

Injection moulding with BioMineralComposites



BioMineralComposites with different content of natural Calcite

CAPROWAX P™ 6006-C65-BM42030

CAPROWAX P™ 6006-C65-BM42100

CAPROWAX P™ 6006-C65-BM42150

Description	CAPROWAX P™ 6006-C65-BM42xxx content 3-15% harmless, soil-similar, acid-binding, natural Biomineral Calcite
Compostable, waterproof binder CAPROWAX P™ 6006-C65: Test certificate No.: P31029-05 see page 7	consists of aliphatic - biodegradable MARINE, home/industrial compostable - certified polyester and modified, readily biodegradable, renewable, GMO-free plant oil. Products comply the specifications of DIN EN 13432
Injection moulding 0,5-3mm	Plastification without predrying 130°C, die 130°C, mould 15°C
3D printing with pellets	Extrusion 100-150°C, die 100-150°C, cold air cooling 15°C
Examples of application Suited for compostable and rotten products after use MB-Colouration see page 3-5	Products of injection moulding and vacuum forming, sheets, composites, foils, support material, substrate, frisbee disk, cans, plant plug signs, garden decor, soap dish, edge protection trays, wicker ribbons, bark beetle trap, stone dummy.
Order quantities	0,3-2 kg sample free, 100 kg minimum order

CAPROWAX P™ compostable of course



BioMineralComposite: CAPROWAX P™ 6006-C65-BM4225

Imitations of coloured stones,

garden ornamental gravels,

melting granules

Description	CAPROWAX P™ 6006-C65-BM4225 contents 25% harmless, soil-similar, acid-binding, natural Biomineral Calcite
Compostable, waterproof binder CAPROWAX P™ 6006-C65: Test certificate No.: P31029-05 see page 7	consists of aliphatic - biodegradable MARINE, home/industrial compostable - certified polyester and modified, readily biodegradable, renewable, GMO-free plant oil. Products comply the specifications of DIN EN 13432
Moulded freely thermo-plasticine !!! Wear protective gloves !!!	Pellets on non-stick panel at 90-100°C preheating, after cooling down to 70-80°C shaping/kneading to shapings
Injection moulding of calcite coloured stones imitations	Plastification without predrying 130°C, die 130°C, mould 15°C
Melt granules 1,5-3,5 mm for one-/multilayered pictures !!! Wear protective gloves !!!	In non-stick pans strewing melt granules-pictures free or with templates, after moving templates, melting on a hotplate at 100°C and cool down to room temperature
Examples of application Suited for compostable and rotten products after use	Calcite coloured stones imitations, deco granules, melting granules garden ornamental gravels, garden decor, letters, substrate Colouration with CAPROWAX P-Masterbatches
Colouration with eco-/soil friendly pigments	Ultramarine, Iron Oxide, Manganviolet, vegetable Carbon Brightening with Kaolin (calcined)
Order quantities	5 kg test material, 100 kg minimum order

Colouration of all **BioMineralComposites** with Masterbatches of Ultramarine, Iron oxides, Mangan violet, vegetable Carbon, Kaolin (calcined) and compostable carrier material.

Your order of CAPROWAX P™ - Products see page 6

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B O W
R A I N S O I L

Colouration of Biopolymer/Biocomposites with Masterbatches



CAPROWAX P-Masterbatches for Bioplastics/ Biocomposites/Blends/Filaments: PLA, PBS, PHA, PCL, **CAPROWAX P™/Blends, BioMineralComposites**, Bio-NFC, Bio-WPC, Polysaccharides/Derivates, Casein, PVAc/Bioplastic-Blends, PVOH, Bio-TPE, Bio-UPR, NIPU. Carrier material based on **CAPROWAX P™ 6006** is compostable, waterproof and according to DIN EN 13432. **Customers request will be coordinated with toll manufacturer.**

Translucent or covering colouration

Pigments are biobased, bio-mineral, mineral, harmless inorganic from synthetic production. Moderate brightening with Kaolin (calcined) without addition of Titanium Dioxide. They are harmless, lightfast, non-migratory, temperature stable, majority insoluble in water, chemically comparable with natural mineral pigments, already mineralised and partially soil improving: **QX see page 3**
They are low-dusty incorporated in compostable carrier material and masterbatch pellets are added to different bioplastics in a range of 0,5-4%.

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B O W
R A I N **S O I L**

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	
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			

The compostability of carrier material is examined by MFPA, University Weimar:

Test material: **CAPROWAX P° 6006**

Test certificate No.: P31029-05 according to DIN EN 13432 see page 7

Thermoplastic application for translucent to transparent, full covering and effecting colouration: Processing at 90-200°C, short time up 220°C.

Pearlescent Masterbatches mpc *LP without addition of Titanium Dioxide

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

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™ - Products see page 6

CAPROWAX P™		Shades	CAPROWAX P™		Shades
Red FK 133 tex		AR	Red FK 112		LP
Lava-Red 134	QX	LP	Red FK 117		LP/AR
Orange FK 204		LP/AR	Orange FK 203		LP/AR
Orange 206 BM	QX	LP/AR	Orange FK 205		LP/AR
Yellow FK 320		LP/AR	Yellow FK 306		LP/AR
Yellow 314 BM	QX	LP/AR	Yellow FK 312		LP/AR
White C 004 BM	QX	MB500	White FK 005 tex		MB500/AR
Grün 416 tex			Grün 417 tex		
Grün FK 446 tex		LP	Grün FK 440 tex		LP
Grün 444 BM	QX	MB500	Grün FK 443 tex		LP
Blue FK G 510 tex		LP	Blue G 545 BM	QX	LP
Blue FK G 512		MB 500	Blue FK G 509		LP
Violet FK B 605		LP/AR	Blue FK R 542		LP
Violet B 636 BM	QX	AR	Violet FK R 608		LP/AR
Brown V 713 BM	QX	LP	Violet R 637 BM	QX	AR
Brown FK V 709	QX	LP	Brown V 724 BM	QX	LP/AR
Lava-Brown 717	QX	LP/AR	Brown FK V 711	QX	LP
Grey 821 BM	QX		Lava-Brown 715	QX	LP/AR
Lava-Grey FK 833	QX	LP	Grey FK 824 S wcb tex		LP/AR
Black 801 wcb		AR	Black V 804	QX	AR
Black V 8121	QX	LP/AR	Lava-Black 806	QX	LP
BioMineralComposite direct compound BM42030			Black V 8117	QX	AR

AR = acid-stable S: heat stable up to 220°C wcb = without carbon black LP: Laboratory Prototype
R: reddish G: greenish B: bluish MB500 = for process engineering experiments

Products QX for soil improvement and fertility:

QX = Soil improvement, water retention capacity, fertility

V = Biobased: Vegetable carbon from coconut shells/Activated carbon from wood

BM = BioMineral, natural Calcite, acid-binding

Lava = Lava rock flour volcanic eifel

FK = Moderate brightening with the eco-friendly, pigmentlike, Kaolin (calcined)

Addition of CAPROWAX P - Masterbatches to different bioplastics: 0,5-4/6%.

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

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B O W
R A I N SOIL

Your order of CAPROWAX P™ - Products

Injection moulding, CAPROWAX P™ 6006-C65-BM42030
 CAPROWAX P™ 6006-C65-BM42100
 CAPROWAX P™ 6006-C65-BM42150

Test material: 0,3-2 kg,
 Toll manufacturing: 100 kg minimum order
 Miscellaneous: Product information and SDS

Imitations of coloured stones CAPROWAX P™ 6006-C65-BM4225
 Melting granules: 5 kg Testmaterial, 100 kg minimum order
 Miscellaneous: Product information and SDS

Masterbatches: CAPROWAX P™ + shade + code, colour palette see pages 4-5

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 4-5

New MB-Recipes: CAPROWAX P™- Button of laboratory prototypes (LP)

Market area: European Union
 Order quantities +/- 25 kg 100kg, 200kg, 500kg / batchwise manufactured by toll manufacturer
 Prices: According to offer
 Payment condition: According to offer
 Delivery date: after complete delivery of raw materials to the toll manufacturer: 6 - 7 weeks
 Miscellaneous: Product infos and SDS

Informations, quote requests and orders at:

Albrecht Dinkelaker,

Polymer and Product Development

Talstrasse 83

info(at)polyfea2.de

D 60437 Frankfurt am Main

Fon: ++49 69 76893910

Banking details/Finance office: On request

VAT-No.: DE165 604 009

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Department: Department of Environment
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Department Manager: Dipl.-Ing. J. Müller

MFA Weimar
Amalienstraße 13
99423 Weimar
Germany
Phone. 03643 / 564 353
Fax. 03643 / 564 201

Test certificate No. P 31/029-05

Order: Test of a biodegradable polymer / wax-compound
CAPROWAX P® 6006-00-000 to German Institute for Standardization
DIN EN 13432 with the proof of the disintegration in a bench-scale test
(A.3), proof of the quality of the composts (8.), including the ecotoxicological
harmless state (A.4)

Customer: POLYFEA Polymer- und Produktentwicklung Albrecht Dinkelaker
Ernst-Wiss-Str. 18
65933 Frankfurt / Main

Order date: 04.11.2004

Test object: CAPROWAX P® 6006-00-000
foil 500 µm / KW 42 / 2004 (foil 1), MFPA-No. BAW 4869
CAPROWAX P® 6006-00-000
powder < 750 µm / 06.11.03 MFPA-No. BAW 4869

Test condition: Test duration 12 weeks, 1 week at temperature of approximately 65 °C,
11 weeks at temperature of approximately 45 °C

Test criterion: Degradation of the BAW > 90%, ecotoxicological harmless state compared
to compost material, compost quality

Test period: 23.11.04 – 16.02.05

Test results: The examined material samples fulfil the criteria of the disintegration for the
aerobic process of composting. The examined material CAPROWAX P® 6006-
00-000 with a foil strength of 500 µm was degraded with several routine tests in
each case to more than 90% within 12 weeks.
After ending of the test period the measuring results of the compost
corresponded to the usual averages of the RAL quality tests. Significant
differences as a result of BAW addition were not found. The comparison with
the authoritative control samples revealed no higher heavy metal content. At the
end the compost was rotted sufficiently.
A detailed test report to the investigations was given at MFPA Weimar
(No. B 31/188-05).

Weimar,
2005-06-02


Prof. Dr.-Ing. J. Bergmann
Scientific Director




Dipl.-Ing. J. Müller
Project Manager

Dieses Prüfzeugnis wurde in 4 Exemplaren ausgefertigt, umfasst 1 Seite und keine Anlage und darf ohne schriftliche Genehmigung der MFA Weimar nicht auszugsweise vervielfältigt werden. Alle Prüfergebnisse beziehen sich ausschließlich auf den im Bericht angegebenen Prüfgegenstand.