



THE MULTI-FUNCTIONAL MATERIAL

For custom packaging and storage solutions

Nilkamal introduces the **BubbleGUARD** series for Industrial Packaging Solutions - an innovative range of sheets designed to fit every application and industry. This multi-utility material supplants conventional, single-use packaging by providing superior protection, reducing weight and improving cost efficiency. **BubbleGUARD** offers complete customisation to meet every packaging need.

TECHNOLOGY AT ITS CORE

BubbleGUARD is manufactured with a patented European technology engineered to deliver high-performance. 9 precise microlayers of polypropylene are co-extruded and bonded with a circular honeycomb structure at the centre which fortifies **BubbleGUARD** with non-collapsible bubbles.

The *Air-Lock* technology ensures constant cushioning to protect contents from damage throughout storage, handling and transportation, without losing its effectiveness. The high strength-to-weight ratio delivers impressive impact with compressive strength, absolute durability and ultra-low weight. Nilkamal quality makes **BubbleGUARD** a highly robust solution tailored to exceed even the most rigorous standards.





OUR PLANET OUR RESPONSIBILITY



BLUE FOR GREEN

Reduce, Reuse, Recycle

Engineered for **reusability** across multiple usage cycles, Nilkamal BubbleGUARD Industrial Packaging replaces single-use paper and plastic that ends up in landfills polluting the environment. With air-lock technology that provides constant cushioning, BubbleGUARD is durable for a long life.

Our unique space-saving and collapsible packaging designs, allows you to **reduce** your return logistics and packaging material requirement. Less packaging means more savings!

With award-winning Nilkamal quality, our products are made from 100% virgin PP. All BubbleGUARD products are **100% recyclable**.

BubbleGUARD eliminates conventional packaging and can immediately improve your ESG score by reducing your carbon footprint for packaging and logistics. Our solutions firmly promote **sustainability** making it the perfect solution.

THE WIN-WIN SOLUTION

BubbleGUARD solutions combine sustainability with cost efficiency. All products are designed with practicality in mind. BubbleGUARD sheets are 100% waterproof, UV resistant, heat resistant and chemical resistant ensuring protection in all industrial environments. The light-weight structure facilitates reduced freight costs for one-way and return logistics.

We are committed to help companies transition to sustainable and profitable packaging solutions with ease. Our packaging experts will individually customise solutions to your needs and supply chain challenged to deliver a high return on your investment.



Made of 100%
Polypropylene



Reusable
Multiple Times



100%
Recyclable

Pallet**GUARD** LITE

Sleeve System

The flexible and efficient packaging solution

UNLIMITED DIMENSIONS, UNLIMITED POSSIBILITIES

Upgrade any Wooden Pallet to the PSS Lite. The Easy, flexible and cost-effective solution to ensure best in class protective packaging at maximum ROI. With PSS Lite, you can customize a solution for any dimension, tailored to your requirement making it the perfect choice for packaging across all product lines.

Thanks to our unique, first of its kind innovation – the PSS Lite brackets - instantly upgrade to a collapsible and returnable solution. Made from rust proof, powder coated Mild Stainless Steel, our patented bracket design helps secure and lock the tough **BubbleGUARD** Sleeve to your standard Euro Pallet. The durable sleeve and the lid are manufactured with the same high performance **BubbleGUARD** as that of the PSS Pro.



INTELLIGENT DESIGN

With the PSS Lite brackets, collapsible sleeve and lid - experience all the benefits of the PSS Pro without the high investment.

The collapsible design of the system allows stocking and transportation, making it perfect for both returnable as well as export and one way logistics requirements.

The PSS Lite is designed to ensure maximum optimization of space without affecting pallet dimensions. The brackets can be retrofitted onto existing pallets or the pallets can be purchased additionally.



LITE ADVANTAGES



Fits on any standard pallet maintaining pallet dimensions



Locking system to secure the sleeve to the pallet



Foldable sleeves

- + Powder coated steel brackets/rust proof and weather proof brackets for use in any environment
- + Highly durable, High Strength sleeve design for enhanced impact resistance
- + **BubbleGUARD** sleeve and Lid is non-reactive and safe with oils and chemicals for industrial usage
- + Compatible with all standard forklift and material handling equipment

KEY BENEFITS



Durable



Foldable Design



Rounded Edges For Safety



Available As Per Size Required



High Point Load Bearing Capacity



Reusable Multiple Times



Lightweight



Can Be Fully Customised



100% Recyclable

STANDARD SPECIFICATIONS

Pallet**GUARD**^{LITE} Sleeve System includes:

- + 4 corner brackets
- + 4 side brackets with sleeve locking
- + 1 collapsible **BubbleGUARD** Sleeve
- + 1 **BubbleGUARD** Lid
- + Wooden Pallet (optional) sold separately

*Recommended for 1+1 stacking



Available with HDPE Thermoformed Lid*

FILLED WITH FEATURES

Pallet**GUARD** Sleeve Systems are available with a wide range of features ensuring a solution designed to meet every requirement.



Front and back flap for easy access **P L**



Secure Lock **P**



Internal partitions and fabrication **P L**



Flat closed edges for safety **P L**



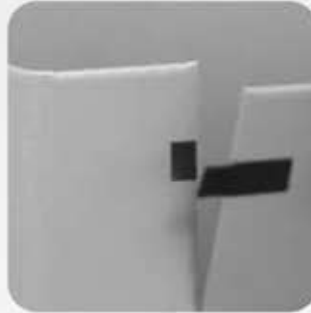
Variable height and size **P L**



Logo or corporate branding **P L**



Document pouch **P L**



Velcro flap lock **P L**



Inner lamination or soft trays **P L**



Trip-tracker **P L**



3-runner pallet base with fork access from all sides **P**



M or Z folding for easy collapse **P L**

OUTPERFORMS CONVENTION

Nilkamal **PalletGUARD** Sleeve Systems offers multiple benefits over conventional paper boxes, octabins and crates.

- + Precise dimensions ensure the most optimum usage of floor space and maximum carrying capacity
- + **BubbleGUARD** walls provide the best strength-to-weight ratio making it lightweight without compromising on superior protection
- + Durability and reusability equals the most cost-effective solution and higher savings
- + 100% polypropylene walls that are completely waterproof, UV resistant, heat resistant and chemical resistant ensuring protection in all industrial environments
- + Branding, trip-tracker, document pouch and secure lock features ensure high visibility in the supply chain reducing risk of loss
- + 100% recyclable sleeves so you can replace them after multiple uses without hurting the environment



**QUICK & EASY
TO ASSEMBLE**



MATERIAL DESCRIPTION:

Co-extruded polypropylene sheets with a central honeycomb bubble structure layer

Product	Thickness	Weight (Gr / sqm)	Colour
Bubble GUARD	1.6 mm - 11 mm	200 - 3500	Various

TREATMENT:

- + Corona- up to 60 dynes
- + Fire Retardant- upon request
- + UV Resistant- on select variants

Printing	One Side	Two Side
Offset UV	✓	✓
Digital UV	✓	✓
Screen-printing	✓	✓

COMPATIBLE CONVERSION

- + Gluing (hot melt; PP or polyurethane reactive)
- + Heat or Ultrasonic Welding
- + Screwing
- + Riveting
- + Stapling
- + Cutting (guillotine, die cut, laser, knife, plotter)
- + Folding (hot or cold)

MECHANICAL PROPERTIES

Property	Method	GSM 300	GSM 1000	GSM 3000	Units
Breaking Strength	ASTM D 638	11.8	35.5	84.3	kgf / 15mm
Elongation MD	ASTM D 638	26.5	23.2	32.7	%
Elongation TD	ASTM D 638	N/A	33.4	42.7	%
Puncture Resistance	IS - 4006-2	75	354	>1500	Beach units (BU)
		22.9	108	>457.5	kgf/cm
Edge Crush Test	IS - 7063	0.5	5.1	18.2	kN/m

CHEMICAL PROPERTIES

Nilkamal Bubble**GUARD** products are manufactured with virgin blend Polypropylene which is non-toxic and food grade safe with RoHS and FDA compliance.

Polypropylene has good chemical inertness and good resistance to cracking under stress. It has no solvent at 20°C. Very resistant to mineral and organic products; it is neither affected by water solutions of mineral salts, nor by chemical bases and mineral acids at temperatures lower than 60°C, except very strong acids. Not resistant to substances with an oxidizing effect or to certain solvents. Details can be supplied on request.

ENVIRONMENT

Polypropylene is persistent in the environment and is not biodegradable.

RECYCLING PROPERTIES

Thermal recycling or incineration

The heat produced can then be used as substitutes for oil, gas and coal or to generate energy at power plants. The complete combustion of polypropylene with air only produces carbon dioxide and water. At higher temperatures traces of nitrogen oxide are present. The incomplete combustion of polypropylene produces soot, carbon dioxide and monoxide, and several carbon, hydrogen and oxygen compounds. Unburnt substances or additional products may be released. The same by-products are also released during the combustion of natural materials such as wood or wool.

MECHANICAL RECYCLING

Polypropylene wastes can easily be recycled. They are collected, separated, milled, melted and extruded in granules in order to be re-injected in our process. We can reuse our own waste.