DEUREX®
THE WAX COMPANY

DEUREX® X 52 G

TECHNICAL INFORMATION

Chemical description: Bio-based Sugar cane wax

Benefits:
- Natural wax from renewable raw materials with a very attractive price-performance ratio
- Replacement of previously used fossil wax products in many applications
- No seasonal fluctuations in availability (as carnauba or montanic waxes)
- Bio-based wax (DIN EN 16640)
- Compostable according to DIN EN 13432

Applications:

PVC and other plastics
- Can be used in all U-PVC and P-PVC applications but also in C-PVC

DEUREX® X 52 is the best choice of lubricant especially in combination with calcium-zinc and tin stabilizers for rigid PVC products like window profiles, technical profiles, pipes and fittings.

Properties:

Internal and external wax, highly effective wax
- Delays fusion
- Decreases torque, pressure and melt viscosity
- Mold release agent
- Improves gloss in U-PVC especially in window profile applications
- Useful for high speed cable extrusion

Typical dosages: Depending on the rheological requirements:
- up to 0.2 phr for PVC and C-PVC

Technical data:

Colour: Amber
Delivery forms: **DEUREX® X 52 G** = Granules

	Minimum	Maximum	Method
Drop point*:	78 °C	82 °C	LV 12 (DGF M-III 3)
Acid value:	20 mg/KOH/g	30 mg/KOH/g	DIN EN ISO 2114
Viscosity (140 °C):		40 mPas	LV 2 (DIN EN ISO3104)
Penetration:	3.0 mm*10^{-1}	7.0 mm*10^{-1}	LV 4 (DIN 51579)
Density (23 °C):	0.80 g/cm³	0.85 g/cm³	LV 3 (DIN EN ISO 1183)

* Part of certificate of analysis
Sugar cane waxes are natural products. Physical properties are subject to slight variations.

Approvals:

FDA Status/Regulation: GRAS - Generally recognized as safe (USA).
INCI (International Nomenclature Cosmetic Ingredients):
Saccharum officinarum cera.
USA: FDA 21 CFR §§ 174.5, 175.105, 175.300, 175.320, 176.170, 177.1200, 177.1550
(Approvals with regard to limitations and migration values in the final application)

Alternative delivery forms:

DEUREX® X 5217 M – Micronized powder, 98% < 17 µm
DEUREX® X 5201 W – Water-based emulsion of sugar cane wax

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DEUREX® X 52 G

DEUREX® X 52 G was investigated in a calcium-zinc stabilized window profile formulation containing:

- 100 phr S-PVC (k=67)
- 6 phr coated calcium carbonate, window profile grade
- 4 phr titanium dioxide, rutile, window profile grade
- 6 phr acrylic impact modifier
- 2.6 phr calcium-zinc stabilizer

The dry blends were mixed up to 120°C in a high speed hot mixer and cooled down to 45°C. After a relaxation time of >12 hours the dry blend was extruded on a parallel twin screw extruder KMD 35-26. The results are summarized in chart 1.

Chart 1:

Raw material	T1	T2	T3	T4
Lubpack	0,55			
DEUREX X 52		0,55		
Wax E			0,55	
Complex ester				0,55
Fusion time [s]	75	95	97	115
Extrusion torque [Nm]	67	65	66	67
Melt pressure [bar]	186	184	180	165
Gloss [%]	32	59	64	51

Conclusion: It was found that DEUREX® X 52 is an excellent alternative in its influence on rheology compared to montanic ester type wax E but also to complex esters both in window profile and fitting applications.

Furthermore, montanic ester type wax E has limited availability due to the plant exit of brown coal in Germany.