top and bottom facing sheets are placed in this mould with special spacers, a hollow space is created and is now ready for chemical injection. This complete pre-assembly is moved laterally into the press by a positioning actuator. A heavy ram, which is a precision machined guided block, closes the mould tightly and holds the 'mould' firmly. The temperature controlled heated plattens keep the mould at the optimum reaction temperature . Through many nozzles provided on the sides of the 'mould', PU chemicals mix is injected to precise volume as per settings in the microprocessor controlled delivery head. The liquid mix finds its level well before the 'cream time' of the chemicals is reached. The foaming reaction starts and the foam rise gradually to fill the nooks and corners of the mould. The rising of the foam is complete well before the 'tack-free' time, when the adhesion to the sheets starts- i.e., well after the foam has filled the 'mould'. The assembly is held in position, in the preheated mould till after the mould release time has elapsed. Then the panel is ejected out of the press.

BNAL Poly Urethane Foam (PUF) Panels By Discontinuous Process

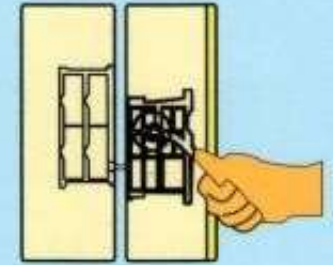
PUF Panels

- BNAL PUF sandwich panels are manufactured on a Cannon sandwich panel foaming plant imported from Italy.
- The PUF panels are manufactured using high quality two component CFC Free PU systems
- Poly Urethane Foam Filled Sandwich Panels are used for providing thermal & sound insulation
- These are light in weight and have good strength
- The panels are joined together by either the **Tongue and Groove arrangement** or **Cam Lock arrangement**



Tongue and Groove

- In this arrangement the panels are interlocked together by tongue and groove arrangement made in the outer skin of the panels
- This arrangement is especially useful for panels which are less than 50 mm thick



Cam Lock Arrangement

- Cam Lock Arrangement provides strong interlocking between ceiling, wall, door frame, floor corner and T panels
- The cam lock provides perfect and strong alignment between the panel joints
- These are spaced at equal distances along the perimeter of the panels, foamed strongly into the panels

Features and Technical Properties of PUF panels

Features of PUF panels	
Easy and quick installation	High load bearing capacity
Controlled temperature and humidity	Easy repair and replacement
Light weight	Good sound insulation
Easy to cut to any size	Long service life
Energy efficient	Modular construction
Lean construction	Tongue and Groove/Cam-lock interlocking

Technical Properties of PUF panels	
Density	40+/-2 kg/m ³
Compressive strength	2.1 kg/cm ² (at 10% deformation)
Tensile strength	3.7 kg/cm ²
Bending strength	4.0 kg/cm ²
Adhesion strength	2.9 kg/cm ² (foam to steel)
Closed cell content	90-95%
Temperature range	-180°C - +110°C
Thermal conductivity at 10°C	0.018 k.cal/m.hr °C
Water vapour permeability	0.08-0.12 gms/hrm ² (at 90% RH and 38°C)

Our clients in the Private sector – PREFAB AND PEB SEGMENT

Strabag-Affcons JV Ltd.	Himtechno Forge Ltd.
Leighton Contractors India Ltd.	IVRCL Ltd.
Emaar MGF Ltd.	C&C Constructions Ltd.
Khandelia Business Group	Rajdeep Buildcon Ltd.
Avon Cycles Group	Surya Pharmaceuticals
Parveen Industries Ltd.	Patel Engineering Ltd.
Livguard industries ltd.	ABC Paper Mills Ltd.
General Cable Industries (India) Ltd.	Himalayan Construction Company Ltd.
DCM Ltd.	Druk Chogley Construction Co. - Bhutan
Naandi Foundation	Stylam Industries Ltd.
Varindra Construction Ltd.	Pioneer India PEB
N.K.Gupta Builders Pvt. Ltd.	M.G. Contractors Pvt. Ltd.
MDB Builders and Contractors Ltd.	J.D.Power Solutions
RituTech PEB	Pankaj Spinners Ltd.

Cold Storages/C.A. Stores Segment

Dayalu Cold Storage

Lalteemaa Cold Storage

Om Shanti Cold Storage

Arora Cold Storage

Fresh Pro Agri Solutions

Kuber Refrigeration

Ph 4 Cider Works

Kesarwani Sheetaly

Soraon Cold Storage

Durga Cold Storage

Brij Kishore Nirmala Devi Cold Storage

Farukabaad Cold Storage

Murari Cold Storage

Poultry/Hatchery Segment

Unnat Poluteries

Kyushi Engineers

Clean Room Segment

V Form Technopack Pvt. Ltd.

Windlass Biotech Limited

Ved Lifesavers Pvt. Ltd.

Ion Healthcare Private Limited

Mushroom Plants Segment

SSS Mushroom Farms

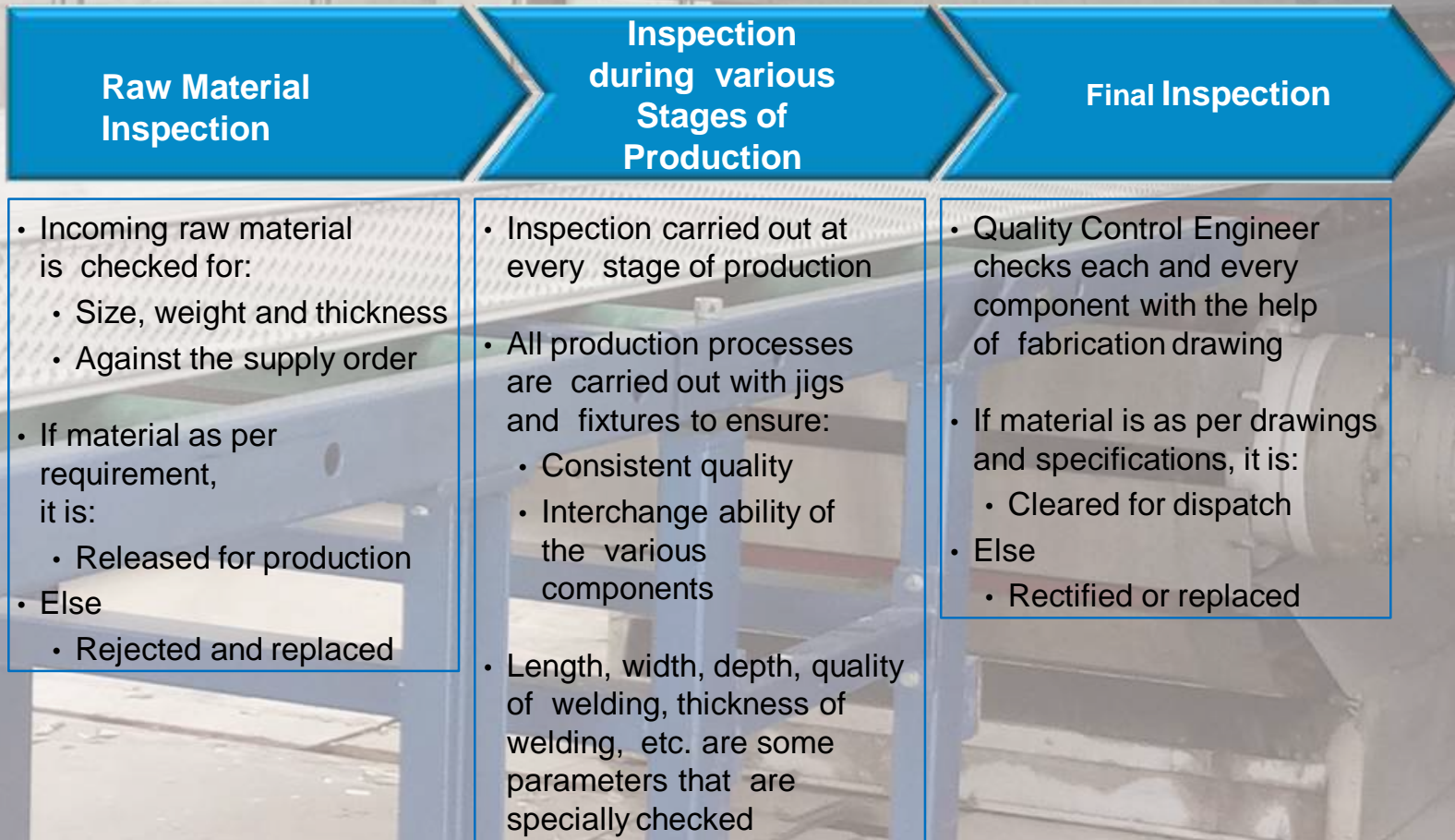
Sterling Farms

Megha Farms

Our clients in the Public sector

The Indian Army	Hindustan Petroleum Corporation Ltd.
Central Reserve Police Force (CRPF)	Kribhco Infra Ltd.
Central Industrial Security Force (CISF)	Military Engineer Services (MES)
Border Security Force (BSF)	Central Public Works Department (CPWD)
Indo-Tibetan Border Police (ITBP)	Municipal Corporation of Delhi (MCD)
Indian Coast Guard	Various Border Roads Projects
National Hydroelectric Power Corporation (NHPC)	Military Engineering College, Pune
Director General of Supplies and Disposal (DGS&D)	Director General Ordnance Services (DGOS)
DG - Uttarakhand Police, Dehradun	Chandigarh Housing Board
National Security Guard (NSG)	DG - Punjab Police, Chandigarh.
Container Corporation of India Ltd.	NTPC
Chandigarh Administration	Hindustan Prefab Limited

BNAL follows a stringent quality control process for raw materials, manufacturing and dispatch



APPROVALS AND CERTIFICATIONS



We can be contacted at...

For further information and for any service assistance, please contact:

BNAL

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Unit 2:

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Tehsil Baddi,
District: Solan (H.P.) -
173205**

Unit 3

**Village Sangrana
Tehsil Barwala
District Panchkula
Haryana.**

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