



POLYURETHANE PALLET SUMER PLÁSTICOS®

A sustainable evolution

THE COMPANY



- We have been in the market for more than 25 years in the plastic extrusion and injection technology segment, offering practical and efficient solutions and high productivity gains
- Our objective is to strive to improve and create new lines of products with state-of-the-art technology, such as through the development of recycled and sustainable products made of Rigid Structural Polyurethane and PVC
- In 2005 Sumer's technology was recognized by the UN through the Montreal Protocol, as a company committed to reducing the emissions of gases harmful to the ozone layer and, since then, we have continued to strongly promote sustainability, reduce our environmental impacts, and offer ecofriendly products



THE PALLET



- It is the first pallet made of rigid structural polyurethane, a sustainable and ecological material that fully replaces wood and plastic, in terms both of their constructive configurations and usability
- This product ensures innovation if compared to similar offers, is easy to handle, and is ergonomic and resistant, in addition to being reusable

CHARACTERISTICS OF THE PRODUCT

Dimensions	1.0 m x 1.0 m x 13 cm	1.0 m x 1.2 m x 13 cm
Weight	6 kg	9 kg
Static load	800 kg	1,000 kg
Dynamic load	500 kg	800 kg
Forklift	7 pallets per meter	7 pallets per meter
Used on racks	yes	yes

OB.: It is also possible to develop a product with specific dimensions



CHARACTERISTICS OF THE MATERIAL



- **Resistance**

– The polyurethane pallet made by Sumer Plásticos® is developed based on the polymeric injection process of highly resistant urethane structural components, the same material utilized to make helmets, bulletproof vests, vehicular shielding, aircraft hulls, and highly resistant parts

PROPERTY	RANGE OF VALUES	UNIT
resistance and flexure	26 to 35	MPa
flexure module	800 to 1200	MPa
resistance to impact	8.3 to 24	J
resistance to tension	12 to 29	MPa
surface hardness	72 to 80	Shore D
thermal conductivity	0.07 to 0.08	W/mk

– It complies with the following norms: ASTM D790 (resistance and flexure) / DIN 53453 (resistance to impact) / ASTM D648 (heat deflection temperature) / ASTM D638 (resistance to tension) / ASTM D2240 (surface hardness) / ISO 2581 (ISO 2581)

CHARACTERISTICS OF THE MATERIAL



– Bayer has undertaken a weathering simulation for the rigid polyurethane plate's structure, a material identical to Sumer Plásticos®' Polyurethane Pallet, which has provided the following results

Accelerated ageing (168h at 70°C)	No effect
Resistance to humidity (168h at 38°C/100%U.R.; 2h at 70°C)	No effect
Salt-spray – (168h at 35°C/5% NaCl; 2h at 70°C)	No effect
Thermal cycle – (conf DG-042956.1 section 3.00)	No effect
Resistance to roughcast – (SAE J400)	No pattern loss
Resistance to impact – (Gardner 24 lb/pol)	No pattern loss
Resistance to fuels	No effect
Resistance to 60/40 ISO – (Octane/Toluene)	No effect
Resistance to acids – (0.1% HCl)	No effect
Resistance to high temperatures – (60 min. at 110°C)	No effect
Resistance to solvents	No effect
Resistance to abrasion – (500 cycles)	No pattern loss
Accelerated weathering (Xenon 2000h)	No pattern loss

CHARACTERISTICS OF THE MATERIAL

- **Stability to humidity and temperature**
 - Polyurethane materials do not absorb humidity, do not suffer any deformation due to temperature variations, and even on water its surface does not become slippery, which may compromise product transportation
 - It can be used at ease in cold stores, refrigerated facilities, dairy stores, and food and pharmaceutical industries, where temperatures are inferior to 0 °C



	Polyurethane	Wood	Plastic
Shrinking ratio	0.4% to 0.6%	10.7% to 13.5%	26 to 36%
Temperature capability	-70 to 110° C	-20 to 100° C	-35 to 60° C

ADVANTAGES

- **Weight**

- A polyurethane pallet has its weight controlled during manufacturing and does not suffer any variation when in contact with humidity, contrary to other materials such as wood, in which that variation may add up to 30% more in terms of weight

- It provides 75% savings during air, maritime and land transportation, considering the cost as per weight



- It reduces engine maintenance requirements, vehicle depreciation, and decreases the environmental impacts, within the mid term

- It is ergonomic, easy to organize, store, stack and transport, and ensures safer operations due its lighter weight

	Polyurethane	Wood	Plastic
Average weight (1.0 x 1.2-m pallet)	9 kg	28 kg	17 kg

EXEMPLO PRÁTICO, A SEGUIR...

ADVANTAGES



An aircraft can carry up to 100 containers with the capacity for 10 pallets, considering just 1 container at an average price of US\$ 25.00/kg:

MATERIAL	PALLET WEIGHT AS PER CONTAINER	COST OF A PALLET AS PER CONTAINER
Wood	280 kg	US\$ 7,000.00
Plastic	170 kg	US\$ 4,250.00
Polyurethane	90 kg	US\$ 2,250.00



A vessel can carry up to 4,000 containers with the capacity for 20 pallets, considering just 1 container at an average price of US\$ 25.00/kg:

MATERIAL	PALLET WEIGHT AS PER CONTAINER	COST OF A PALLET AS PER CONTAINER
Wood	560 kg	US\$ 14,000.00
Plastic	340 kg	US\$ 8,500.00
Polyurethane	180 kg	US\$ 4,500.00

ADVANTAGES



Considering that a truck can carry from 28 to 32 pallets and has a maximum capacity of 25 tons:

MATERIAL	PALLET WEIGHT AS PER TRUCK
Wood	896 kg
Plastic	544 kg
Polyurethane	288 kg

- A truck loaded with polyurethane pallets, if compared to wooden pallets, would allow a company to gain 608 kg of extra weight capacity to transport its own products
- In terms of values: if a company's product costs in average R\$ 40.00/kg to be transported, we are talking here about R\$ 24,320.00 more

ADVANTAGES

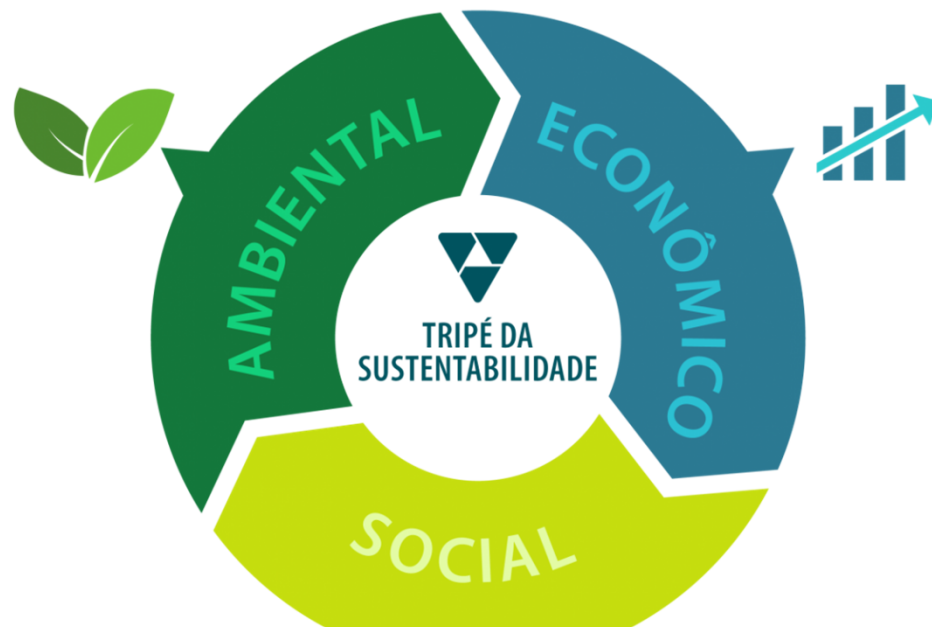
- **Hygiene and Safety**
 - The fumigation process is not necessary due to the utilized material
 - Its polymeric composition ensures full antimicrobial protection, and therefore it is immune to the proliferation of fungi and bacteria, thus fulfilling the health norms
 - It can be easily cleaned with running water
 - It decreases the operational risk due to its weight, and does not generate splinters



ADVANTAGES

- **Sustainability**

- An ecofriendly and reusable product, which can be recycled
- It is composed of two polymeric components, which are therefore 100% recyclable and made of non-toxic materials, in addition to having a long useful life, ensuring the product can be used for a longer period of time
- It has a lower potential of generating environmental impacts



DID YOU KNOW?

- In order to make just 1 wooden pallet up to 3 8-year old replanted trees are necessary, and around 45% of those trees are discarded as leftovers, bark, branches, scraps or sawdust, since only the core of a tree is utilized. Environmental Hydrology studies undertaken by Prof. Walter de Paula Lima from the University of Sao Paulo (USP) have shown that a replanted tree consumes the equivalent to 36 liters of water per day. By calculating consumption for 8 years we would have:
 - Water: 36 liters x 3 trees x 30 days x 12 months x 8 years = 311,040 liters of water could be saved.
 - Energy: 12,900.64 Kw/h could be saved
 - Carbon Dioxide: 806.64 kg would no longer be released into the atmosphere



DID YOU KNOW?

- Another important point is wood dust dissemination, because when a tree is cut down a huge quantity of molecules such as cellulose, polyosis, and lignin, among other materials, are broken loose. Data disclosed by the Cancer Institute (INCA) have indicated that those molecules, when they enter the respiratory tract through inhalation, may cause allergenic respiratory effects, as well as many different kinds of cancer





“To sow ecological ideas and cultivate sustainability is to make sure we will harvest a fertile and conscious future.”

Make your contribution!



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