

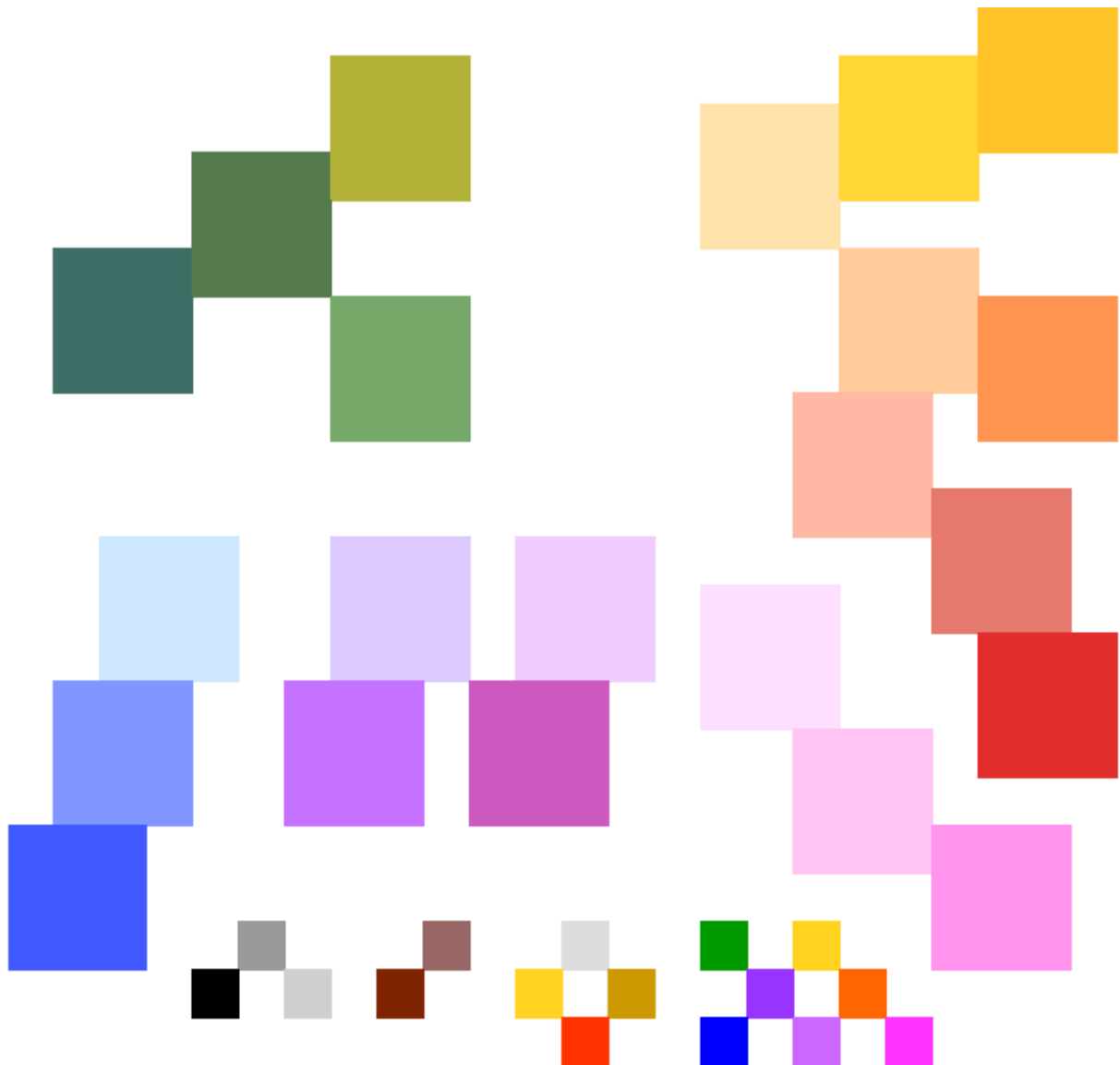
Masterbatches for Bioplastics/Biocomposites/Blends:

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 harmless, inorganic pigments with moderate, lightfast brightening without addition of TiO₂.

The carrier material is waterproof, consist of aliphatic - biodegradable MARINE, home/industrial compostable - certified polyester and modified, readily biodegradable, renewable, GMO-free plant oil.

Colourations of bioplastics comply the specifications of DIN EN 13432.



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> COLOURATION <

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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- / moulding, fused casting,
Mono-/Multifilaments, Foils/Sheets, Hotmelts, NF-BioComposites,
Thermoplastic Plasticine, Foams and Coating.

Pigments are biobased, bio-mineral, mineral and/or from inorganic, synthetic production. Moderate brightening with calcined Kaolin. They are harmless, lightfast, non-migratory, temperature stable, majority insoluble in water, comparable with natural, mineral pigments already mineralised and partially soil improving: QX see page 4 - 6. They are low-dusty incorporated in compostable carrier material (see page 10 also) and masterbatch pellets are added to different bioplastics: 0,5-4%. 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.

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BOW
RAIN
SOIL

Masterbatches for translucent colouration

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CAPROWAX P™	Shade chromatic	CAPROWAX P™	Shade chromatic
Red 114 T		Red Y 121 T tex	AR
Yellow 310 T tex	AR	Green 427 T tex	
Green 413 T tex	MB500	Green 426 T tex	
Green AR 430 T tex	LP/AR	Blue AR 530 T tex	LP/AR
Blue G 511 T tex		Blue R 516 T tex	
Violet B 616 T		Violet R 617 T	
Violet B 630 T tex	LP/AR	Violet B 635 T tex	LP/AR
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 biopolymers: 0,5-4%
 All shades of colour are comparable or similar to the product colours.

Pearlescent Masterbatches *LP without addition of Titanium Dioxide

Matt Gold light 9307		Pearlescent neutral 9002	u
Matt Gold medium 9317	#	Pearlescent white 9011	u
Matt Gold dark 9314		Matt Silver classic V 9012	#
Red 9101		Matt Silver silky V 9016	#
Bronze 9701		Matt Silver grey V 9014	#
# = also for opaque or filled BioPolymers / u = matt pearlescent for all colours V = vegetable carbon black, biobased / *LP = Laboratory prototype			

Pigment mixtures are low-dusty incorporated in compostable carrier material and masterbatch pellets are added to different bioplastics: 2-4%.

Colourations of bioplastics comply the specifications of DIN EN 13432.

Your order of CAPROWAX P™ - Masterbatches see page 7

Masterbatches for chromatic, covering colouration

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CAPROWAX P™	Shade chromatic	CAPROWAX P™	Shade chromatic
Red FK 133 tex	LP/AR	Red FK 111	LP
Lava-Red 134 QX	LP	Red FK 112	LP
Red FK 117	LP/AR	Red 135 BM QX	LP
Red FK 115	LP/AR	Red FK 130	LP/AR
Orange FK 205	LP/AR	Orange 206 BM QX	LP
Orange FK 203	LP/AR	Orange FK 204	LP/AR
Yellow FK 312	LP/AR	Yellow 314 BM QX	LP
Yellow FK 306	LP/AR	Yellow FK 320	LP/AR
Green 416 ww tex		Green 417 ww tex	
Green 418 ww tex		Green 448 ww tex	
Green 447 ww tex		Green FK 446 tex	
Green FK 440 tex	LP	Green FK 443 tex	LP
Green 444 BM QX		Green 450 BM QX	
BM: Biomineral, natural Calcite, acid binding		FK: Kaolin, calcined, soil similar	
AR = Acid resistant		LP: Laboratory prototype	
QX = soil improving / acid binding / Water retention capacity / Fertility			
tex = suited for colouration of filaments		Continuation next page >>>>>>>	

Products for soil improvement QX:

QX = Vegetable Carbon biobased, Lava rock flour, soil improvement, water retention capacity

BM = BioMineral, natural Calcite, acid-binding and soil similar

FK = calcined Kaolin, compost friendly

Addition of CAPROWAX P - Masterbatches to different bioplastics: 0,5-4%.

The brightening of the product palette is changed to the eco-friendly, soil similar, pigmentlike, calcined Kaolin (FK) as a white pigment.

CO2 long-term fixation by vegetable carbon/lava rock flour

Your order of CAPROWAX P™ - Masterbatches see page 7

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B O W
R A I N S O I L

Masterbatches for chromatic, covering colouration

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CAPROWAX P™	shade chromatic	CAPROWAX P™	shade chromatic
Green AR 433 tex	LP/AR	Green AR 435 tex	LP/AR
Blue FK G 543	LP	Blue FK G 509	LP
Blue FK G 510 tex	LP	Blue FK G 512	
Blue G 545 BM QX	LP	Blau R 547 BM QX	LP
Blue FK R 541	LP	Blue FK R 542	LP
Violet B 636 BM QX	LP	Violet R 637 BM QX	LP
Violet FK B 605	LP/AR	Violet FK R 608	LP/AR
Brown FK V 712 QX	LP/AR	Brown FK 705 S wcb tex	LP/AR
Brown FK V 709 QX	LP/AR	Brown FK V 711 QX	LP/AR
Lava Brown 715 QX	LP	Lava Brown 717 QX	LP
V: vegetable carbon from coconut shelle or wood, biobased FK: Kaolin, calcined, soil similar BM: Biomineral, natural Calcite, acid binding R: reddish G: greenish B: bluish wcb = without carbon black LP: Laboratory Prototype tex: suited for colouration of filaments S: heat stabel up to 220°C AR = acid resistant QX = soil improving / acid binding / water retention capacity / fertility			

Products for soil improvement QX:

QX = Vegetable Carbon biobased, Lava rock flour, soil improvement, water retention capacity

BM = BioMineral, natural Calcite, acid-binding and soil similar

FK = calcined Kaolin, compost friendly

Addition of CAPROWAX P - Masterbatches to different bioplastics: 0,5-4%.

The brightening of the product palette is changed to the eco-friendly, soil similar, pigmentlike, calcined Kaolin (FK) as a white pigment.

CO₂ long-term fixation by vegetable carbon/lava rock flour

Your order of CAPROWAX P™ - Masterbatches see page 7

CAPROWAX P™ compostable of course

B O W
R A I N **SOIL**

Masterbatches for achromatic, covering colouration

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CAPROWAX P™	Shade achromatic	Description
White FK 005 tex	AR	Kaolin, calcined
White C 004 BM QX	MB500	natural Calcite
Grey 821 BM QX		natural Calcite/ Iron Oxide Black
Grey FK 822 wcb	LP/AR	Kaolin, calcined / Iron Oxide Black
Grey FK 824 S wcb tex	LP/AR	Kaolin, calcined / Iron Oxide Black (S)
Grey FK V 827 QX	LP/AR	Kaolin, calcined / vegetable carbon black
Lava-Grey FK 833 QX	LP	Lava rock flour volcanic eifel, Iron Oxide, Kaolin
Black 801 wcb	AR	Iron Oxide Black
Black 803 S wcb tex	LP/AR	Iron Oxide Black (S)
Black V 804 QX	AR	vegetable Carbon, Anthracite Black
Black V 8121 QX	LP	vegetable Carbon, Black
Lava Black 806 QX	LP	Lava rock flour Vulkaneifel, Eisenoxid
V: vegetable carbon, coconut shells or wood, biobased BM: Biomineral, natural Calcite, acid binding FK: Kaolin, calcined, soil similar AR = acid resistant tex = suited for colouration of filaments LP: Laboratory sample wcb = with out carbon black S: heatstable up to 220°C QX = soil improving / acid binding / water retention capacity / Fertility		

Products for soil improvement QX:

QX = Vegetable Carbon biobased, Lava rock flour, soil improvement, water retention capacity

BM = BioMineral, natural Calcite, acid-binding and soil similar

FK = calcined Kaolin, compost friendly

Addition of CAPROWAX P - Masterbatches to different bioplastics: 0,5-4%.

The brightening of the product palette is changed to the eco-friendly, soil similar, pigmentlike, calcined Kaolin (FK) as a white pigment.

CO2 long-term fixation by vegetable carbon/lava rock flour

Your order of CAPROWAX P™ - Masterbatches see page 7

CAPROWAX P™ compostable of course



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 pallet	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

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D 60437 Frankfurt am Main

Fon: ++49 69 76893910

Banking details/Finance office: On request

VAT-No.: DE165 604 009

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Applications with CAPROWAX P™ materials

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Injection moulding



Masterbatches
with compostable carrier material

Vacuum forming Foil / Sheets

Buttons



Hotmelts
Thermoplastic plasticine

Monofilamente



Blow moulding



Nature Fibres
BioComposites

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Masterbatch CAPROWAX P™ Blue FK G 510 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

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Product example

Albrecht Dinkelaker

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Properties / Data / Description

Form	LP		pellets
Content of pigments	b)	%	25
Colour Index	PB 29		Ultramarine Blue
Colour Index	PW 19		Kaolin, calcined
Colour description	c)		blue, greenish, covering
Lightfastness	d)		7-8
Bulk density	DIN EN ISO 60	g/l	690
Density	DIN EN ISO 1183	g/cm3	>1,2
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			

b) Pigment determination proportionally

c) 2% Masterbatch in CAPROWAX P 6006

d) Data of pigment producer

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

LP = Laboratory prototype

tex = suited of colouration of filaments

Description

CAPROWAX P™ Blue FK G 510 tex, a masterbatch with harmless, lightfast, non-migratory, temperature stable, insoluble in water, inorganic pigments and moderate brightening without addition of TiO2 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 - biodegradable MARINE, 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

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

Processing temperatures Drying pellets on demand

90-200°C / short time up to 220°C
50°C /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

CAPROWAX P™ compostable of course



Carrier material based on CAPROWAX P™ 6006

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CAPROWAX P carrier material is a mixture of aliphatic - biodegradable MARINE, home/industrial compostable - certified polyesters and modified, readily biodegradable, renewable, 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. (11/2023)

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/black colour of compost or humus change over to the coloured bioplastic and the colourful appearance disappears. Compounds with biomineral Calcite support biogenic weathering in soil and waters.

Product information, quote request, order at:

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Ideas

increase to

pellets

www.caprowax-p.eu

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