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QUADERNO 4

Lightness

1. FLEXIBLE WOOD

Flexible wood made by using selected Canadian birch veneer as raw material, though other high quality veneers are available on request.

The material is finished with a fine sanding surface treatment to give elegance to the container, giving it a soft touch effect similar to leather; these particular properties combined with the pleasant aspect of wood make this product an effective solution for high-end product packaging. Hot brand, laser engraving or colour foil technology can be carried out, which allow the final product to be highly personalised.

This new material finds application in gift and food packaging; for example, it is used to produce oval and cylindrical packaging for whisky and expensive wines, for high-end foods like caviar, porcini mushrooms and chocolates, for cosmetics and for certain sporting goods accessories and golf balls. (NT6016)

PROPERTIES

Electrical Insulating
Waterproof
Thermal Insulating
UV Resistant

2. BANANA FIBRE VENEERS AND PANELS

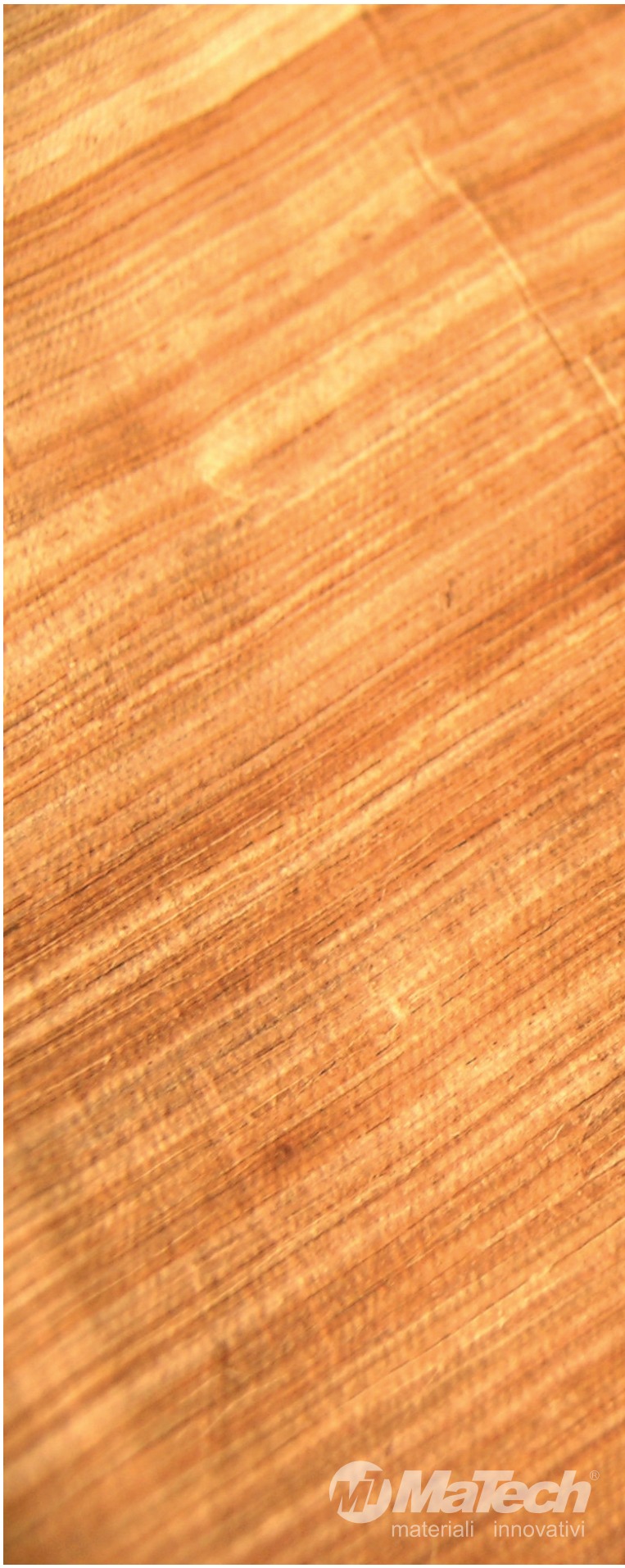
Veneers and panels made of pressed banana fibres.

Banana harvesting generates a large amount of waste which then remains on the ground, decomposing into carbon dioxide and methane.

These discards, which are rich in natural resins, are processed and pressed in special moisture and temperature conditions, resulting in sheets, veneers and panels. This makes this material sustainable and renewable.

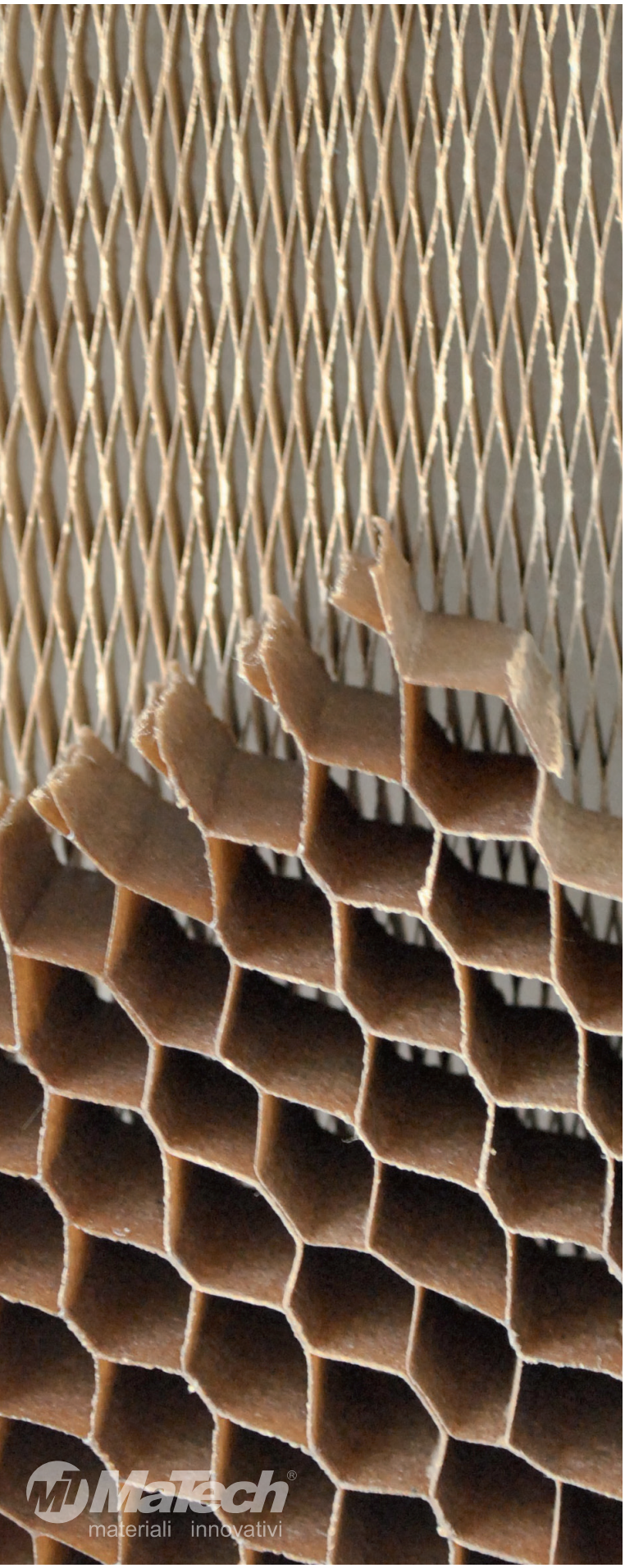
The patented process preserves the natural structure, granting water and fire resistance.

They are mainly applied as covering for furniture in indoor design, the automotive and boat industry or as decorative finishing for objects such as guitars and skis. (NT6047)



PROPERTIES

Reduced Emissions
Energy Saving
Bio-Based
Recycled
Transparent
Flame Retardant
Hydrophobic
Waterproof



3. PAPER HONEYCOMB

Honeycombs made of paper, suitable for manufacturing extremely light sandwich panels with good lift qualities at a reasonable cost.

They are a green alternative if compared to traditional honeycombs (made of carbon, aluminium or polymer) because they are made of paper and water-based glue.

They are available in different sizes, with different cell sizes and different paper weights as well. In some cases the honeycomb paper can be impregnated with resins to increase mechanical strength, especially in the construction of structural sandwiches in the composite field.

The production is certified according to standards ISO9001: 2008. Applications include interior doors, furniture, automotive parts and packaging materials as pallets. (NT6049)

PROPERTIES

Bio-Based
Reduced Emissions
Breathable
Soundproof
Thermal Insulating
Electrical Insulating
Impact Resistant
Transparent

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4. POLYMER WITH CLAY NANOPARTICLES

Transparent nanocomposite material made in polyamide (nylon 6) reinforced with clay nanoparticles and organic hybrids.

This type of composite requires only 2-8% reinforcement in order to reach and sometimes exceed the performances of reinforced glass composites at 20-30%. It is manufactured in film or plate form.

It is an excellent barrier against moisture, odours and gas, thus proving to be a good solution for the packaging industries in foodstuff, medicine, cosmetics and electronics.

In comparison with glass-reinforced material, this composite is much lighter and more resistant to wear. The process is the same of nylon; its viscosity does not degrade over time and is lower in the direction of the clay nanoparticles. Given its nylon base, it has good resistance to contact with hydrocarbons, but proves less effective with strong acids or bases.

Its high coefficient of water absorption causes a loss in rigidity in favour of material elasticity. It has an excellent surface finish, good resistance to traction and high rigidity. (PO2545)

PROPERTIES

Abrasion Resistant
Elastic
Transparent
Thermal Insulating
Waterproof
Electrical Insulating

5. POROUS FILTERING PLASTIC

Plastics made of an intricate network of open cells derived from material porosity. These pores, with dimensions ranging from 7 to 1000 micron, offer a good combination of filtering capacity and structural strength.

Unlike synthetic fabric or wire mesh where the filtration capability consists in a single direct passage, in porous plastics the pores are joined to form many winding paths that allow for double filtration.

They are available in sheets, rod, tube and moulded parts with dimension and pore sizes depending on the product type. It is also possible to produce them in different polymers, such as high density polyethylene (HDPE), polytetrafluoroethylene (PTFE), Ultra High Molecular Weight Polyethylene (UHMW), Nylon 6 (PA6), Polypropylene (PP), polyvinylidene fluoride (PVDF), polyethersulfone (PES).

There is also a version that is loaded with active carbon, which is therefore capable of absorbing and eliminating odours. In this case, choice of colour is limited to black.

The insertion of the charge is only possible for certain, specific porosities, as otherwise the final product would be excessively fragile. The maximum width for the active carbon version is 300 mm.

These types of products are employed as filtering agents for liquids or gas in different sectors such as in medical (drug delivery, dialysis) pharmaceutical (packaging), electronics (sensors, breathable adhesives), automotive, foodstuff, laboratory analysis (gas chromatography, liquid-liquid extraction, protein precipitation) and in everyday objects (fragrance diffusers, oxygen diffusers for aquariums, tips for highlighters and markers). (PO2665)

PROPERTIES

Transparent
Soundproof
Absorbent
Breathable
Electrical Insulating
Recyclable
Antibacterial
Thermal Insulating
Suitable for Food Contact
Corrosion Resistant

6. WATER-SOLUBLE PAPER

Water soluble paper made of sodium carboxy methyl cellulose and wood pulp. Its main property is the capability to dissolve rapidly and completely in most liquids including water.

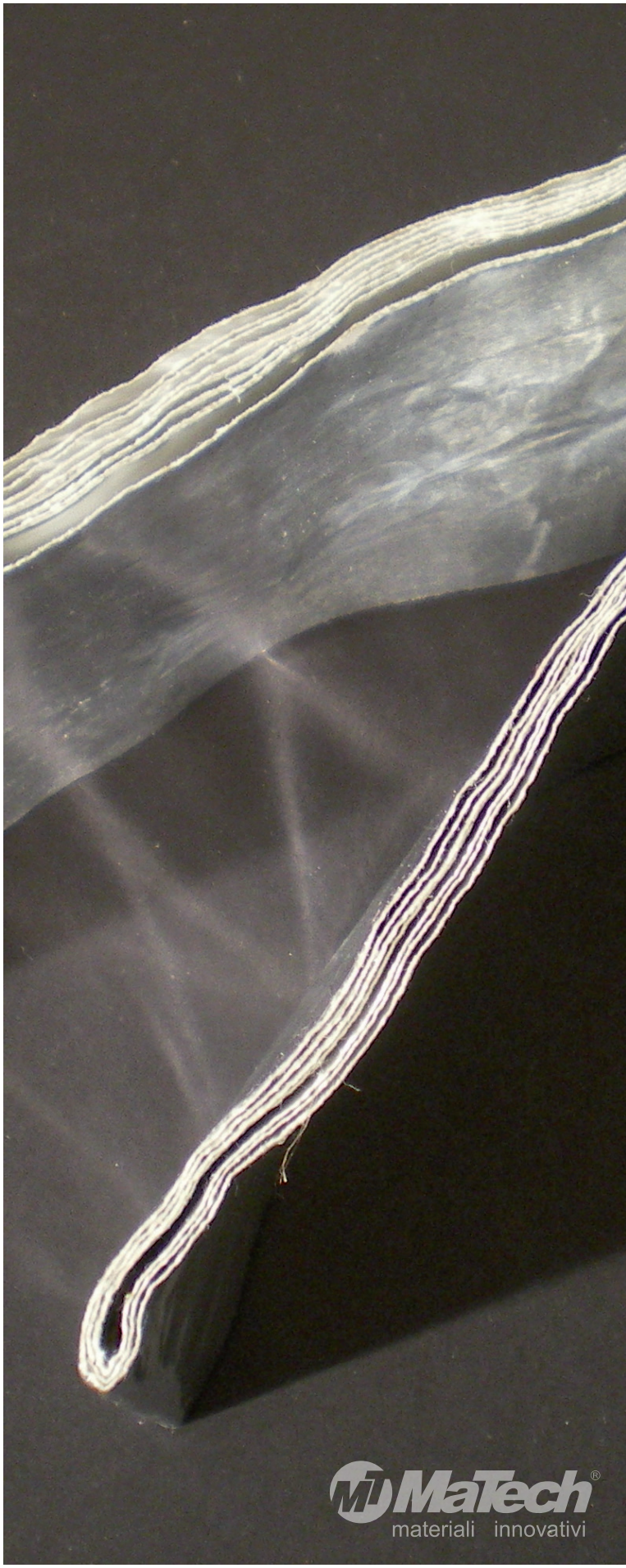
This product has been designed as a barrier for inert gases applied in welding processes for stainless steel and aluminium tubing, offering a good replacement to traditional products, such as inflatable rubber bladders, rubber gaskets or paperboard discs.

Compared to these materials, water soluble paper has many advantages: it increases the containment of inert gases used (especially argon and helium) and allows for the reduction of their quantities, with consequential cost reduction, because it can be positioned very close to the welding zone, creating a smaller chamber.

Furthermore, once the welding is complete, the material can be effortlessly dissolved and flushed out of the system with water, leaving no residue in the pipeline.

Finally, it is available in sheets, rolls and pressure-sensitive tapes and so it is easy to store and ship. It is extremely easy to use, environmentally friendly and non-toxic.

This paper is available in a wide range of grades and sizes permitting the construction of purge dams for literally any pipe diameter. Its main application field is in industrial welding. (NT6029)



PROPERTIES

Electrical Insulating
Hypoallergenic
Biodegradable
Absorbent

7. PRESSURE INDICATING SENSOR FILM

Mechanochromic film, able to change its colour when pressed or mechanically loaded. It is a multilayer film, where the external layers have two 4 micron thick polyester films with two special patented layers inside; one consists in microcapsules filled with a patented substance and the other is a special impressionable layer.

The application of pressure on the film causes the microcapsules to rupture and the contained substance impresses on the near layer, producing an instantaneous and high definition monochromatic image.

The intensity of the colour represents the pressure variation in the contact area; more intensity stands for more pressure.

Eight types of these film are available, depending on the pressure to be measured, from 2-20 PSI (0.14 — 1.4 kg/cm³) to 43200 PSI (3000kg/cm³).

They can be used from 5 to 35°C or at higher temperatures for a short time, and in humid conditions from 20 to 90% RH. Its shelf life is two years. It is possible to convert the monochromatic image into multicolour, reducing the approximation from 10% to 2%.

They are applied in aerospace (composite layups, bolted joints), automotive (during test for impacts, braking), electronics (heat sinks, LCD bonding, PCB lamination, wafer bonding), medical (clamping, gait analyses, ergonomics, orthotics and prosthetics), packaging (heat sealing, converting) and the plastics industry (lamination press, die extrusion, injection moulding, stamping). (TC3591)

PROPERTIES

Waterproof
Elastic
Mechanochromic

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8. ANTI-SLIP PAPER SHEETS

Sheets of paper with special anti-slip properties. These properties come from the surface treatment that the sheets are submitted to.

They can be coated on one or both sides. This product is hydrophobic and 100% recyclable; it is also suitable for contact with food.

The sheets can be arranged under heavy loads to prevent slipping and damage during transport; if placed correctly they can stabilise palletised goods with up to a 50-degree inclination.

In addition to the improvement of anti-slip properties the technical coating ensures a soft touch surface.

This product is available in rolls or sheets in different weights per square metre (from 50 to 300g/m²) and with a maximum width 140 cm.

Anti-slip paper sheets are mostly used for packaging applications and for transport; they are also used for non-slip trays for cafeterias, computer bases and mousepads. (NT6014)

PROPERTIES

Waterproof
Anti-Slip
Hydrophobic
Electrical Insulating
Abrasion Resistant
Recyclable

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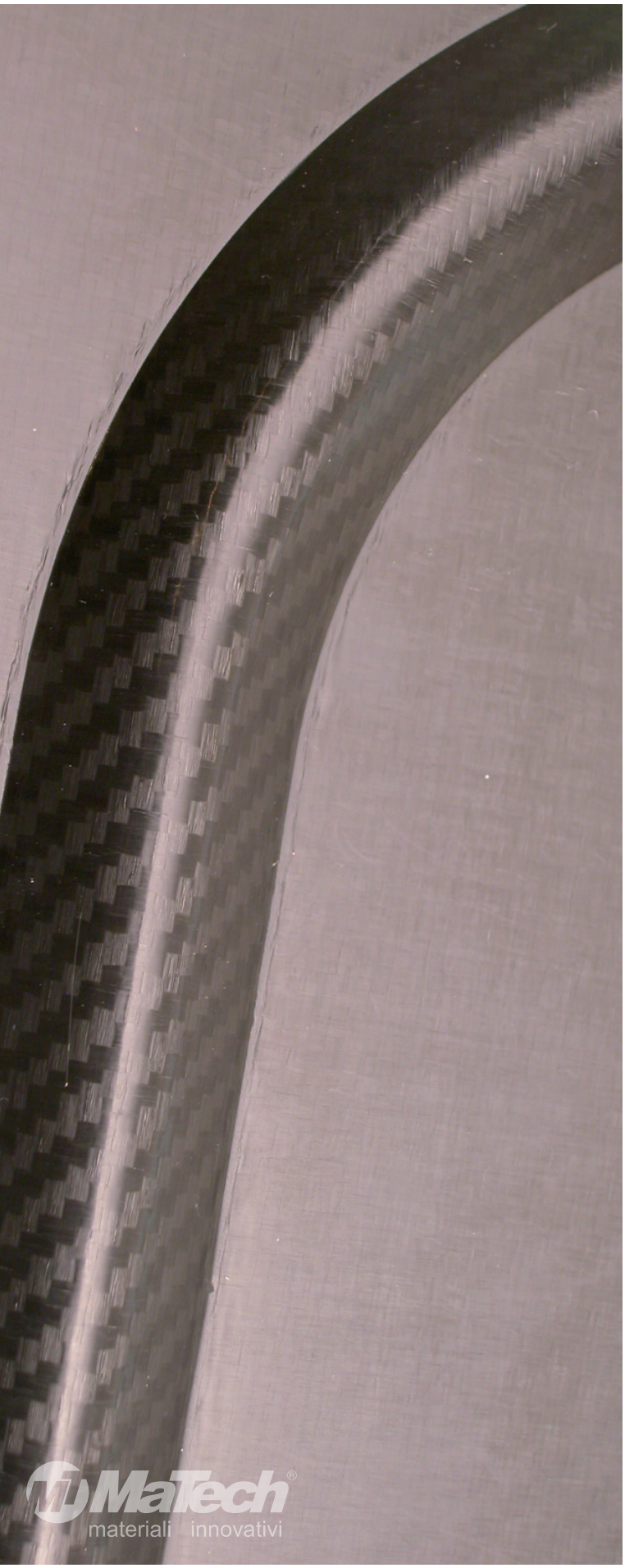

9. RECYCLABLE COMPOSITE MATERIAL MADE OF 100% PP

Recyclable composite material made of 100% PP (polypropylene) with an aesthetic appearance similar to carbon fibre panels.

It is manufactured starting with numerous PP (polypropylene) fabric layers pressed together through a special process that permits the obtaining of a self-reinforced structure with great mechanical properties, high rigidity, high tensile strength and impact resistance.

It is a low density material, non-toxic and resistant to corrosion. With its very high strength-to-weight ratio, it is possible to obtain high performance components.

This special material can be laminated to foam or honeycomb structures for sandwich panel production; it is easily thermoformed if heated at 150 - 160 °C by infra-red heating or air convection without shrinking or otherwise deforming. Due to partially extendible self-reinforcing fibres, unlike glass or other common reinforcements, fibre distribution is achieved with minimal thinning in high draw areas.

The lack of glass or mineral filler allows it to be machined with standard cutting tools; it may be punched or machine-worked as well as cut by water jet. It can easily be joined and have attached fittings through ultra-sonic welding.

It is applied in the automotive industry for exterior and interior components (bumpers, control boards, door liners, load floors) or in sporting goods production, personal protection equipment, composite packaging and technical components. (CP2035)

PROPERTIES

Waterproof
Impact Resistant
Recyclable
Electrical Insulating

10. HAND MOULDABLE THERMOPLASTIC POLYMER

Hand mouldable thermoplastic biodegradable polymer. It is a high molecular weight linear polyester with a low melting temperature (60°C), which is often used in the field of plastics as an additive to improve the low temperature resistance of many polymers; its low melting temperature reduces the energy necessary for the production of extruded profiles, with consequent improvement of the aesthetic appearance of the moulded parts.

If applied alone, it can be easily hand-moulded once placed in hot water for a few minutes; once cooled, it hardens and looks and feels like solid nylon. The heating and cooling cycles are unlimited and so the polymer can change its shape as many times as desired.

These physical and chemical properties make it suitable for small modelling, production of small objects, repair of plastic items and rapid prototyping, where resistance to high temperature is not a fundamental requirement.

It is applied in the production of models and prototypes and creation of moulds suitable for the re-production of other objects.

Consequently, as it is FDA approved, it is used in the medical field in specific applications such as drug delivery devices, sutures (biocompatible and bio-absorbable) and as structures for osteogenesis (regenerative synthesis of bone tissue). (PO2661)

PROPERTIES

Electrical Insulating
Biocompatible
Biodegradable
Suitable for Food Contact
Hydrophilic
Impact Resistant

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