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ECO-FRIENDLY COMPOSITE MATERIAL- STARCH BASED

Stone-Plastic Boxes





Introduction

Traditional packaging materials rely on tree-based pulp, causing deforestation, biodiversity loss, and ecosystem disruption. The paper production process involves chemical treatments that pollute water and release harmful air pollutants, contributing to acid rain and respiratory issues. Additionally, it has a high carbon footprint, emitting 2.6 kg of CO₂ per kg of paper. This invention offers a sustainable alternative to reduce these environmental impacts.





Main Material Composition

The main material is a bio-based polymer blend of polylactic acid (PLA) and calcium carbonate (CaCO_3). Mix calcium carbonate with coupling agents, white oil, silicone oil, and PLA in a high-speed mixer to form a viscous substance.

Convert the mixture into granules using a twin-screw extruder at 230°C.





Stone-Plastic Boxes Material

PP + Calcium
Carbonate Composit



30% PP Content



70% Inorganic
Calcium Carbonate



Low Carbon Emissions –
Aligns with national carbon reduction policies

Durable and Recyclable –
Supports the circular economy with long-term reuse



Stone-Plastic Boxes Material

PRODUCT	APPEARANCE	PACKING
Stone-Plastic Boxes Material	Pellet	25Kg Bag, 1MT/Pallet, 18MT/20'GP OR Jumbo Bag, 20MT/20'GP





Stone-Plastic Boxes Advantage

The material is lightweight-
can replace traditional paper packaging currently used in the market

The material is waterproof and moisture-resistant, making it suitable for refrigerated goods and wet environments, ensuring the contents remain intact

It is impact-resistant and strong, providing better protection for products during transportation

Customizable and reusable- reducing waste and promoting circular economy practices

The material can be recycled and reused- further supporting environmental sustainability



Stone Plastic Boxes vs. Traditional Packaging

Food Industry (Fresh Food Delivery)

Performance Indicator	Traditional Carton	Stone-Plastic Box
Moisture Permeability	20% - 30%	Below 5%
Freshness Duration (Strawberries at 20°C)	1 - 2 days	3 - 4 days
Stacking Load Capacity	Deforms at 3 - 4 layers	Supports 8 - 10 layers

Electronics Industry (Electronic Component Packaging)

Performance Indicator	Ordinary Plastic Box	Stone-Plastic Box (Electronics Series)
Electrostatic Dissipation Time	5 - 10 seconds	Within 1 second
Humidity Fluctuation (25°C, 60% - 90% RH, 72h)	±10%	Within ±3%



Stone-Plastic Boxes vs. Cardboard Boxes

Material & Environmental Impact

Feature	Stone Plastic Box	Cardboard Box
Material	PP + 70% calcium carbonate (inorganic)	100% paper-based material
Plastic Reduction	Uses 30% PP, reducing plastic usage	No plastic, but uses trees
Carbon Emissions	Lower emissions, eco-friendly	Higher emissions, energy-intensive
Recyclability	Long-term reusable, circular economy	Recyclable, but limited reuse

Performance

Feature	Stone Plastic Box	Cardboard Box
Durability	Strong, waterproof, oil-resistant	Weak against moisture, oil
Weight	Heavier than cardboard	Lightweight
Stacking Strength	High, space-efficient	Lower, takes up more space
Cost	Higher initial cost, long-term savings	Lower cost, but short lifespan
Best Use Cases	Frozen food, logistics, long-term use	Dry goods, short-term packaging



Stone-Plastic Boxes Properties



Water and Oil Resistance:

The composite material is resistant to water and oil, making it ideal for various applications



Superior Hardness:

It is more durable and rigid than traditional paper cartons, ensuring better structural integrity



Printability:

The material is easy to print on, offering flexibility for branding and product information



Stone-Plastic Boxes Properties



Ease of Processing:

It can be easily processed, enhancing manufacturing efficiency



Reusability:

The material can be reused multiple times, reducing waste



Higher Load Capacity:

Our product supports up to 40% more weight than regular paper cartons, making it a stronger packaging solution.



Applications

