PalmPeat®

# GROW SUSTAINABLY With PalmPeat®

First Growing Media and Substrates
from Date Palm Residues

# PalmPeat® Transforms Palm Residues Into Soilless Media and substrates

PalmPeat is the world's first soilless growing media and substrates extracted from date palm agricultural residues.

PalmPeat provides a renewable and sustainable alternative to sphagnum peat moss, which has been facing increasing regulatory pressure on its extraction.

PalmPeat expands the range of peat-free soilless substrates. Resulting in more geographically dispersed economical supply, in suitable volumes and quality with minimal carbon footprint. Which fulfills the ever-increasing demand for soilless growing media by the horticulture industry, without threatening the sensitive sphagnum peatland ecosystem.

## PalmPeat® Stands for

- Sustainable soilless growing media, alternative to sphagnum peat moss
- Available in many forms including particles, chips and mulch
- Suitable for wide range applications, such as horticulture, hydroponics and nurseries
- Geographically dispersed and close to major markets in MENA region and Europe
- Derived from renewable bioresources and 100% biodegradable
- Excellent water holding capacity, wettability and airspace with controlled pH and EC
- Biologically stable and free from pathogens, nematodes and harmful microorganisms

# PalmPeat® - Grades and Products

## Soilless Media from Date Palm Residues

PalmPeat is very versatile and can be processed into various substrates, including, particles with uniform texture, high water-holding capacity and high porosity, providing good drainage while retaining moisture and enabling healthier root growth. It can also be processed into chips that promotes aeration of substrates and allows easy repotting, which is ideal for growing orchids and for balancing air to water ratio for different applications. Or it can be processes into mulch with decorative appearance, which preserves humidity and limits rapid evaporation during summer, and prevents erosion and limits weeds growth.

PalmPeat

PalmChips

PalmMulch

Palmpeat can be wrapped in growbags in different sizes, which is ready to use and can be supplied with planting, dripping and drainage holes and can be reused in multiple growing cycles. It can also be compresses into blocks of various sizes, which are very easy to use and cost-effective in transportation, and can easily expand and transform into fluffy PalmPeat by adding water. PalmPeat can be pressed into discs which is ideal for starting seedlings and floriculture crops.

Growbags

Blocks

Pellets

# Applications

## Peat-free Substrates For Climatic Agriculture

The unique features and characteristics of PalmPeat make it an excellent sustainable growing media for a wide range of applications. Ranging from horticulture, floriculture, nurseries, gardening, landscaping, indoor farming, hydroponics, organic farming and lawns.

### Nursery

- Plants/ shrubs in containers
- Plant propagation
- Perennial plants
- Vine plants in containers

### Horticulture

- Horticulture
- Annuals and biennials
- Flowerpots
- Chrysanthemums
- Perennials

## Landscape

- Green roof
- Green wall
- Flowering
- Sports fields

## Berries

- Strawberry
- Raspberry
- Blueberry
- Blackberry

## Specialty Crops

- Orchards
- Mushrooms farming
- Aromatics herbs

## Mulching

- Annual
- Perennials
- Vegetables
- Animal bedding

# Features and Benefits

## Sustainable & Renewable

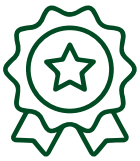
PalmPeat is peat-free media obtained from renewable bioresources and which does not threaten the sensitive sphagnum peatland ecosystem. It is 100% biodegradable and compostable and has the ability to naturally degrade and return back into the environment. PalmPeat is carbon dioxide neutral and consumes very low amounts of water and energy during extraction (sun-dried).

## Geographically Dispersed

PalmPeat is obtained from date palm, which is widely grown across the Middle East and North Africa, with very high populations in Saudi Arabia, Iran, UAE, Iraq, Egypt, Algeria, and Tunisia. This close proximity to major markets in MENA and Europe minimizes the transportation carbon footprint. The estimated global PalmPeat availability can reach up to 1 million tons/year (moisture ~20%).

## Economical

PalmPeat is obtained from palm agricultural residues and does not require extra investment in water, fertilizer, pesticide, or land. Those residues are often regarded as agricultural waste, with zero price in the field. Valorizing these residues provides an extra source of income for palm growers and generates thousands of decent jobs. In addition to, creating entire value chains within rural communities.



## Ideal Performance

PalmPeat has the excellent water-holding capacity and excellent airspace for better root aeration, root growth, and drainage. It has controlled pH and EC levels for the exchange of nutrients. Its spongy structure allows absorbing nutrients and slowly releasing them. It has excellent wettability and decomposes slowly, hence can be reused in multiple growing cycles.

## Safe

PalmPeat is free from weed seeds, pathogens, nematodes, and harmful micro-organisms. The material has up to 90% organic matter, and it is safe during handling, use and disposal. It has no traces of harmful pesticides or heavy metals.

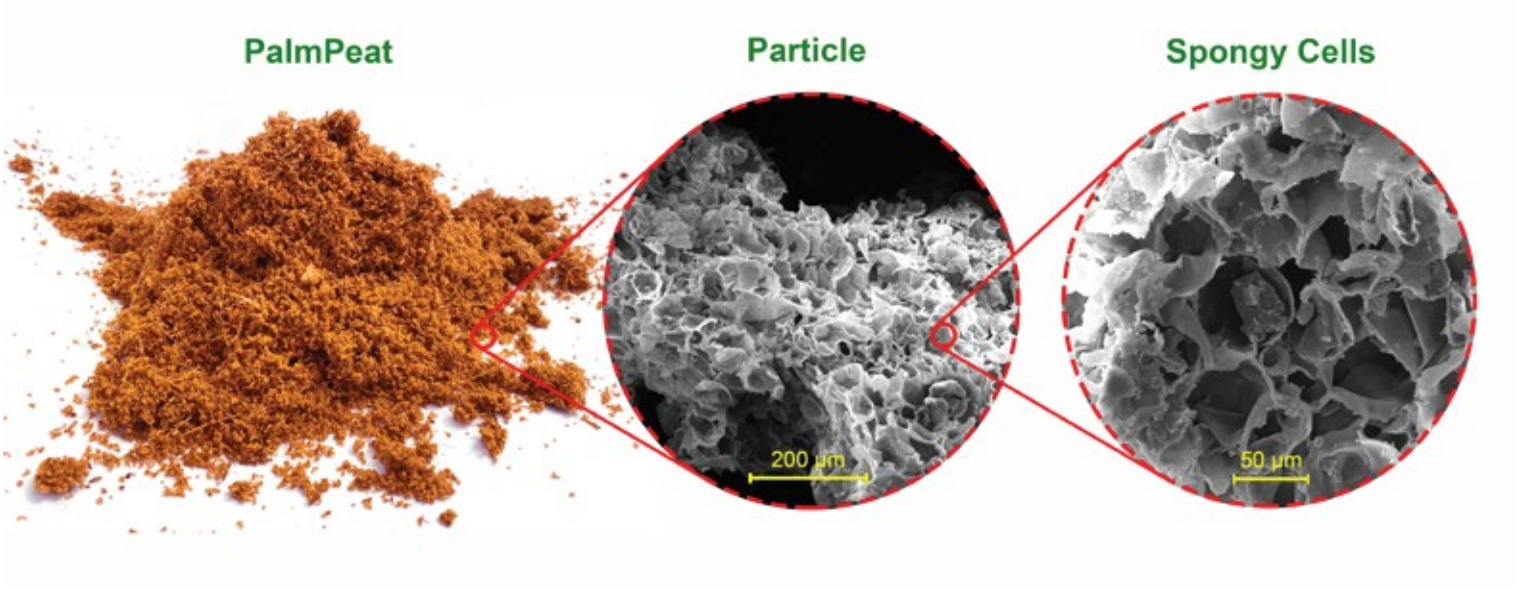
## Compatible

PalmPeat can be used in the same way as sphagnum peat moss and (coco peat). It doesn’t require any special preparations or setup. It is available in compressed form as well as direct grow bags for easy use. It can also be easily mixed with other soilless media, fibers, or fertilizers.

# PalmPeat® Technology

## Contribution to Circular Bioeconomy

PalmPeat is based on a proprietary technology (UK patent pending) for extracting lignin-rich media from date palm agricultural residues. The media is characterized by a unique spongy cellular structure, with high cell rigidity and minimal fiber content, which is important to enhance the water-holding capacity.




The novel PalmPeat media have been extensively tested in key laboratories in France, Belgium, and the Netherlands. They were also well received by the growing media industry, through a collaboration with leading soilless growing media suppliers in Europe and the United States.

PalmPeat technology contributes to the global food security by providing a sustainable peat-free soilless media, to fulfill the urgent and increasing demand for alternative media. Driven by increased crop production, transition of newer crops from soil to soilless production, a thriving mushroom industry and an increase in home gardening. PalmPeat proprietary extraction technology could be applied to agricultural residues of other palm species such as oil palm, and sugar palm.

PalmPeat®

# Technical Data Sheet

## Physical Properties

| Properties | Values | Test Methods |
|---|---|---|
| EC washed (ms/cm) | 0.1 | NF EN 13038 |
| pH washed | 5.6 | NF EN 13037 |
| Dry bulk density (kg/m3) | 107 | NF EN 12580 |
| Organic Content of dry matter (%) | 91.6 | NF EN 13039 |
| Particle size (mm) | 1 – 8 | - |
| Fiber Content (%) | 2 – 5 | - |
| Expansion Ratio (l/kg) | 12 – 15 | - |
| WHC (ml/100gm) | 600 - 700 | - |
| Oxygen uptake (mmol O2/kg o.m./h) | 7 | - |

## Macro/ Micronutrients

| Nutrient Ions | Values | Test Methods |
|---|---|---|
| N-NO3- (mg/l) | <0.050 | NF EN ISO 11885 |
| P (mg/l) | 1.01 | NF EN ISO 11732 |
| SO42- (mg/l) | 33 | NF EN ISO 11885 |
| Cl- (mg/l) | 9.7 | NF EN ISO 11885 |
| N-NH4+ (mg/l) | 0.110 | NF EN ISO 11732 |
| K+ (mg/l) | 89.26 | NF EN ISO 11885 |
| Mg2+ (mg/l) | 119.26 | NF EN ISO 11885 |
| Ca2+ (mg/l) | 183.31 | NF ISO 9297 |
| Na+ (mg/l) | 78.71 | NF EN ISO 11885 |

## Metallic Trace Elements

| Elements | Values | Test Methods |
|---|---|---|
| Cadmium (mg / kg MS) | 0.07 | NF EN ISO 11885 |
| Chrome (mg / kg MS) | 4.88 | NF EN ISO 11885 |
| Copper (mg / kg MS) | 5.25 | NF EN ISO 11885 |
| Mercury (mg / kg MS) | <0.011 | NF EN ISO 12338 |
| Nickel (mg / kg MS) | <0.27 | NF EN ISO 11885 |
| Lead (mg / kg MS) | <0.53 | NF EN ISO 11885 |
| Zinc (mg / kg MS) | 13.6 | NF EN ISO 11885 |
| Chromium + Copper + Nickel + Zinc (mg / kg MS) | 24.00 | NF EN ISO 11885 |

## Pathogens

| Organisms | Values | Test Methods |
|---|---|---|
| Escherichia coli (UFC/g MB) | <100 | NF ISO 16649-2 |
| Clostridium perfringens (UFC/g MB) | <100 | NF EN ISO 7937 |
| Enterococcus (/ g MB) | 40 | NF EN ISO 7899-1 |
| Other microorganisms | | |
| Listeria monocytogenes | Not detected | NF EN ISO 11290-1 |
| Salmonella | Not detected | NF EN ISO 6579-1 |
| Helminth eggs | Absence | FD X33-040 |
| Biological Analysis | Not detected | DNA Multiscan |
| Nematodes | Not detected | Nematodes t.b.v. RHP |
| Pesticides | Not detected | LC-MSMS , GC-MSMS |

# Resource of The Future

## Five reasons why date palm is the resource of the future

- Highly tolerant to difficult environmental conditions.
- Very important for food and nutrition security in deserts and drylands.
- Its agricultural residues are considered renewable resources of biomaterials for many applications.
- The utilization of its agricultural residues is part of a long technical heritage.
- The main source of livelihood for a big proportion of the world population.

## Developer

### The Sustainable Material Valorization Center

PalmPeat® is developed by VALORIZEN Research and Innovation Center which is specialized in developing, scaling up and commercializing technologies to valorize sustainable materials. It is the research arm and a wholly owned subsidiary of UK-based Scaleup Innovations Holdings Limited. VALORIZEN operates in 3 core areas, including biomass valorization, waste valorization, as well as knowledge valorization.

# Partnership & Sponsorship Opportunities

## Supporting Sustainable Development and Improving Livelihoods

We believe that there is a very promising future for PalmPeat as a novel class of peat-free soilless substrates, with an estimated annual market worth of US$ 330 million. We are seeking partnership to scaleup and commercialize PalmPeat proprietary technology. Possible partners include palm growers, soilless media mixing companies, developmental organizations, government agencies, and research funding organizations.

The scope of partnership includes but is not limited to:

- Joint venturing
- Technology licensing
- Product development
- Research collaboration

For inquiries, collaboration, partnership, sponsorship, and trial samples
Please contact:

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