

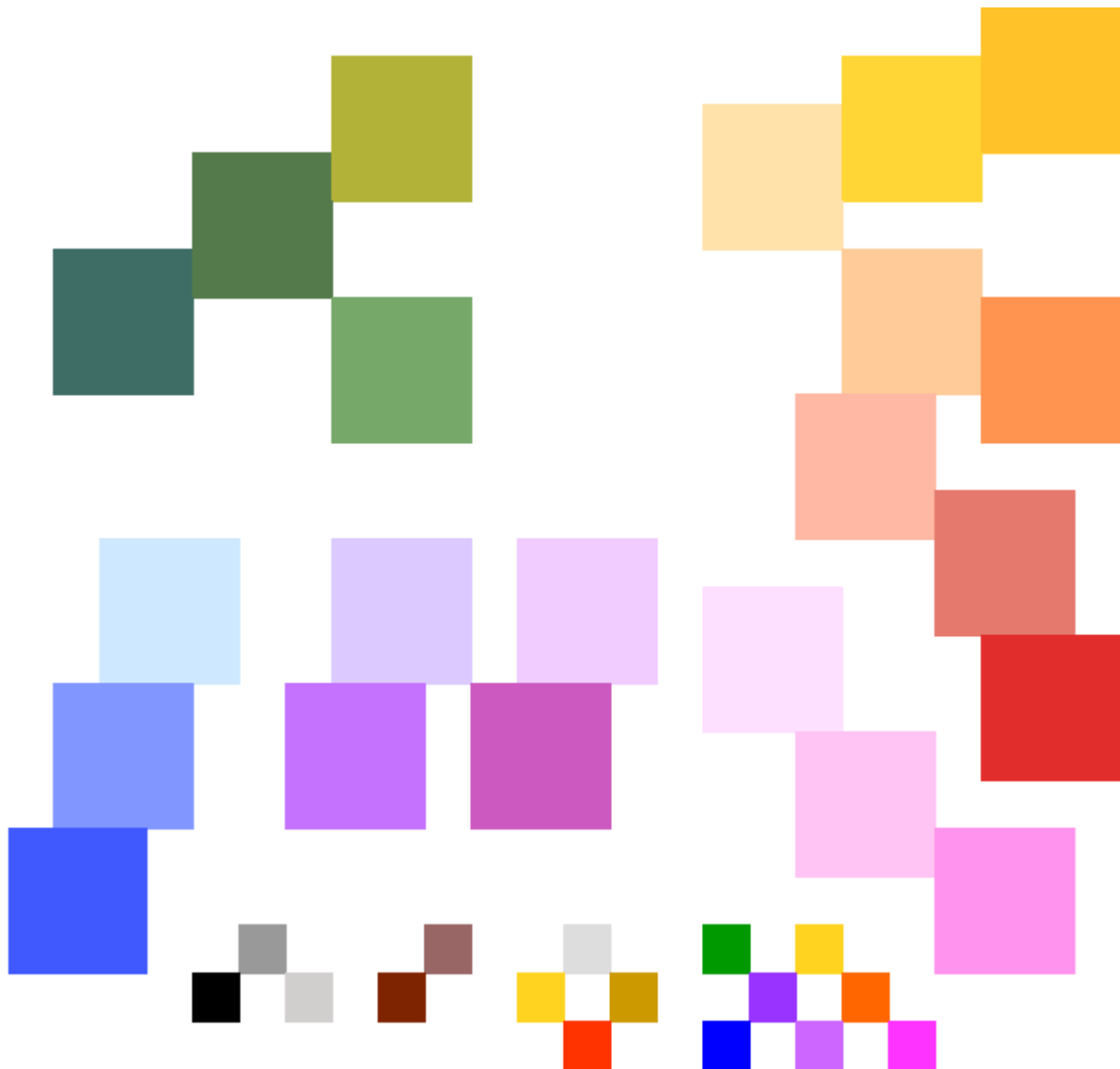
# CAPROWAX P™

**Masterbatches** for Bioplastics/Biocomposites/Blends: PLA, PBS, PHA, PCL, CAPROWAX P™/Blends/BioMineralComposite, Bio-NFC/WPC, Casein, PVOH, Polysaccharides/Derivates, PVAc/Blends, Bio-TPE/UPR, NIPU.

As colourants are used biobased, bio-mineral and/or harmless, inorganic pigments with sustainable, lightfast brightening without Titanium Dioxide.

The carrier material is compostable and waterproof.

Colourations of bioplastics comply the specifications of DIN EN 13432.



Albrecht Dinkelaker  
Polymer- and Product Development

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[www.caprowax-p.eu](http://www.caprowax-p.eu)

CAPROWAX P™ compostable of course






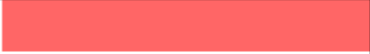












## > COLOURATION <

After successful tests of Masterbatches with your bioplastics or composites your request will be coordinated with toll manufacturer.

Translucent to transparent, pearlescent or full covering colouration:  
 Injection- / Vacuum- / Blow- / Compression- / Melt-Moulding,  
 Mono-/Multifilaments, Foils/Sheets, Hotmelts, NF-BioComposites,  
 Thermoplastic Plasticine, Foams and Coating.

Pigments are biobased, biomineral or calcined, pigmentlike Kaolin and/or of inorganic, synthetic production. They are harmless, lightfast, non-migratory, temperature stable, insoluble in water, comparable with natural, mineral pigments and already mineralised. They are low-dusty incorporated in compostable carrier material and masterbatch pellets are added to different bioplastics in a range of 0,5-6%. Processing at 90-200°C, short time up 220°C. In coloured final products content of each separate pigment is  $\leq 1\%$ . Colouration of bioplastics comply the specifications of DIN EN 13432.






# Masterbatches for translucent colouration

CAPROWAX P™	Shade chromatic	CAPROWAX P™	Shade chromatic
Red 114 T		Red Y 121 T tex	
Yellow 310 T tex		Green 427 T tex	
Green 413 T tex		Green 426 T tex	
Green AR 430 T tex		Blue AR 530 T tex	
Blue G 511 T tex		Blue R 516 T tex	
Violet B 616 T		Violet R 617 T	
Violet B 630 T tex		Violet R 635 T tex	
R: reddish    Y: yellowish    G: greenish    B: bluish    T: translucently			
tex: suited for colouration of filaments    LP: Laboratory prototype    AR: acid resistant			

Addition of CAPROWAX P - Masterbatches to different bioplastics: 0,5-4%  
 Injection- /Vacuum- /Blow- /Compression- /Melt-Moulding, Filaments,  
 Foils/Sheets, Hotmelts, Thermoplastic Plasticine, Foams and Coating.  
 All shades of colour are comparable or similar to the product colours.

## Application projects with pearlescent pigments

For customer testing: Masterbatches with pearlescent pigments  
 Test material (LP): 50g Flakes

CAPROWAX P™	Shade	CAPROWAX P™	Shade
Gold 9301		Gold 9302	
Silver 9001		Bronze 9701	
Rot 9101			

Addition of Pearlescent-Masterbatches to different bioplastics: 0,5-6%  
 Harmless, pearlescent pigments: Mica coated with TiO<sub>2</sub> and/or Fe<sub>2</sub>O<sub>3</sub>  
 Preferably pearlescent masterbatch Silver 9001 is additive combinable with  
 translucent CAPROWAX P - Masterbatches to yield diverse pearlescent  
 colouration preferably in a proportion of 2:1.

# Masterbatches for chromatic, covering colouration

CAPROWAX P™	Shade chromatic	CAPROWAX P™	Shade chromatic
Red FK 111	LP	Red 112 lw	
Red FK 112	LP	Red 115 BM ww	LP
Red FK 117	LP	Red FK 130	LP
Red FK 115	LP	Red 116 lw tex	
Orange FK 205	LP	Orange 203 BM ww	LP
Orange FK 203	LP	Orange FK 204	LP
		Orange 204 lw tex	
Yellow FK 312	LP	Yellow 306 BM ww	LP
Yellow FK 306	LP	Yellow FK 320	LP
		Yellow 307 lw tex	
Green FK 441	LP	Green 418 ww tex	
Green 417 ww tex		Green 416 ww tex	
BM: Biomineral, natural Calcium Carbonate		ww = TiO2 free	FK: Kaolin, calcined
tex: suited for colouration of filaments			
lw = ≤ 0,1% TiO2 in coloured polymer		LP: Laboratory prototype	
Continuation next page >>>>>>>>			

Addition of CAPROWAX P - Masterbatches to different bioplastics: 0,5-4%. A brightening without Titanium Dioxide is possible. The palette of masterbatches is changed to the eco-friendly, soil-related, calcined, pigmentlike Kaolin (FK) as white pigment. Titanium Dioxide will be used in exceptional cases only or strong reduced. The biomineral, natural Calcium Carbonate, is used as a white pigment with gentle covering brightening.

All shades of colour are comparable or similar to the product colours. Injection-/ Vacuum-/ Blow-/ Compression/ Melt-Moulding, Foils/Sheets, Filaments, Hotmelts, NF-BioComposites, Plasticine, Film, Foams, Coating

Your order of CAPROWAX P™ - Masterbatches see page 7

# Masterbatches for chromatic, covering colouration

CAPROWAX P™	Shade chromatic	CAPROWAX P™	Shade chromatic
Green 444 <b>BM ww</b>	LP	Green AR 435 <b>ww tex</b>	LP
Green 412 <b>lw</b>		Green AR 433 <b>ww tex</b>	LP
Green <b>FK</b> 440	LP	Blue <b>FK G</b> 543	LP
Blue <b>G</b> 509 <b>BM ww</b>	LP	Blue <b>FK G</b> 509	LP
Blue <b>G</b> 510 <b>lw tex</b>		Blue <b>FK G</b> 512	LP
Blue <b>R</b> 541 <b>BM ww</b>	LP	Blue <b>FK R</b> 542	LP
Violet <b>B</b> 636 <b>BM ww</b>	LP	Violet <b>R</b> 637 <b>BM ww</b>	LP
Violet <b>FK B</b> 605	LP	Violet <b>FK R</b> 608	LP
Violet <b>B</b> 607 <b>lw tex</b>		Violet <b>R</b> 610 <b>lw tex</b>	
Violet <b>B</b> 606 <b>lw tex</b>		Violet <b>R</b> 609 <b>lw tex</b>	
Brown <b>FKV</b> 712 <b>bb</b>	LP	Brown <b>FK</b> 705 <b>S</b>	LP
Brown <b>V</b> 713 <b>BM bb ww</b>	LP	Brown 702 <b>lw tex</b>	
Brown <b>FKV</b> 709 <b>bb tex</b>	LP	Brown <b>FKV</b> 711 <b>bb tex</b>	LP
<b>V: vegetable Carbon</b>	<b>bb: biobased</b>	<b>FK: Kaolin, calcined</b>	<b>ww = TiO2 free</b>
<b>BM: Biomineral, natural Calcium Carbonate</b>		<b>lw = ≤ 0,1% TiO2 in coloured polymer</b>	
<b>tex: suited for colouration of filaments</b>		<b>S: heat stabel up to 220°C</b>	
<b>R: reddish</b>	<b>G: greenish</b>	<b>B: bluish</b>	<b>AR = acid resistant</b>
			<b>LP: Laboratory Prototype</b>

Addition of CAPROWAX P - Masterbatches to different bioplastics: 0,5-4%. A brightening without Titanium Dioxide is possible. The palette of masterbatches is changed to the eco-friendly, soil-related, calcined, pigmentlike Kaolin (FK) as white pigment. Titanium Dioxide will be used in exceptional cases only or strong reduced. The biomineral, natural Calcium Carbonate, is used as a white pigment with gentle covering brightening.












All shades of colour are comparable or similar to the product colours. Injection-/ Vacuum-/ Blow-/ Compression/ Melt-Moulding, Foils/Sheets, Filaments, Hotmelts, NF-BioComposites, Plasticine, Film, Foams, Coating

Your order of CAPROWAX P™ - Masterbatches see page 7

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# Masterbatches for achromatic, covering colouration

CAPROWAX P™	Shade achromatic	Description
White FK 005 tex		Kaolin, calcined
White C 004 BM ww		natural Calcium Carbonate
Grey 821 BM ww		natural Ca-Carbonate / Iron Oxide Black
Grey V 826 BM bb ww		natural Ca-Carbonate / vegetable Carbon
Grey FK 822		Kaolin, calcined / Iron Oxide Black
Grey FKV 827 bb		Kaolin calcined / vegetable Carbon
Grey FK 824 S		Kaolin calcined / Iron Oxide Black (S)
Black 801		Iron Oxide Black
Black V 802 bb tex		vegetable Carbon (E153)
Black 803 S tex		Iron Oxide Black (S)
Black V 804 bb		vegetable Carbon (technically)
V: vegetable Carbon	bb: biobased	BM: Biomineral, natural Calcium Carbonate
FK: Kaolin, calcined	ww: TiO2 free	tex: suited for colouration of filaments
LP: Laboratory prototype		S: heat stable up to 220°C

Addition of CAPROWAX P - Masterbatches to different bioplastics: 0,5-4%. A brightening without Titanium Dioxide is possible. The palette of masterbatches is changed to the eco-friendly, soil-related, calcined, pigmentlike Kaolin (FK) as white pigment. Titanium Dioxide will be used in exceptional cases only or strong reduced. The biomineral, natural Calcium Carbonate, is used as a white pigment with gentle covering brightening.

All shades of colour are comparable or similar to the product colours. Injection-/ Vacuum-/ Blow-/ Compression/ Melt-Moulding, Foils/Sheets, Filaments, Hotmelts, NF-BioComposites, Plasticine, Film, Foams, Coating

Your order of CAPROWAX P™ - Masterbatches see page 7

# Your order of CAPROWAX P™ - Masterbatches

After a successful test with samples at customers your request will be manufactured batchwise by toll manufacturer. Page 7 of 10

## CAPROWAX P™ COLOUR PALETTE

See colour palettes page 3-6: **Shades of colours + code**

Technical samples: Up to 4 samples a 50g pellets free of charge

Coloured buttons with CAPROWAX P™ 6006 material on request.

For additional processing tests 500g of the standard material CAPROWAX P™ Blue G 510 can be requested. (See page 9)

Supply quantities:	100 kg, 200 kg, 500 kg
+/- 25 kg:	After your selection you will get an offer about location-based, direct delivery
25 kg PE-Bags in carton or on palett	Order with 200 kg and 500 kg need a yearly forecast or 3 months in advance
Market area:	European Union
Prices:	According to offer
Payment conditions:	According to offer
Delivery date:	6 - 7 weeks
Miscellaneous:	Product infos and SDS
Test material of new formulations (LP):	50g Flakes

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Informations, quote requests and orders at

Albrecht Dinkelaker

Polymer and Product Development

Blumenweg 2

info@polyfea2.de

D 79669 Zell im Wiesental

Fon: ++49 7625 91 84 58

Banking details/Finance office: On request

VAT-No.: DE165 604 009

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# Applications with CAPROWAX P™ materials

## Injection moulding



**Masterbatches**  
with compostable carrier material

## Vacuum forming Foil / Sheets

### Buttons



**Hotmelts**  
**Thermoplastic plasticine**

## Monofilamente



**Nature Fibres**  
**BioComposites**

## Blow moulding





# Masterbatch CAPROWAX P™ Blue G 510 lw tex

Compostable carrier material: Bio-Dry-Blend CAPROWAX P 6006-C65 (Intermediate) page 9 of 10

Sample material

Customs-Tariff-No.: 3907 99 80

## Customer information

## Product example

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## Properties / Data / Description

Form	a) 36.08.PV.006	mm	Pellets, Diameter:1,5-3,0/ Size:2,0-3,5
Content of pigments	b)	%	25,0
Colour Index	PB 29		Ultramarine Blue
Colour Index	PW 6		Titandioxide
Colour description	c)		blue, greenish, covering
Lightfastness	d)		7-8
Bulk density	DIN EN ISO 60	g/l	754
Density	DIN EN ISO 1183	g/cm <sup>3</sup>	1,21
Residual Humidity (LOD)	105°C/1h	%	< 0,3
Softening beginning	DSC	°C	57-63
Remark: tex = suited for colouration of filaments / heatstable up to 200-220°C / acid sensitive			

a) internal test norm / b) Formulation with weighing protocol c) 2% Masterbatch in CAPROWAX P 6006 lw = low content TiO<sub>2</sub>

d) Data of pigment producer

Based on the biological sources different values of measurement could be occur

## Description

CAPROWAX P™ Blue G 510 lw, a masterbatch with harmless, lightfast, non-migratory, temperature stable, insoluble in water, inorganic pigments partially comparable with natural pigments. Low-dusty incorporated in a compostable carrier material. Coloured bioplastics comply the specifications of DIN EN 13432

## Carrier material

CAPROWAX P 6006-C65:

\*) calculated

83,7%\* organic carbon from biobased resources

Total amount of organic carbon: 71,4%\*

A compostable carrier material - as dry-blend-intermediate - is modified with additives in accordance to DIN EN 13432 and is comparable with the tested material at MFPA Weimar

## MFPA Weimar

Test certificate: P31/029-05

**CAPROWAX P® 6006-00-000 (DIN EN 13432)**

## No food or feeding stuff

Ecofriendly composition

GM-free, no content of starch or PLA

Without content of aromatic or nitrogenous substances

## Biopolymers and use

Covering colouration of bioplastics/biocomposites/blends as PLA, PBS, PHA, PCL, CAPROWAX P™/Blends, Bio-NFC/-WPC Polysaccharides/Derivates, Casein, PVAc/Bioplastic-Blends, PVOH, Bio-TPE, Bio-UPR, NIPU. For use as colouring additive suited for products of agriculture, garden and environment.

## Introduction to recipe for reduced content of TiO<sub>2</sub> (lw)

1-2% Masterbatch (MB) homogenous intermixing with pellets

In coloured products content of TiO<sub>2</sub> is ≤0,1%

## Processing temperatures

Drying pellets on demand

90-200°C (194-392°F) / short time up to 220°C (428°F)

50°C (122°F)/12h Avoid heating melt >90°C over long time

## Examples of application

Products of injection moulding, vacuum-/blowforming, foils, hotmelts, NF-BioComposites, support material, substrate, coating

## Storage/Instruction

Avoid heat and moisture, storage in original containers only

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B O W

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R A I N

S O I L

# Carrier material based on CAPROWAX P™ 6006

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Bio-Dry-Blend CAPROWAX P 6006-C65 is produced as a intermediate in powder form and as a compostable carrier material for masterbatches applications. Modified with additives in accordance with DIN EN 13432 and comparable with CAPROWAX P™ 6006, certified by MFPA, University Weimar  
Test material: CAPROWAX P® 6006

Test certificate No.: P31029-05 / DIN EN 13432

83,7% content of organic carbon\* from biobased resources

Total content\* of organic carbon: 71,4% \*) calculated

Portions of carrier material in masterbatches are 60-85%

Maximum range of thermal stability: 180-220°C (356-428°F)

Processing >150°C predrying at 48-50°C/12 h

Ecofriendly: "Free of aromatics and nitrogen, renewable raw materials without genetically modified growing". No content of starch or PLA. No content of food and feeding stuff. (20/2019)

Product surfaces of CAPROWAX P™ - Material are self-cleaning with water or rain just like lotus flowers. Quick degradation in aerob compost or slow rotting in soil works into biomass, mixtures of soil-related, mineral, inorganic substances, carbon dioxide and water. As well under anoxic/denitrifying conditions degradation occurs fully. In the course of composting the brown to black colour of compost or humus change over to the coloured bioplastic and the colourful appearance disappears. Colourations with bio-mineral Calcium-carbonate-Masterbatches support biogenic weathering in soil and waters.

Product information, quote request, order at:

Albrecht Dinkelaker

Polymer- and Product Development

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Ideas

increase to

pellets

www.caprowax-p.eu

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