

## High performance **CERALENE®** waxes.

PE-waxes and functionalised synthetic waxes for specific applications.



2012

# CERALENE® waxes.

## For different kinds of technical applications

- colour masterbatches (dispersing additive)
- PVC (ext. release, surface improvement, int./ext. lubricant)
- technical plastics (flow/surface improvement, mould release)
- additive masterbatches (dispersing additive, compatibilizer)
- duroplasts (flow, levelling, pigment dispersion)
- pigment and fillers (surface coating)
- rubber processing (release)
- powder coatings (flow/levelling/scratch resistance)
- bitumen
- hot melt adhesives
- aqueous and solvent based coating systems (surface modification)
- also for cosmetic applications

## Packaging

- PE-bags of 20 kg net
- Big bags of 1000 kg net

## Ecology/toxicology properties

Products are water insoluble and show effects on fish and bacteria.

## Status under food legislation

FDA/BfR and plastics directive 2002/72/EC on request.



	CERALENE® grade	wax type	appearance	density (at 23°C) g/cm <sup>3</sup>	drop point °C	viscosity <sup>1)</sup> (at 120°C) mPa · s	penetration (at 25°C) mm · 10 <sup>-1</sup>	acid value mg KOH/g
non-oxidized	1X	LDPE	white prills	0.92 - 0.94	102	160	2 - 3	< 0.5
	1M	LDPE	white prills	0.92 - 0.94	104	260	4 - 6	< 0.3
	2E	LDPE	white prills	0.92 - 0.94	106	550	≤ 2	0
	2T	LDPE	white prills	0.92 - 0.94	108	1.100	1 - 3	0
	882	Polyolefine	white prills	0.90 - 0.93	146	280 **	≤ 0.5	0
	1H	HDPE	white prills	0.94 - 0.96	122	1.000 *	≤ 2	0
oxidized	326	Oxid. PE	white powder	0.94 - 0.96	137 <sup>2)</sup>	110.000 **	≤ 0.5	28
	719	Oxid. PE	white powder	0.94 - 0.96	138 <sup>2)</sup>	140.000 **	≤ 0.5	19
functionalised	592	Polyester mod.	white prills	0.96 - 0.98	60	550	n.d.	11
	620	Grafted PE	yellowish prills	0.97 - 0.99	105	1.500	n.d.	20
	677	Polyester mod.	almost white prills	0.96 - 0.99	72	700	n.d.	38
	691	Polyester mod.	white prills	0.96 - 0.98	73	130	1 - 2	10
	692C	Polyester mod./ cosmetic grade	white prills	0.96 - 0.98	59	500	n.d.	12
	693	Polyester mod.	white prills	0.96 - 0.98	71	400	1 - 2	16
	694	Polyester mod.	white prills	0.96 - 0.98	70	170	1 - 2	19
	695	Polyester mod.	yellowish prills	0.96 - 0.99	79	170	n.d.	9
	696	Polyester mod.	yellowish prills	0.96 - 0.99	88	150	n.d.	7
	697	Polyester mod.	yellowish prills	0.96 - 0.99	91	160	n.d.	5

<sup>1)</sup> Haake Rheostress Viscosimeter  
\* at T=140 °C, \*\* at T=150 °C

<sup>2)</sup> melting temperature (DSC)  
n.d. = not determined

## CERALENE® waxes for plunger lubrication.

Use as high performance plunger lubricant for aluminium die-casting machines.

CERALENE®	wax type	appearance	particle size (mm)	drop point °C	viscosity <sup>1)</sup> (at 120°C) mPa · s	penetration (25°C) mm · 10 <sup>-1</sup>
ZE 450/2000	LDPE	white	0.45-2.0	106	360	≤ 2
DCG	LDPE/graphite	black	0.45-2.0	108	600	≤ 2

## CERALENE® types for a broad range of industrial applications.

### Benefits

- plasticizing
- viscosity reduction
- internal/external lubrication
- reduced energy input/friction
- slip and anti-blocking effect
- improved wetting of pigments, fillers and fibres

CERALENE®	masterbatch	technical resins (pigment wetting, dispersion, lubrication, release)	PVC	duroplasts powder coatings	bitumen	hotmelt adhesive (viscosity adaption)	wood/fibre-plastic composites (adhesion promotion)	solvent based formulations (slip abrasion resistance)	water-based additives (surface modification)	
non-oxidized	1X	○	○		++	++		○ <sup>2)</sup>		
	1M	+	+				++ <sup>2)</sup>			
	2E	++		++			++ <sup>2)</sup>			
	2T	++	+	++	++		○ <sup>2)</sup>			
	882	++				+	○			
1H	++									
oxidized	326						++		++	
	719						+		++	
functionalised	592		++	+	++		+			
	620	○				+	++	++		
	677	+	++		+					
	691	++	++	+		+	+	++		
	692C	in cosmetics – especially for the manufacturing of lip sticks								
	693	++	++	++	+		+	+	++	
	694	++	++	++	+		+	+	++	
	695	○	++		+					
	696	○	++		+					
697		++		+						

○ suitable + recommended ++ specially recommended

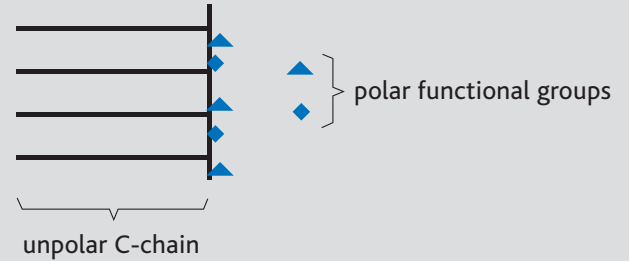
<sup>1)</sup> Haake Rheostress Viscosimeter  
<sup>2)</sup> inks

## New synthetic CERALENE® polyester waxes.

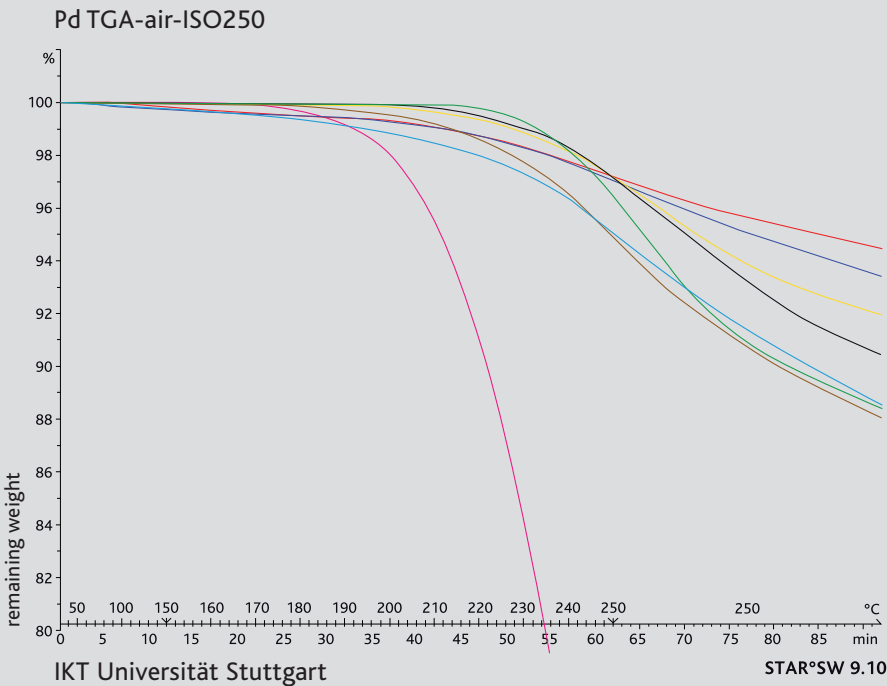
### Overview

CERALENE®	drop point °C	acid value mg KOH/g	viscosity (at 120°C) mPa · s
691	73	10	130
693	71	16	400
694	70	19	170

### Structure



### Volatility (air)



material	volatility (%)
CERALENE® XP*	5,5
CERALENE® XP*	6,6
CERALENE® 694	8,0
CERALENE® 691	9,5
Montan wax ester	11,4
LDPE wax	11,6
Amide wax	12,0
Erucamide	73,9

\* new products under development

### Excellent temperature stability

Air draft oven at 160 °C, 24 hours

CERALENE® 691

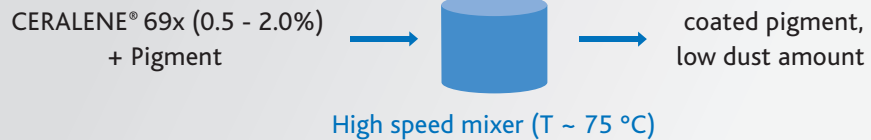
CERALENE® 693

CERALENE® 694

# CERALENE® 691, 693 and 694 for pigment coating and pigment dispersion in colour masterbatches.

- strong colour increase
- low filter pressure
- low dosage

Low drop point allows the usage of polyester waxes for pigment coating using a high speed mixer



## Compatibility with different technical resins

Resin	Dosage CERALENE 694 (%)	Visual
Polycarbonate	0.4	+, slightly opaque
Polystyrene	0.5	+, slightly opaque
Polyamide	0.3	++
Polyamide	5.0	++
ABS	0.4	++
POM	0.3	++
PET	0.3	++
PP	0.3	++



## Additional benefits

- high surface quality
- improved flow in injection moulding processes
- reduction of demoulding forces
- can induce nucleation
- polymer with a molecular weight Mw ~ 2000 (no migration, very low volatility)
- excellent temperature stability (no yellowishing/no influence on the resin colour)
- good compatibility (polarity adjustable to be resin and application)

## PVC processing

### CERALENE® 691, 693 and 694 – new lubricants for PVC

- broad lubrication (internal as well as external) → flow promotion  
→ release effect
- high melt strength → dimensional stability
- low volatility → no condensed deposits
- compatibility/molecular weight → surface properties (smoothness, gloss)  
no plate out



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