

Specification		PCE - BV
Physical and chemical properties		D 6417
CH - Braun 6417		D 6417
Colour:	brown	
Application:	dark tinted sunglare filter with high UV- and IR - absorption filter category 3 acc. to DIN EN 1836 (for $t_v > 18\%$ filter category 2)	
<p>The subsequent properties are based primarily upon the measuring results of the very latest standards and measuring methods, which are defined in corresponding "Measuring and Test Procedures". SCHOTT DESAG retains the right to change the data in keeping with the latest technical standards. Non-toleranced numerical values are reference values of an average production quality.</p> <p>Values marked with \diamond do not apply to the type of glass or no values are available.</p> <p>Requirements deviating from these specifications must be defined in writing in a customer agreement.</p>		
Date of release:	21 March 2002	

Form 0050/6A

Specification		PCE - BV	
Physical and chemical properties		D 6417	
1.2.2.2	Shade N / Filter category		
	N for mean thickness $d = 1.7 \text{ mm}$ ($t_{vD65} = 22.8 \%$)		6 - 2.5
	N for mean thickness $d = 2.4 \text{ mm}$ ($t_{vD65} = 12.6 \%$)		6 - 3.1
	filter category for nominal transmittance $t_{vD65} = 17.0 \%$		3
1.2.3	Special transmittance values in % ($d = 2.0 \text{ mm}$)		
1.2.3.1	UV - transmittance		
		t_{UVA}	< 0.1
		t_{SUV}	< 0.08
		t_{SUVA}	< 0.1
		t_{SUVB}	< 0.01
1.2.3.2	IR - transmittance	t_{SIR}	8
1.2.3.3	Solar blue - light transmittance	t_{sb}	5.4
1.3	Colour		
1.3.1	Visual evaluation		◇
1.3.2	Colorimetry		
	Chromaticity coordinates	A x_{10}	0.423 ₀
		y_{10}	0.406 ₀
	Chromaticity coordinates (colour locus) are referred to the Standard Illuminant D ₆₅ according CIE 10°-observer for the nominal transmittance $t_{vD65} = 17.0 \%$ (refer to 1.2.2.1)	B x_{10}	0.431 ₀
		y_{10}	0.406 ₀
		C x_{10}	0.431 ₀
		y_{10}	0.416 ₀
	In case of verification, the measured values may additionally deviate by the measuring uncertainty of the used measuring devices.	D x_{10}	0.423 ₀
		y_{10}	0.416 ₀
	part of chromaticity coordinates		see annex
1.3.3	Signal recognition		
	Relative visual attenuation coefficient Q	Q _{blue}	0.76
	for signal lights referred to the	Q _{green}	0.84
	nominal transmittance $t_{vD65} = 17.0 \%$	Q _{yellow}	1.24
	(refer to 1.2.2.1)	Q _{red}	1.39
	This sunglare filter is acc. to DIN EN 172 "not suitable for driving and road use"		
1.3.4	Yellowness index ($d = 10 \text{ mm}$)		
		Y_i	◇

Form 0050/6B

Specification		PCE - BV
Physical and chemical properties		D 6417
2.	Thermal properties	
2.1	Viscosities and corresponding temperatures	
	Designation	Viscosity log <i>h</i> in dPas
		Temperature <i>J</i> in °C
	Strain point	14.5
	Annealing point	474
	Softening point	13.0
		7.6
	Forming temperature	6.0
	Forming temperature	5.0
	Forming temperature	4.0
2.2	Transformation temperature <i>Tg</i> in °C	501
2.3	Coefficient of mean linear thermal expansion <i>a</i> (20°C-300°C) in 10 ⁻⁶ K ⁻¹ (Static measurement)	9.4
2.4	Fuseability	◇
2.5	Mean specific heat capacity <i>c_p</i>(20°C-100°C) in J/(g · K)	◇

Specification		PCE - BV D 6417
Physical and chemical properties		
3.	Mechanical properties	
3.1	Density r in g/cm³ (annealed at 40°C/h)	2.57
3.2	Stress optical coefficient C in 1.02×10^{-12} m²/N	3.37
3.3	<p>Breaking strength</p> <p>A higher mechanical strength can be realized by chemical toughening according to the ion exchange procedure (refer to annex 3.3.1) or by thermal toughening. Both toughening methods may cause in slightly transmittance - and colourchange.</p>	
3.3.1	Chemical toughening	
	Processing temperature J in °C	390
	Processing time t in h	4
	Compressive stress D_s as birefringence in nm/cm	6000
	Penetration depth Nz up to neutral zone in µm	51
	Further information	see annex
3.3.2	Thermal toughening	
	Recommended minimum thickness d in mm for toughened safety glass lenses without corrective effect as per ball drop test (DIN EN 168)	2.5
3.4	Young´s modulus E in kN/mm²	◇
3.5	Poisson´s ratio m	◇
3.6	Torsion modulus G in kN/mm²	◇
3.7	Knoop hardness HK_{100}	◇

Form 0050/6B

Specification		PCE - BV	
Physical and chemical properties		D 6417	
4.	Chemical properties		
4.1	Hydrolytic resistance acc. to DIN ISO 719		
		Hydrolytic class	HGB 3
	Equivalent of alkali (Na ₂ O) per gram of glass grains in µg/g		159
4.2	Acid resistance acc. to DIN 12 116		
		Acid class	S 2
	Half surface weight loss after 6 hours in mg/dm ²		0.8
4.3	Alkali resistance acc. to DIN ISO 695		
		Class	A 3
	Surface weight loss after 3 hours in mg/dm ²		218
5.	Electrical properties	disregard	
6.	Other properties	disregard	
7.	Annex (diagrams, curves)		

Specification

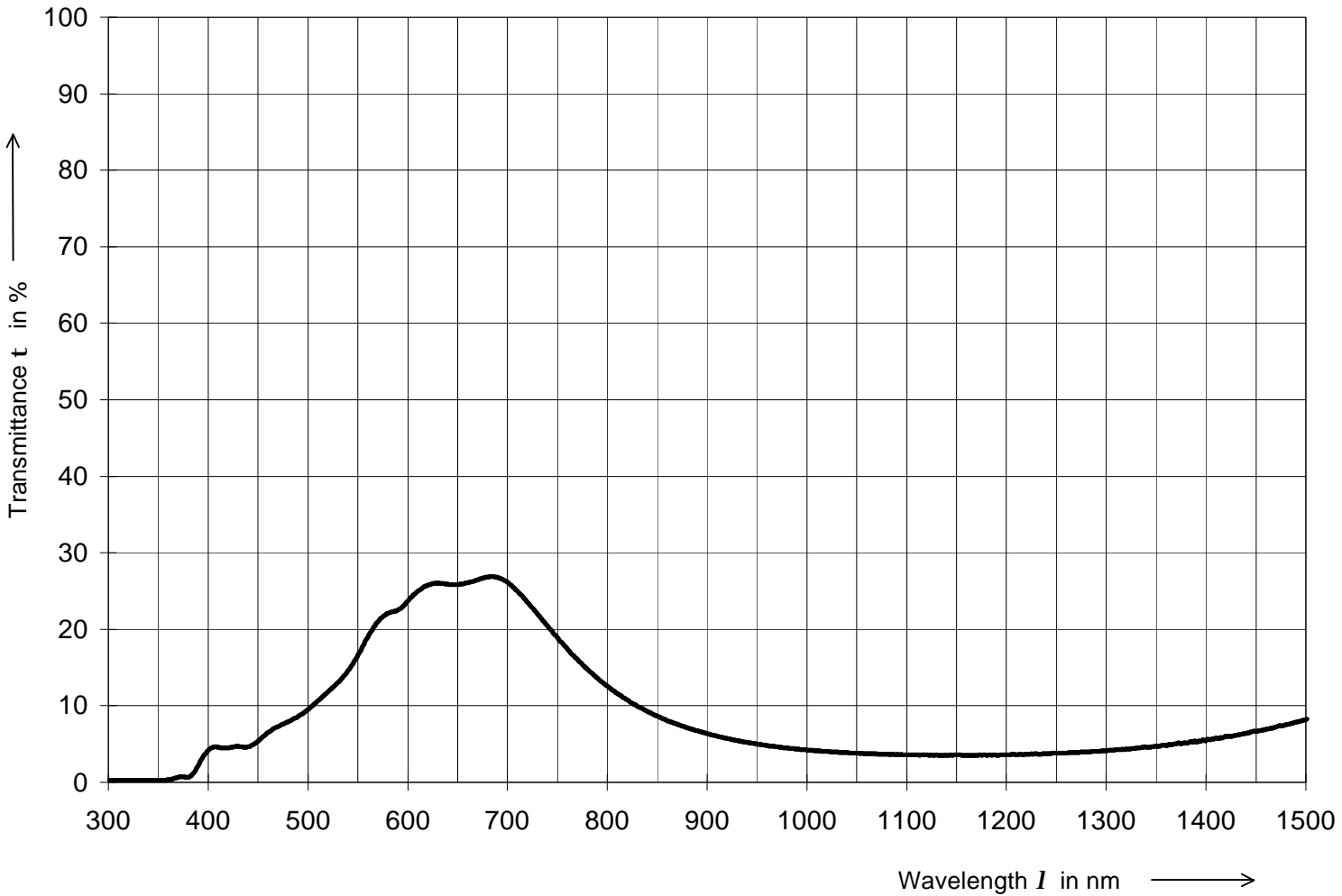
Physical and chemical properties

PCE - BV

D 6417

Spectral Transmittance

Type of Glass: CH - Braun 6417
Thickness: 2.00 mm



Specification

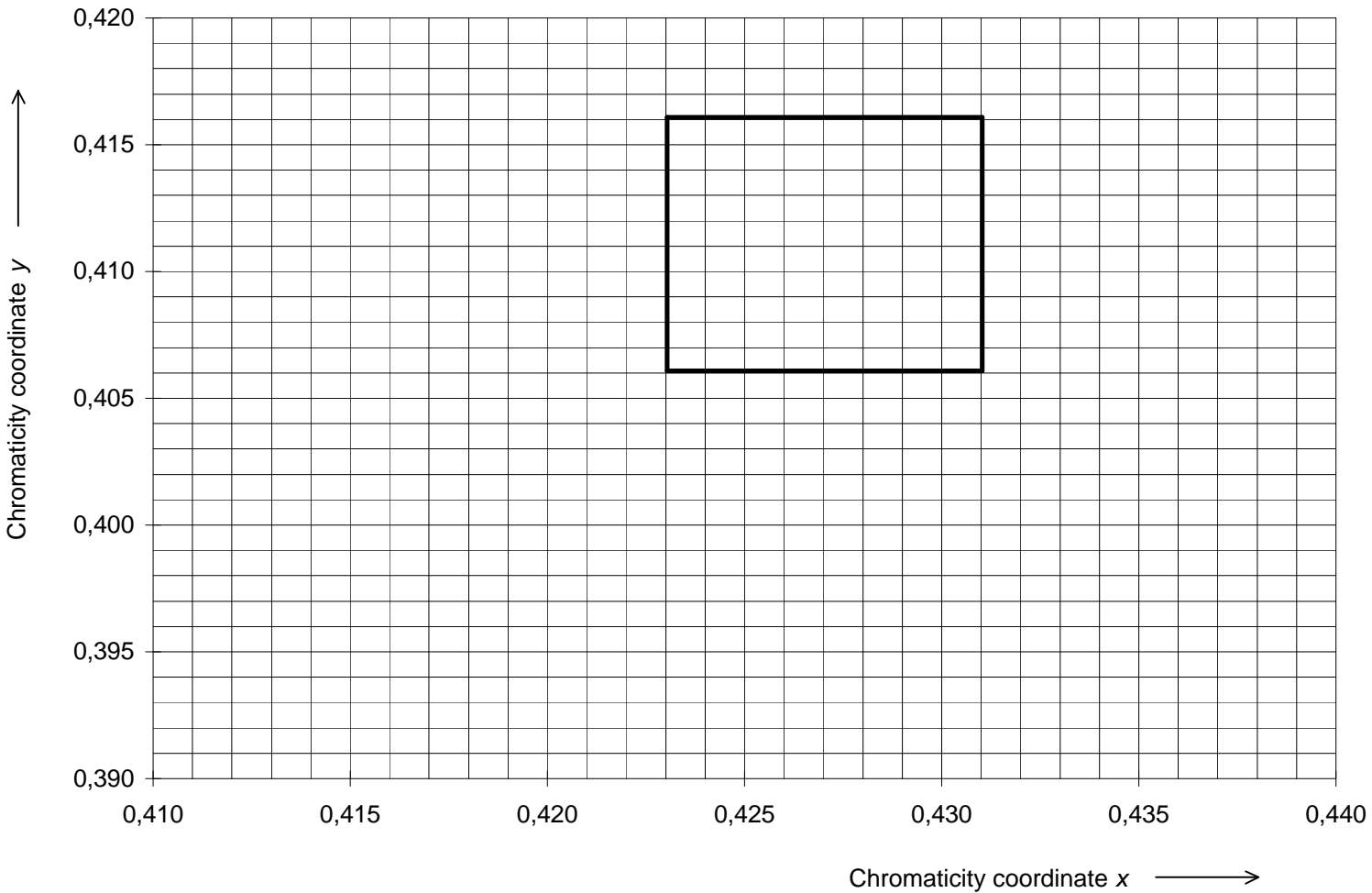
Physical and chemical properties

PCE - BV

D 6417

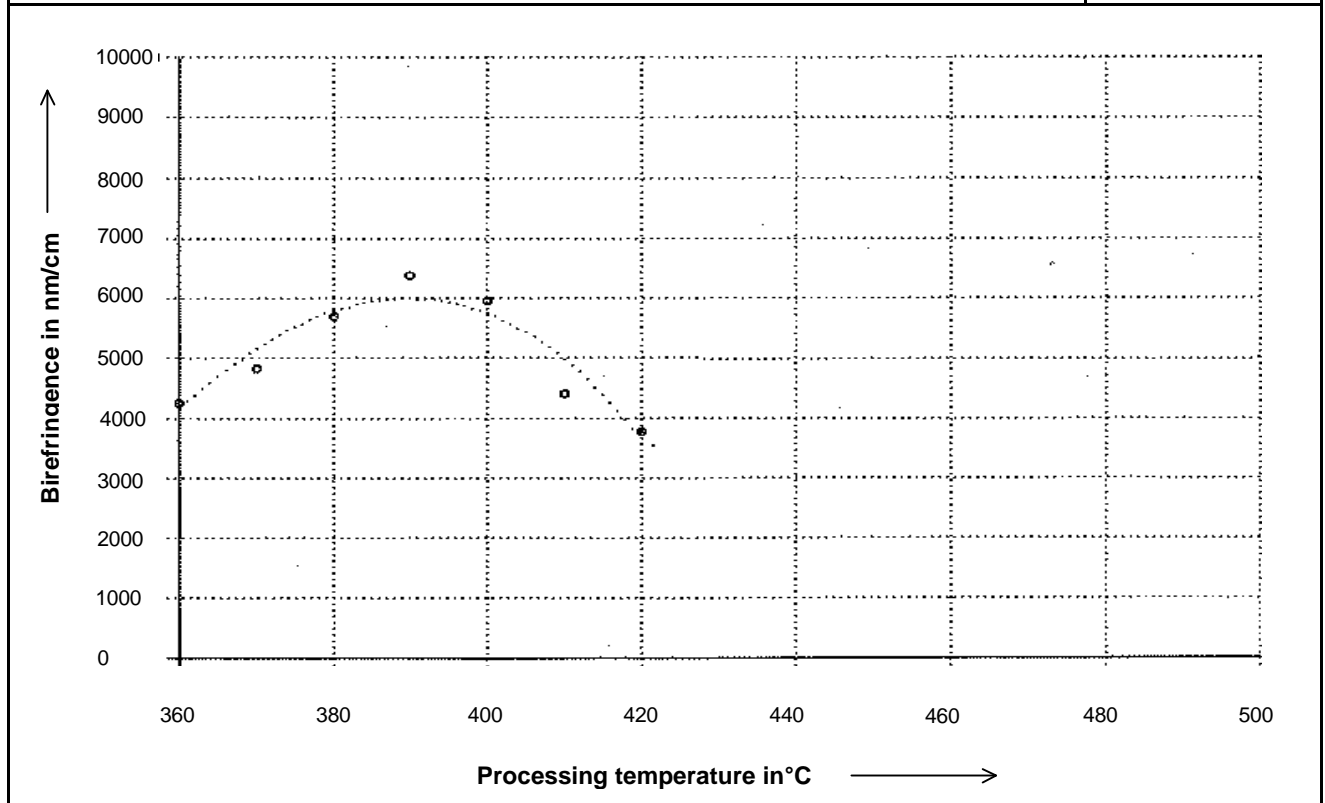
Chromaticity Coordinates

Type of Glass: CH - Braun 6417
Thickness: 2.0 mm



Annex 3.3.1

Specification		PCE - BV	
Physical and chemical properties		D 6417	
Chemical toughening parameter			
Glass and chemical toughening parameters			
Transformation temperature	°C	501	
Glass thickness	mm	2	
Processing time	h	4	
Processing temperature	°C	390	
Salt bath (* weight percentages)	KNO ₃ in % *	99.5	
	SiO ₂ x H ₂ O in % *	0.5	
Chemical toughening results *			
Penetration depth	µm	51	
Birefringence	nm/cm	6000	
* measured across at a sample piece ground down to 0.3 mm ± 0.05 mm			
Ball drop test acc. FDA	% failed	not carried out	
Ball drop test acc. DIN	% failed	not carried out	



Form 0050/6B