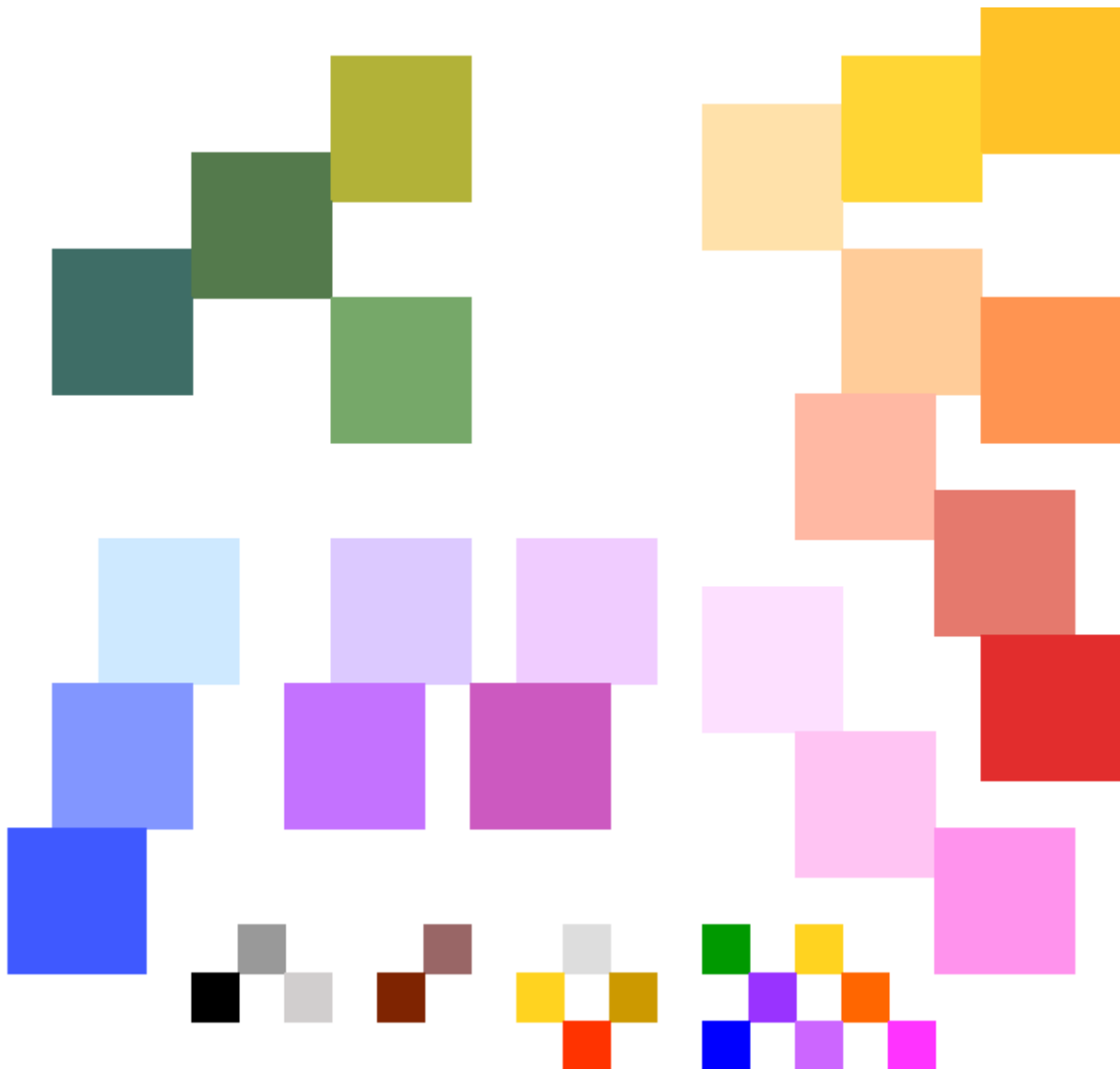


CAPROWAX P™

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 pigments without Titanium Dioxide. The carrier material is compostable and waterproof.

Colourations of bioplastics comply the specifications of DIN EN 13432.



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> 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.

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
 MB500 = 500g sample for process engineering experiments

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 your shortlist: Coloured buttons of MB-Laboratory prototypes (LP) with CAPROWAX P™-Blends on request

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 TiO₂ and/or Fe₂O₃ 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	MB500
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 lw = ≤ 0,1% TiO2 in coloured polymer tex: suited for colouration of filaments MB500 = 500g sample for process engineering experiments		ww = TiO2 free LP: Laboratory prototype FK: Kaolin, calcined	
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 strong reduced only. The biomineral, natural Calcium Carbonate, is used as a dull, white pigment with gentle covering brightening. Sampling see page 7

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 BM ww	LP	Green AR 435 ww tex	LP
Green 412 lw		Green AR 433 ww tex	LP
Green FK 440	LP	Blue FK G 543	LP
Blue G 509 BM ww	LP	Blue FK G 509	LP
Blue G 510 lw tex	MB500	Blue FK G 512	LP
Blue R 541 BM ww	LP	Blue FK R 542	LP
Violet B 636 BM ww	LP	Violet R 637 BM ww	LP
Violet FK B 605	LP	Violet FK R 608	LP
Violet B 607 lw tex		Violet R 610 lw tex	
Violet B 606 lw tex		Violet R 609 lw tex	
Brown FKV 712 bb	LP	Brown FK 705 S	LP
Brown FKV 709 bb tex	LP	Brown 702 lw tex	
		Brown FKV 711 bb tex	LP

V: vegetable Carbon **bb: biobased** **FK: Kaolin, calcined** **ww = TiO2 free**
BM: Biomineral, natural Calcium Carbonate **lw = ≤ 0,1% TiO2 in coloured polymer**
R: reddish **G: greenish** **B: bluish** **AR = acid resistant** **LP: Laboratory Prototype**
tex: suited for colouration of filaments **S: heat stabel up to 220°C**
MB500 = 500g sample for process engineering experiments

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 strong reduced only. The biomineral, natural Calcium Carbonate, is used as a dull white pigment with gentle covering brightening.
 Sampling see page 7

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 achromatic, covering colouration

CAPROWAX P™	Shade achromatic	Description
White FK 005 tex		Kaolin, calcined
White C 004 BM ww	MB500	natural Calcium Carbonate
Grey 821 BM ww		natural Ca-Carbonate / Iron Oxide Black
Grey FK 822	LP	Kaolin, calcined / Iron Oxide Black
Grey FK 824 S	LP	Kaolin calcined / Iron Oxide Black (S)
Grey FK V 827 bb	LP	Kaolin calcined / vegetable Carbon (tech)
Black 801		Iron Oxide Black
Black 803 S tex	LP	Iron Oxide Black (S)
Black V 804 bb	LP	vegetable Carbon (tech)
V: vegetable Carbon	bb: biobased	tech = technically LP: Laboratory prototype
FK: Kaolin, calcined	ww: TiO2 free	BM: Biomineral, natural Calcium Carbonate
tex = suited for colouration of filaments		S: heat stable up to 220°C
MB500 = 500g sample for process engineering experiments		

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 strong reduced only. The biomineral, natural Calcium Carbonate, is used as a dull white pigment with gentle covering brightening. Sampling see page 7

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: You can get up to 4 samples a 50g pellets free of charge
For additional process engineering experiments you can get 500g MB500 samples see page 2-5

New MB-Recipes: For your shortlist coloured CAPROWAX P™ - Buttons of MB-Laboratory prototype (LP) on request.

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
For a better raw material procurement a yearly forecast is required
*) Since corona crisis the delivery of raw material is temporally unsure

Market area: European Union

Prices: According to offer

Payment conditions: According to offer

Delivery date *): after completely delivery of raw material to the toll manufacturer plus up to 6-7 weeks

Miscellaneous: Product infos and SDS

Informations, quote requests and orders at

Albrecht Dinkelaker

Polymer and Product Development

Talstrasse 83

D 60437 Frankfurt am Main

info@polyfea2.de

Fon: ++49 69 76893910

Banking details/Finance office: On request

VAT-No.: DE165 604 009

CAPROWAX P™ compostable of course



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

Fon: +49 69 76 89 39 10

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Product example

Albrecht Dinkelaker

Polymer- and Product Development

Talstrasse 83

D 60437 Frankfurt am Main

Properties / Data / Description

Form	a)	mm	Pellets, Diameter: 1,5-3,0 / Size: 2,0-3,5
Content of pigments	b)	%	25
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 ³	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) Pigment determination proportionally c) 2% Masterbatch in CAPROWAX P 6006 lw = low content TiO₂

d) Data of pigment producer Based on the biological sources different values of measurement could be occur

Description

CAPROWAX P™ Blue G 510 lw tex, 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:

consists of aliphatic, home/industrial compostable, certified polyester and modified, readily biodegradable, renewable, GMO-free plant oil.

MFPA Test certificate:

P31/029-05

*) calculated

The carrier material is comparable with the test material CAPROWAX P® 6006 DIN EN 13432 tested by MFPA Weimar 83,7% of organic carbon are biobased *)

No food or feeding stuff

eco-/compost friendly composition

GM-free, no content of starch or PLA
Without content of aromatic or nitrogenous substances
Harmless, soil-similar, inorganic pigments

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 TiO₂ (lw)

Processing temperatures

Drying pellets on demand

1-2% Masterbatch (MB) homogenous intermixing with pellets yield in coloured products a content of ≤0,1% TiO₂

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

B O W

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R A I N

S O I L

Carrier material based on CAPROWAX P™ 6006

Page 10 of 10

CAPROWAX P carrier material is a mixture of aliphatic, home/industrial compostable, certified polyesters and modified, readily biodegradable, renewable and GMO-free plant oil.

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, examined by MFPA, University Weimar. Test material: CAPROWAX P® 6006 Test certificate No.: P31029-05

Total content* of organic carbon: 71,4% *) calculated
From that 83,7% organic carbon* from biobased resources

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. (32/2020)

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:

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Ideas increase to pellets

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