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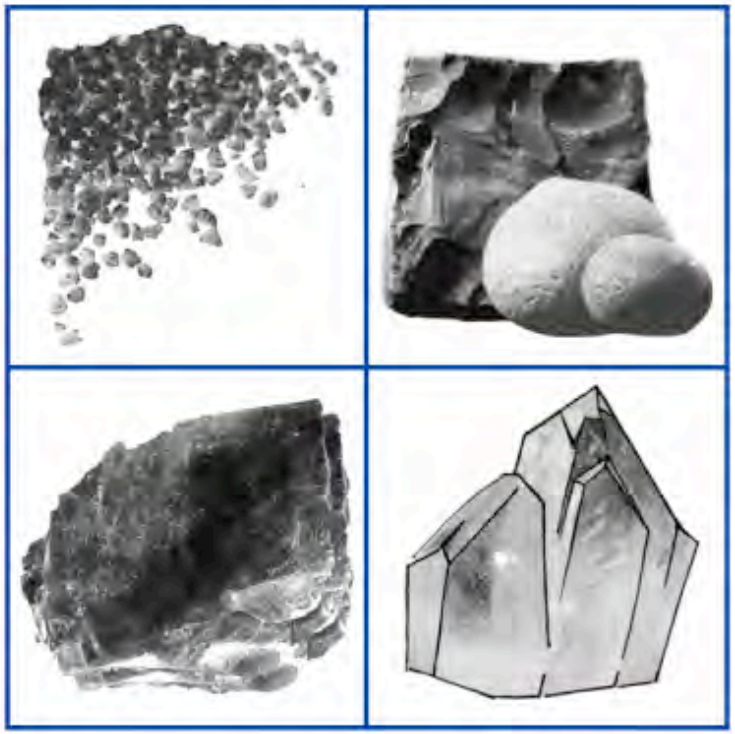

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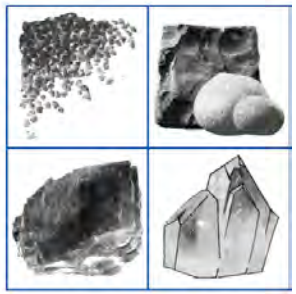

Transparent Fillers

and their use in paint formulation

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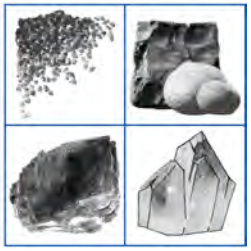

Fillers in the paint industry and their function

Traditional Fillers	Value	Function
Calciumcarbonate	low cost	body filler + brightness
Talc	medium value	opacity + brightness
Baryte	medium value	body filler + brightness
Mica	medium value	cracking control
New Filler Type		
Glass powders	medium value	transparence + special functions

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Glass Powders Boruvit

Boruvit Glass powder acting as Functional Filler in Paints

- **Transparency (neutral for pigmention)**
- **UV-absorption**
- **Scratch resistance**
- **Adhesion of coatings**
- **Mechanical properties**
- **Sanding**
- **Blocking**

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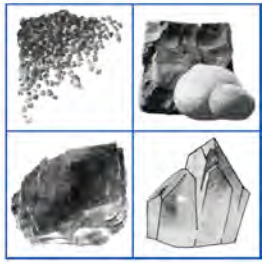


Research on use of Boruvit Glass powder in transparent wood coatings by Clariant Germany

Transparent Wood Coatings on Emulsion basis with UV - Protection

Basic formulation of a Transparent Wood Coating

Components		Parts by weight
Mowilith LDM 7416approx. 50 %		740,0
Ammoniak 25 %		2,0
Water	)	93,5
Mergal KD 10 N	)	2,0
Syloid ED 30	)	15,0
Agitan 295	) mixed	4,0
Lopon 890	) before adding	3,0
Dowanol DPnB	)	20,0
Methoxybutanol	)	20,0
Rhoximat RH 50 MD	)	0,5
Primal RM-8	)	
Water		15,0
Ultralube E 390 Cl		40,0
Total		960,0

Traditional Formulations

- **Insufficient UV- absorption**
  → requires UV-absorber and HALS (hindered amine light stabilizer)

- **High Thermoplasticity**
  → leads to problems with Blocking and Sanding

Clariant GmbH
Division CP
LBU Dispersionen Technisches Marketing

Clariant

Rezept Nr. L 5011 HAI

Laborausarbeitung

Blockfeste Holzlasur für außen und innen
Basis Mowilith LDM 7416 ca. 50 %

Bestandteile			Gewichtsteile
Mowilith LDM 7416 ca. 50 %			740,0
Ammoniak, 25 %			2,0
Wasser	)		93,5
Mergal K 10 N	)	1)	2,0
Agitan 295	) gemischt	2)	4,0
Lopon 890	) zugeben		3,0
Dowanol DPnB	)		20,0
Methoxybutanol	)		20,0
Rhoximat RH 50 MD	)	3)	0,5
Primal RM-8	)		5,0
Wasser			15,0
Ultralube E 390 Cl		4)	40,0
Borovit B 140	5)		200,0
Gesamt			1145,0

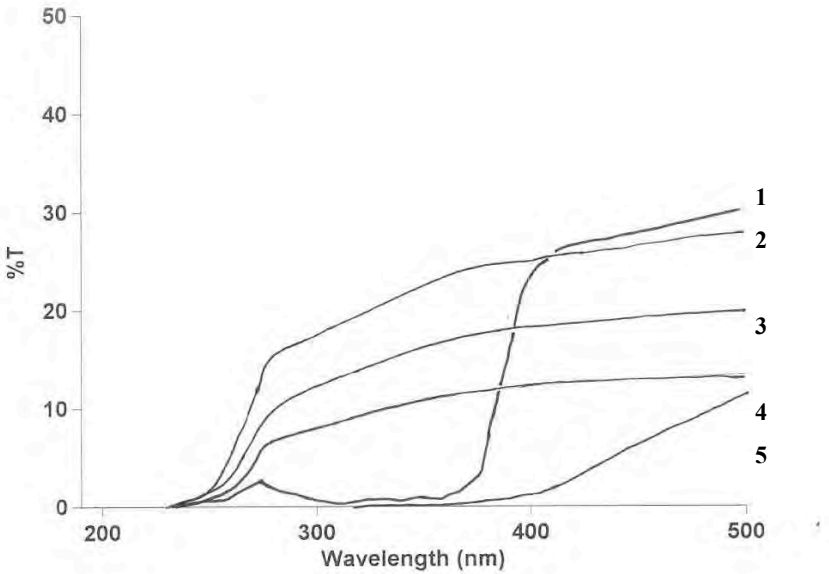
Hersteller:
1) Troy Chemie GmbH, 30926 Seelze
2) Münzing Chemie GmbH, 74076 Heilbronn
3) Colltec, 33739 Bielefeld
4) Keim Additec Surface GmbH, 55478 Kirchberg
5) Ziegler & Co. GmbH, 95632 Wunsiedel

Clariant

New paint formulation

Including Boruvit B 140

Reducing UV-Transmission



1) 1,5% UV -Absorber
2) without addition
3) 10% Boruvit
4) 30% Boruvit
5) 4% Pigment preparation

UV-Transmission

The transparent wood coatings filled with Boruvit were tested on a weathering standing panel in Frankfurt area according to the normal conditions (45 % inclination). This test showed the lasting UV-absorbtion of the Boruvit into the wood coatings. This field test result has been confirmed by laboratory measurements on UV-transmission.

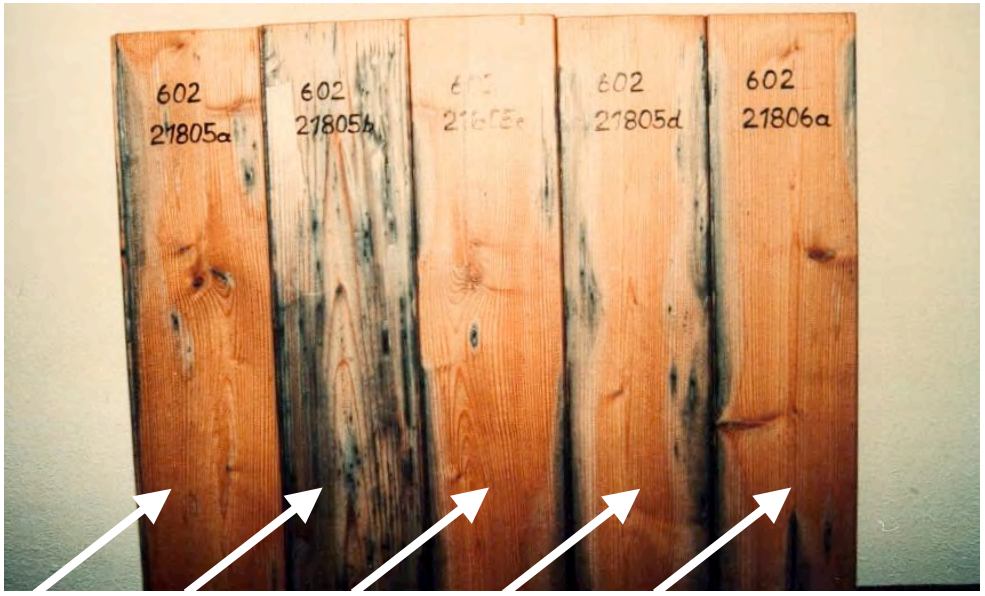
602.21805a with UV-Absorber / **without** Boruvit

602.21805b without UV-Absorber / **with 1 %** Boruvit

602.21805c without UV-Absorber / **with 3 %** Boruvit

602.21805d without UV-Absorber / **with 5 %** Boruvit

602.21806a without UV-Absorber / **with 10 %** Boruvit



a b c d

a and c are without,

b and d with Boruvit 200

a and b = one coat

c and d = two coats

Conclusions

By adding Boruvit to transparent wood coatings made on emulsion basis,

it is possible to improve the following properties:

- **UV – Protection**
- **Blocking**
- **Sanding**

Without reducing noticeably the transparency of the wood coating

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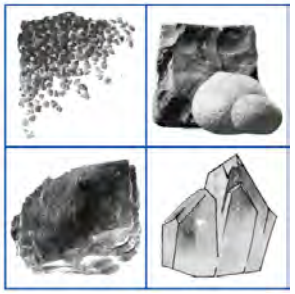

physical and chemical aspects of Boruvit

- mechanically strong
- transparent
- particle sizes
  0-40 / 70 / 100 microns
- safe in handling
- chemically resistent
- granular particle shape

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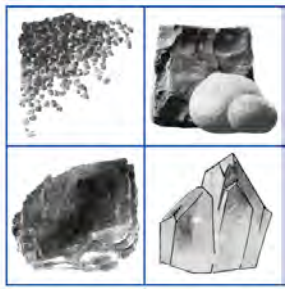

Economic aspects of using of Boruvit

- Medium Value of Boruvit Glass Powder

- Important Cost savings on UV-absorbers / HALS

- Overall cost savings by filling up to 30 % Boruvit

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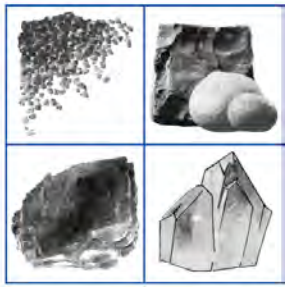

Possible uses of Boruvit in paints

- Transparent Wood coatings

- Heavy duty coatings

- Transparent sealants