

FRUIT STONE GRANULES FOR INNOVATIVE BIO-MATERIALS

Composite Materials and Bio-Polymers

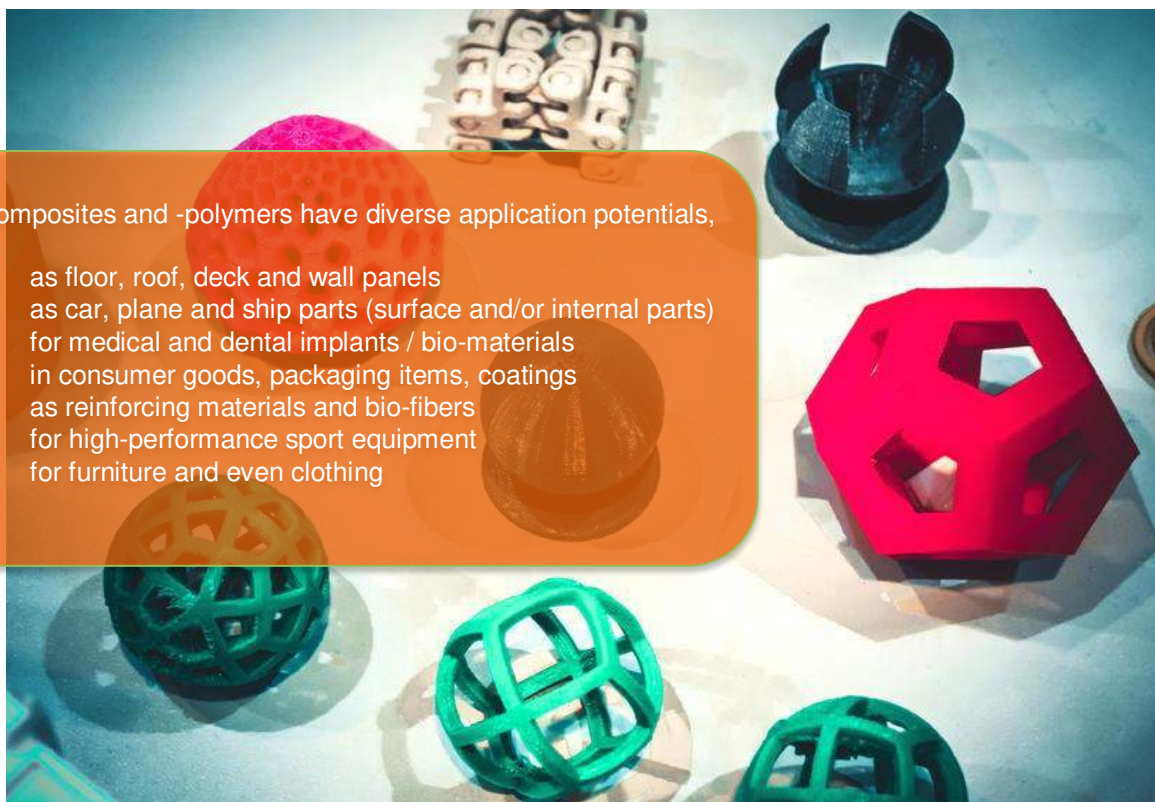
Lower your carbon footprint - use renewable compounding ingredients!

Composites are materials made up of two or more elements or parts with disparate properties. They are made with the goal of achieving new compounds with enhanced material properties such as better resistance, stability or texture.

Thanks to their mechanical and physical properties, fruit stone granules are well-suited ingredients for composites. Compounding is mainly done in a 2-step process: extrusion and compression molding. Fruit stone powders have been used both with other renewables (e.g. wood fibers) and with inorganic compounds such as polypropylene - also for 3D-printed objects.

Bio-composites and -polymers have diverse application potentials, e.g.

- as floor, roof, deck and wall panels
- as car, plane and ship parts (surface and/or internal parts)
- for medical and dental implants / bio-materials
- in consumer goods, packaging items, coatings
- as reinforcing materials and bio-fibers
- for high-performance sport equipment
- for furniture and even clothing
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Lignin and Cellulose Fibers

Due to their high cellulose and lignin content, olive stone and almond shell granules have been a sought-after raw material for biodegradable fibers. Fibers are mainly used as

- personal care ingredients and scrub beads
- food/feed fibers for dietary supplements
- pharma and life science additives
- filtration, construction

Fiber content of olive stones and seed

FIBER TYPE	STONE*	SEED*
Cellulose	30-34.5	2.3-4
Hemicellulose	21.2-28.8	4-9
Lignin	20.5-26	2-4.8

* percentage of dry weight

(Source: Rodríguez et. al.: Olive Stone an attractive source of bioactive and valuable compounds, 2007; Food Biotechnology Dept., Instituto de la Grasa, Seville, Spain)

Construction and Decorative Applications

As robust and long-lasting materials, fruit stone and shell granules are perfectly suited for many decorative and design applications, for example

- as a biodegradable alternative for conventional deco granules made of plastics or glass
- for decorative surface coating and textured wallpapers
- to create textured mosaics, floors or walls
- as a filling material for terraria, landscape and other nature-inspired arrangements
- for exhibition booth and shop design concepts
- as cushion fillers or insulation materials with strong heat-retaining capacities

Colors ranging from nearly white, beige/sandy up to ochre and earthy tones create a warm ambience in any type of space. Powders and granules can be dyed by means of various methods. They are nearly inodorous and suitable for indoor and outdoor areas.

Unique Advantages of Fruit Stone and Shell Granules

- 100% **renewable** and **sustainable**: no crops are required as our materials are derived exclusively from fruit-processing by-products
- **Minimum carbon emissions**: our granules are manufactured mechanically and without any additives
- **Resistance, hardness** (around 3.5 according to Mohs) and durability
- Micron size adaptability and diverse mixtures: **tailored** to your requirements

Evolution of Texture and Particle Visibility in Olive Stone Granules



❖ Please contact us with your specific requirement! ❖

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