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# 8 / Materials



## STANDARD MATERIALS

## POLYPROPYLENE (PP)

It is the basic material in order to manufacture conveyor belts for most of processes, both in food industry and in industry generally speaking.

With a good mechanic resistance, and a temperature range from +5 °C to +104 °C, it has a specific gravity of approximately 0.9, and it floats in the water.

Given its excellent chemical resistance to most of the acids and concentrated bases, salts, and detergents, it is essential for corrosive work environments.

It is very resistant to penetration of micro organisms.

Though it has a resistance to impact close to 3.5 kJ/m<sup>2</sup>, it becomes slightly fragile at temperatures below 9 °C. That is why it is not recommended for processes in which there will be strong impacts on the belt.

## Temperature range (°C)

+5°C to +104°C

## Colours

Natural - Blue

Fit for food industry



Suitable



## POLYETHYLENE (PE)

Thanks to a temperature range from -50 °C to +65 °C, it is the most suitable material for belts to be used in freezing processes.

With a specific gravity of 0.95 approximately, it floats in the water. It stands out for its excellent resistance to impact and fatigue, and for its flexibility.

Good chemical resistance to many acids and concentrated bases, salts, and detergents.

Its low coefficient of friction provides excellent sliding properties, with a minimum of adherence and absorption.

## Temperature range (°C)

-50°C to +65°C

## Colours

White - Grey - Blue

Fit for food industry



Suitable



## ACETAL (POM)

With a specific gravity of 1.5 approximately, the technical polyacetals are thermoplastics of low friction coefficient with the greatest resistance to scratching and breakage. That is why it is the material used in accumulation tables for all kind of containers, as it avoids any damage on the product surface, as well as crushing.

Its great mechanical resistance enables it to transport heavy loads.

With a wide temperature range from -40 °C to +90 °C, it is used for manufacturing belts that will convey heavy loads and in applications involving the use of sharp tools.

It has a good chemical resistance to solvents, greases, and a large list of chemicals.

## Temperature range (°C)

-40°C to +90°C

## Colours

White - Natural - Blue

Fit for food industry



Suitable



## FOR SPECIAL APPLICATIONS

## RESISTANT TO UV-RAYS

We have a black polyethylene resistant to UV rays for conveyor belts to be used in applications that will be out in the open, at low temperatures, and exposed to solar radiation.

## Polyethylene (PEO)

## Temperature range (°C)

-50°C to +65°C

## Colours

Black

Fit for food industry



Suitable



## DETECTABLE BY METALS AND X-RAYS

It is used in belts for process lines where you want to avoid that it can be mixed with the product, pieces or splinters of it.

Material easily detectable by all types of metal detectors and can also be detected by an X-ray detector.

It is recommendable to test the material in your production environment to determine the detection sensitivity of your equipment.

Check availability and deadlines according to models and series of belts.

## Polipropylene (PPM)

## Temperature range (°C)

+5°C to +63°C

## Colours

Blue

Fit for food industry



Suitable



## Acetal (ACM)

## Temperature range (°C)

-40°C to +80°C

## Colours

Blue

Fit for food industry



Suitable



## METAL DETECTABLE (PED)

It is used in the belts of the process lines where you want to avoid the mix pieces or shrapnel of it with the product.

Material easily detectable by all types of metal detectors (MD).

Suitable for direct contact with food.

## Polyethylene (PED)

## Temperature range (°C)

-40°C to +50°C

## Colours

Blue

Fit for food industry



Suitable



FOR SPECIAL APPLICATIONS

**ELECTRICALLY CONDUCTIVE**

Polyethylene with a very low coefficient of resistivity, both volumetric and superficial, which makes it ideal for those applications in which it is necessary to dispel the electrostatic charges, created on the belt, through the conveyor's structure.

Special for conveyance applications at low temperatures in environments classified as ATEX.

Unsuitable for direct contact with food.

Polipropylene (PPE)	
Temperature range (°C)	+5°C to +55°C
Colours	Black
Fit for food industry	Unsuitable

Acetal (ACM)	
Temperature range (°C)	-30°C to +70°C
Colours	Black
Fit for food industry	Unsuitable


**WEAR-RETARDANT MATERIAL**

Special material to prolong the average life of the belts, as their wear gets reduced when working in abrasive environments.

It is used in all those applications in which the belt is exposed to scratches due to the abrasion caused by the product itself or by other elements like sand, abrasive dust, etc.. conveyed together with it.

Unsuitable for direct contact with food.

Anti-wear (AAN)	
Temperature range (°C)	-30°C to +80°C
Colours	Yellow
Fit for food industry	Unsuitable

Anti-wear (AA)	
Temperature range (°C)	-40°C to +85°C
Colours	Natural
Fit for food industry	Suitable 


**HIGH IMPACT MATERIAL AT LOW TEMPERATURE**

Particularly suitable for applications where flights break even at low temperatures.

Very resilient with high impact resistance

Continuous working temperature to -40°C y 110°C

Suitable for direct contact with food.


High impact (TPC)	
Temperature range (°C)	-40°C to +110°C
Colours	Cream
Fit for food industry	Suitable 

**HIGH IMPACT MATERIAL AND SCRATCHES**

It is an acetal resistant to high Impacts and scratches. Thanks to its mechanical properties it can be used in applications where is necessary to cut meat or fish with sharp tools on the belt.

It is also resistant to products that can scratch the surface such as bones or thorns.

It is also a suitable material to resist the impact of products bulky and heavy. The belt does not suffer breakage. Suitable for use with pork ham, cow forequarters and whole tuna during its manual handling.

High impact (AC)	
Temperature range (°C)	-40°C to +90°C
Colours	Natural - White
Fit for food industry	Suitable 

FOR SPECIAL APPLICATIONS


**SPECIAL POLYPROPYLENE FOR PASTEURIZERS**

This material protects the belt from temperature changes with the presence of bromine and chlorine.

Improves resistance up to 15% at near temperatures of 104°C.

It is not recommended in applications with high impact below 9°C

Food certification, both European Directive and FDA (Food and Drug Administration)

Polypropylene (PPV)	
Temperature range (°C)	+5°C to +104°C
Colours	Green
Fit for food industry	Suitable 

**FLAME RESISTANT**

With some good properties mechanical and resistance chemistry it is retardant to the flame of the fire having a flammability index of V-0 (UL94 test).

To be lubricated it has one index of absorption and a coefficient of friction very low.

This material is not approved for direct contact with food and its range of working temperature is from +5 to 104°C

Polypropylene (PPL)	
Temperature range (°C)	+5°C to +104°C
Colours	White
Fit for food industry	Unsuitable

Flammability rating (UL94)		
Thickness (mm)	Value	
3,00	V-0	
1,5	V-0	
0,75	V-2	

**POLYKETONE**


This material has better resistance to abrasion and impact than acetal.

Excellent chemical resistance to chemical agents such as acids, hydrocarbons, etc...

It also has good wear and friction properties, with a low noise level.

Material with high resistance to hydrolysis, maintaining dimensional stability in a humid and hot environment

Suitable for direct contact with food.

Polyketone (PK)	
Temperature range (°C)	-30°C to +80°C
Colours	Blue - White - Cream
Fit for food industry	Suitable 



## FOR HEAT RESISTANT APPLICATIONS

## NYLON

Belts made from this material have good geometric stability against heat, great hardness and high rigidity.

They are resistant to wear in abrasive and dry environments.

With a high hygroscopic value, it is not recommended for use in humid environments, since the dimensions of the belt vary considerably.

## Nylon

Heat stable with temperature values up to 120°C in continuous work and peaks up to 135°C. For extreme values, it is necessary to take into account the decrease in its mechanical properties.

Its flammability index is V-2 (UL94 test in a thickness of 1.6 mm.)

Suitable for direct contact with food, except with foods that contain alcohol.

## Nylon high temperatures resistant (HT)

Heat stable with temperature values up to 150°C in continuous work and points of up to 180°C. For extreme values, the decrease in its mechanical properties must be taken into account.

Its flammability index is HB (UL94 test in a thickness of 1.6 mm.)

Suitable for direct contact with food, except with foods that contain alcohol.

## Nylon high temperatures resistant (HT plus)

Heat stable with temperature values up to 170°C in continuous work. For extreme values, the decrease in its mechanical properties must be taken into account.

Its flammability index is V-0 (UL94 test in a thickness of 1.6 mm.)

It also contains special additives to reduce adherence.

It is not suitable for direct contact with food.

## PPS

It is one of the polymers with the greatest hardness and rigidity, with heat stability at temperatures up to 200°C in continuous work and peaks up to 240°C.

High resistance to fatigue, mechanical and chemical.

Flame retardant to fire, flammability rating of V-0

Low water absorption, practically nil (0.02%)

It is suitable for direct contact with food.

## Nylon (NYN)

## Temperature range (°C)

-40°C to +120°C

## Colours

Natural

## Fit for food industry



Suitable



## Nylon HT (NYR)

## Temperature range (°C)

-40°C to +150°C

## Colours

Brown

## Fit for food industry



Suitable



## Nylon HT plus (NYJ)

## Temperature range (°C)

-40°C to +170°C

## Colours

Red

## Fit for food industry

Unsuitable

## PPS

## Temperature range (°C)

-40°C to +200°C

## Colours

Brown

## Fit for food industry



Suitable



## FOR FRICTION TOP BELTS

## THERMOPLASTIC ELASTOMERS (TPE)

It is a thermoplastic vulcanized, flexible and with a very good adherence. It is used for obtaining the maximum grip of the product to the transport surface in order to prevent it from sliding in incline conveyors.

Good resistance to fatigue, oil, and chemicals in general.

The temperature range runs from -40 to 100 °C.

When designing an application with belts manufactured in this material, we should take into account:

- The environmental conditions regarding the work area (temperature, humidity, possible spilling of liquids, etc.).
- The geometrical peculiarities of the application (inclination degrees, speed, possible vibrations, etc.).
- The characteristics of the product (weight, dimensions, material of its packing, etc.).
- The belt return way will be designed avoiding always the friction of the rubber on the support surfaces, on the inverse turn rollers, etc.

We have three hardness grades:

## Shore A35

## Temperature range (°C)

-40°C to +100°C

## Colours

Grey

## Fit for food industry



Suitable



## Shore A45

## Temperature range (°C)

-40°C to +100°C

## Colours

Black

## Fit for food industry

Unsuitable

## Shore A60

## Temperature range (°C)

-40°C to +100°C

## Colours

Beige

## Fit for food industry



Suitable



Chemical **resistance**

CHEMICAL NAME	PP		PE		AC	
	20 °C	60 °C	20 °C	60 °C	20 °C	60 °C
Acetic acid	V	V	V	Q	-	-
Acetic acid (5%)	V	V	V	V	V	-
Acetone	V	V	V	V	Q	Q
Alcohol (all types)	V	V	V	V	-	-
Aluminium compounds	V	V	V	V	-	-
Alums (all types)	V	V	V	V	-	-
Ammonia	V	V	V	V	-	-
Ammonium compounds	V	V	V	V	-	-
Amyl acetate	Q	NV	Q	NV	-	-
Amyl chloride	NV	NV	Q	NV	-	-
Aniline	V	V	V	NV	-	Q
Aqua regia	NV	NV	Q	NV	-	-
Arsenic acid	V	V	V	V	-	-
Barium compounds	V	V	V	V	-	-
Barium soap fat	V	Q	-	-	-	-
Beer	V	V	V	V	-	-
Benzene	Q	NV	Q	NV	V	Q
Benzene sulphonic acid (10%)	V	V	V	V	-	-
Benzoic acid	V	V	V	V	-	-
Borax	V	V	V	V	-	-
Boric acid	V	V	V	V	-	-
Brake fluid	V	V	-	-	V	V
Brine (10%)	V	V	V	V	V	V
Bromic acid	NV	NV	NV	NV	-	-
Bromine, liquid or vapour	NV	NV	NV	NV	-	-
Bromine water	NV	NV	-	-	-	-
Butyl acetate	NV	NV	Q	NV	-	-
Butyl acid	NV	NV	V	Q	-	-
Butyric acid	V	-	V	Q	-	-
Calcium compounds	V	V	V	V	-	-
Calcium soap fat	V	Q	-	-	-	-
Calgonite (0,3%)	V	V	-	-	V	V
Carbon dioxide	V	V	V	V	-	-
Carbon disulphide	Q	NV	Q	NV	-	-
Carbon tetrachloride	NV	NV	NV	NV	V	Q

This chemical resistance guide is merely informative and it is based on specifications given by the suppliers of the technical plastics employed in our manufacturing process.

Materials:

[PP] Polypropylene / [PE] Polyethylene / [AC] Polyacetal / [PA] Nylon / [PBT] Polybutylene terephthalate

[V] Valid / [NV] Not Valid / [Q] Questionable / [-] No Information

Chemical **resistance**

CHEMICAL NAME	PP		PE		AC	
	20 °C	60 °C	20 °C	60 °C	20 °C	60 °C
Cellosolve TM	V	V	-	-	-	-
Chloroacetic acid	V	V	-	-	-	-
Chlorine-gas	NV	NV	Q	NV	NV	NV
Chlorine water (0,4% Cl)	V	Q	-	-	NV	NV
Chlorobenzene	NV	NV	Q	NV	-	-
Chloroform	NV	NV	NV	NV	-	-
Chlorosulphonic acid	NV	NV	NV	NV	-	-
Chlorox	NV	V	Q	-	-	NV
Chromic acid (50%)	V	V	V	Q	-	-
Citric acid	V	V	V	V	-	-
Citric acid (10%)	V	V	V	V	V	-
Citrics juice	V	V	V	V	-	-
Clorine liquid	NV	NV	NV	NV	NV	NV
Coconut oil	V	V	V	V	-	-
Copper compounds	V	V	V	V	-	-
Corn oil	V	V	V	V	-	-
Cottonseed oil	V	V	V	V	-	-
Cresol	V	V	V	Q	-	-
Cyclohexane	V	Q	NV	NV	-	-
Cyclohexanone	V	Q	NV	NV	-	-
Detergents	V	V	V	V	V	V
Dextrine	V	V	V	V	-	-
Di-iso-octyl phthalate	V	V	-	-	-	-
Dibutyl phthalate	V	Q	-	-	-	-
Diethanolamine	V	V	-	NV	-	-
Diethyl ether	NV	NV	NV	NV	Q	Q
Diglycolic acid (30%)	V	V	V	V	-	-
Dimethyl phthalate	V	V	-	-	-	-
Dimethylamine	V	-	-	-	-	-
Diocetyl phthalate	V	Q	-	-	-	-
Ethyl acetate	V	V	Q	Q	Q	NV
Ethyl ether	Q	Q	-	-	-	-
Ethylamine	V	V	-	-	-	-
Ethylene chloride	NV	NV	-	-	-	-
Ethylene glycol (50%)	V	V	V	V	V	Q

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Chemical **resistance**

CHEMICAL NAME	PP		PE		AC	
	20 °C	60 °C	20 °C	60 °C	20 °C	60 °C
Ferric/ferrous compounds	V	V	V	V	-	-
Formaldehyde (37%)	V	V	V	Q	-	-
Formic acid (85%)	V	Q	V	V	-	-
Freon	-	-	V	V	Q	Q
Fuel oil	V	Q	V	NV	Q	Q
Furfural	NV	NV	Q	NV	-	-
Glucose	V	V	V	V	-	-
Glycerol	V	V	-	-	-	-
Grease	V	V	V	Q	-	-
Heptane	NV	NV	Q	NV	V	V
Hexane	V	Q	NV	NV	-	-
Hydriodic acid	NV	NV	-	-	-	-
Hydrobromic acid (50%)	V	V	V	V	-	-
Hydrochloric acid	V	V	V	V	NV	NV
Hydrochloric acid (10%)	V	V	V	V	NV	NV
Hydrofluoric acid (35%)	V	V	V	V	NV	NV
Hydrogen peroxide (3%)	V	V	V	V	V	V
Hydrogen peroxide (90%)	Q	Q	V	Q	-	-
Hydrogen sulphide	V	V	V	V	-	-
Igepal (50%)	V	V	-	-	V	Q
Iodine-glasses	V	V	Q	Q	-	-
Isooctane	NV	NV	V	-	-	-
Kerosine	Q	NV	Q	Q	V	V
Lactic acid	V	V	V	V	-	-
Lanolin	V	Q	V	V	-	-
Lard	-	-	V	V	-	-
Lauric acid	V	V	V	V	-	-
Lead acetate	V	V	V	V	-	-
Ligroine	Q	NV	-	-	-	-
Lime sulfur	V	-	-	-	-	-
Linseed oil	V	V	V	V	V	V
Lubricating oil	V	Q	-	-	V	V
Magnesium compounds	V	V	V	V	-	-
Malic acid (50%)	V	V	V	V	-	-
Manganese sulphate	V	-	V	V	-	-

Chemical **resistance**

CHEMICAL NAME	PP		PE		AC	
	20 °C	60 °C	20 °C	60 °C	20 °C	60 °C
Margarine	V	V	V	V	-	-
Mercury	V	V	V	V	-	-
Mercury compounds	V	V	V	V	-	-
Methyl cellosolve	V	-	-	-	-	-
Methyl chloride	NV	NV	-	-	-	-
Methyl ethyl kesone	V	Q	NV	NV	-	-
Methyl sulphuric acid	V	V	V	V	-	-
Methylene chloride	Q	NV	NV	NV	-	-
Mineral oil	Q	NV	V	NV	V	V
Mineral alcohols	Q	NV	-	-	-	-
Molasses	V	V	V	V	-	-
Motor oil	V	Q	-	-	V	V
Naphtha	V	Q	Q	NV	-	-
Nickel compounds	V	Q	V	V	NV	NV
Nitric acid (30%)	V	Q	V	V	NV	NV
Nitric acid (50%)	V	Q	V	V	NV	NV
Nitric acid (fuming)	NV	NV	NV	NV	NV	NV
Nitrobenzene	V	Q	NV	NV	-	-
Nitrous acids	Q	NV	-	-	-	-
Nitrous oxide	V	-	-	-	-	-
Oil for transformers	V	Q	V	Q	-	-
Oleic acid	V	NV	-	-	V	V
Olive oil	V	V	V	V	-	-
Oxalic acid	V	V	V	V	-	-
Oxygen	NV	NV	-	-	-	-
Ozone	NV	NV	Q	NV	-	-
Palmitic acid (70%)	V	V	V	V	-	-
Perchloric acid (20%)	V	V	V	V	-	-
Perchloroethylene	NV	NV	NV	NV	-	-
Petrol	Q	NV	V	NV	V	V
Phenol (5%)	V	V	V	V	NV	NV
Phenol	V	V	V	V	NV	NV
Phosphoric acid (30%)	V	V	V	V	-	-
Phosphoric acid (85%)	V	V	V	V	-	-
Photographic solutions	V	V	V	V	-	-

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Chemical **resistance**

CHEMICAL NAME	PP		PE		AC	
	20 °C	60 °C	20 °C	60 °C	20 °C	60 °C
Phthalic acid (50%)	V	V	V	V	-	-
Plating solutions	V	V	V	V	-	-
Potassium compounds	V	V	V	V	-	-
Potassium iodide 3% iodine	V	V	V	V	-	-
Potassium hydroxide	V	V	V	V	-	-
Potassium permanganate	V	Q	V	V	-	-
Silver cyanide	V	V	-	-	-	-
Silver nitrate	V	V	V	V	-	-
Sodium chlorite	V	Q	V	V	-	-
Sodium compounds	V	V	V	V	-	-
Sodium hydroxide	V	V	V	V	-	-
Sodium hydroxide (60%)	V	V	V	V	V	V
Sodium hypochlorite (5% Cl.)	V	Q	-	-	NV	NV
Stannic chloride	V	V	V	V	-	-
Stannous chloride	V	V	V	V	-	-
Stearic acid	V	Q	V	V	-	-
Succinic acid	V	V	V	V	-	-
Sugar	V	V	V	V	-	-
Sulphamic acid (20%)	V	V	-	-	NV	NV
Sulphite solutions	V	V	-	-	-	-
Sulphur	V	V	V	V	-	-
Sulphur bioxide	V	V	V	V	-	-
Sulphur chloride	V	-	-	-	-	-
Sulphuric acid (3%)	V	V	V	V	V	V
Sulphuric acid (50%)	V	V	V	V	NV	NV
Sulphuric acid (70%)	V	Q	V	Q	NV	NV
Sulphuric acid (fumming)	NV	NV	NV	NV	NV	NV
Sulphurous acid	V	-	V	V	-	-
Tannic acid (10%)	V	V	V	V	-	-
Tartaric acid	V	V	V	V	-	-
Tetrahydrofurane	Q	NV	-	-	-	-
Toluene	NV	NV	NV	NV	Q	NV
Tomato juice	V	V	V	V	-	-
Tributyllic phosphate	V	Q	-	-	-	-
Trichloroacetic acid	V	V	-	-	-	-

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Chemical **resistance**

CHEMICAL NAME	PP		PE		AC	
	20 °C	60 °C	20 °C	60 °C	20 °C	60 °C
Trichloroethylene	NV	NV	NV	NV	-	-
Tricresylic phosphate	V	Q	-	-	-	-
Trisodium phosphate	V	V	V	V	-	-
Turbosine	Q	NV	Q	Q	V	V
Turpentine	Q	NV	Q	NV	-	-
Urea	V	V	V	V	-	-
Vinegar	V	V	V	V	-	-
Wine	V	V	V	V	-	-
Xylene	NV	NV	NV	NV	-	-
Zinc compounds	V	V	V	V	-	-

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