

## ROMBEST® masterbatches for PS & PP Thermoforming

### SELECTION GUIDE FOR THERMOFORMING

#### 1) WHITES for PP & PS thermoforming

WHITE PS & PP masterbatches are recommended for PS & PP products, where they ensure better dispersion and homogenization than PE based masterbatches and do not affect the mechanical properties of the end product. Such products are WHITE PP950, PP9502, PP9505, PS7305, PS730, PS734, PS741, and PS7452.

For products where antistatic properties are required we recommend WHITE PP9352 or WHITE PP9509 which combine TiO<sub>2</sub> and one or more antistatic agents.

### ROMBEST WHITE MASTERBATCHES

#### PP – PS

ROMBEST WHITE	Carrier Resin	White Pigments %	White Pigments types	Undertone	Additives	Filler	Injection moulding	Blow-moulding	Sheets	PP tapes	PP fibers
PP952	PPH	50	TiO <sub>2</sub>	B		◆	•	•	o	o	
PP950	PPH	50	TiO <sub>2</sub>	B			•	•	•	o	
PP9505	PPH	50	TiO <sub>2</sub>	B*		◆	•	•	•		
PP9352	PPH	35	TiO <sub>2</sub>	M	AT	◆	•	•	•	o	
PP9509	PPH	50	TiO <sub>2</sub>	M	AT	◆	•	•	•	o	
PS7305	PSGP	25	TiO <sub>2</sub>	B*		◆	•		•		
PS730	PSGP	30	TiO <sub>2</sub>	B*		◆	•		•		
PS734	PSGP	30	TiO <sub>2</sub>	M		◆	•		•		
PS741	PSGP	40	TiO <sub>2</sub>	B*		◆	•		•		
PS7452	PSGP	45	TiO <sub>2</sub>	B*		◆	o		•		

AT : anti-static

B : bluish

PPA : polymer processing aid

M : milky

• : recommended

◆ : yes

o : can be used

\* : Extra Bluish

Modified versions of the above products can be produced upon request, e.g. with another base resin, white pigments type/content or containing different types/levels of additives.

## 2) FILLERS for PP & PS thermoforming

ROMBEST FILLER masterbatches are concentrates of Calcium Carbonate (CaCO<sub>3</sub>) or Talc in a polymer base. They offer a convenient way of incorporating CaCO<sub>3</sub> and Talc in thermoplastics, without contamination by dust. They have perfect dispersion and optimized flow properties, ensuring easy processing.

The CaCO<sub>3</sub> and talc grades used in ROMBEST FILLER masterbatches are of excellent quality. Their typical properties are as follows:

Property	CaCO <sub>3</sub>	Talc
Median size (D50), mic.	3,2	5,4
Top Cut (D98), mic.	9,5	20
Hardness (Mohs)	1,5	1
Oil Absorption (gr / 100 gr)	14	25

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ROMBEST FILLER	BASE RESIN	FILLER TYPE	FILLER %
PP977	PP-H	CaCO <sub>3</sub>	75
PS 780	PS-GP	CaCO <sub>3</sub>	80
PS 781 (*)	PS-GP	CaCO <sub>3</sub>	80
PP956	PP-H	Talc	50
PS 7603	PS-GP	Talc	60

(\*) contains TiO<sub>2</sub>

### BENEFITS OF MINERALS ADDITION TO THERMOFORMING PROCESS

- Increased thermal conductivity
- Increased modulus of elasticity
- Lower shrinkage
- Lower transmission rate (better barrier properties)
- Lower overall migration

### EXAMPLES

- **Thermal Conductivity** (shorter heating and cooling time, higher production rate)

Material	Thermal Conductivity (w / m°C°)
PP	0.2
HIPS	0.17
CaCO <sub>3</sub>	2.7
Talc	2.1
20% CaCO <sub>3</sub>	0.42
20% Talc	0.37

- **Stiffness** (reduction of wall thickness, lower cost)

Material	Tensile Modulus (MPa)
PP	1200
PP+20% Talc	2200
PP+30% Talc	2500
PP+20% CaCO <sub>3</sub>	1500
PP+30% CaCO <sub>3</sub>	1700

- **Shrinkage** (Lower internal Stresses, better dimensional stability)

Material	Shrinkage (%) Machine Direction
PP	1.9
PP+10% CaCO <sub>3</sub>	1.6
PP+20% CaCO <sub>3</sub>	1.4
PP+30% CaCO <sub>3</sub>	1

**ASPECTS THAT SHOULD BE CONSIDERED FOR MINERALS INCORPORATION TO THERMOFORMING APPLICATIONS**

- Color Influence
- Limited use for food contact of acidic products (solution for this is Co Extrusion)

**TYPICAL ADDITIONS**

- Single layer film : 10-20% Talc , 20-40% CaCO<sub>3</sub>
- Co Extrusion film: Structure 20% / 60% / 20% up to 40-50% minerals can be incorporated in the middle layer.

09/10

The information and suggestions contained herein are the result of our experience, knowledge and research. They are believed to be reliable and are given in good faith. However, no warranty is provided, as the conditions under which our products are used are beyond our control.