



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

PackGUARD

Strong durable sheets for fabricated boxes



ROBUST & RE-USABLE

The PackGUARD range of sheets is engineered to be converted into extremely lightweight boxes with a high load carrying capacity. PackGUARD's optimal strength-to-weight ratio makes it ideal for stacking and keeps your products protected during storage, handling and transportation. The sheets are highly durable so they can be reused for multiple cycles.

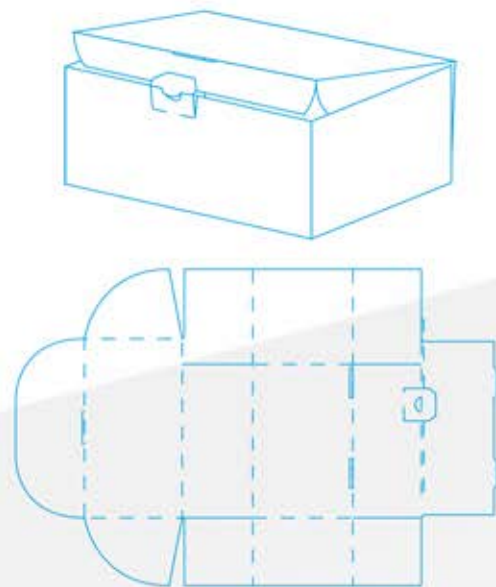
POWER-PACK PERFORMANCE

PackGUARD is formulated to be tough and rigid while simultaneously being easy to fabricate. With a patented honeycomb-structured design, PackGUARD sheets provide superior impact protection to the contents stored inside with its *air-lock* technology. PackGUARD's strong walls don't crack and prevent deformation from bulging or sagging.



HIGHLY VERSATILE

Boxes made from **PackGUARD** are highly customizable for multi-functional usage. They can be cut, creased or fabricated in any size and fitted with value added features such as internal partitions, handles, soft liner, Velcro locks, rivets, ultra-sonic welding and branding. Compared to conventional paper boxes, **PackGUARD** is tear resistant, completely waterproof and can be reused over multiple cycles without losing effectiveness. Its light weight property reduces freight cost considerably making it an ideal solution across industries.



KEY BENEFITS



High Stiffness & Rigidity



Uniform Strength In All Directions



Can Be Cut, Creased



Can Be Welded & Thermoformed



Lightweight



High Load Carrying Capacity



Reusable Multiple Times



Can Be Fully Customised



100% Recyclable

PRODUCT DETAILS

Size:
Custom sizes

Variant:
400-2000 GSM

Colours available:



STANDARD SPECIFICATIONS

Test Type	Strength Value	Test Standard
Breaking Strength	29.85 kgf / 15mm	ASTM D 638
Edge Crush	2.54 / m	IS - 7063
Puncture Resistance	76.86 kgf / cm	IS - 4006-2

Note: Test values for 700 GSM

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.