DATA SHEET

SCHOTT® B270I

Specification Physical and chemical properties			PCP B 270®i
1.	**Optical properties**		
1.1	**Refractive indices** (20 °C)		
	Pretreatment of samples	n_g	1.5341
	Condition as supplied	$n_{F'}$	1.5297
	["as drawn"]	n_F	1.5292
		n_e	1.5251 ± 0.001
		n_d	1.5230
		n_D	1.5229
		$n_{C'}$	1.5207
		n_C	1.5203
1.1.1	**Abbe value**	ν_e	58,3 ± 0.6
		ν_d	58.5
1.2	**Transmittance data**		
1.2.1	**Spectral transmittance τ (λ)**		
1.2.1.1	**τ (λ) - curve**		
	Plot of spectral transmittance $\tau(\lambda)$ for		
	d = 2.0 mm (λ = 280 nm to 650 nm)		see annex
	d = 2.0 mm (λ = 280 nm to 2000 nm)		see annex
1.2.1.2	**τ (λ) - individual values in %**		◊
1.2.1.3	**Edge wavelength (d = 2.0 mm)**		
	Edge wavelength	λ_c (τ = 0.46) in nm	310
	Solarization refer to 6.1		
	Additional data	λ_S (τ = 0.05) in nm	293
		λ_P (τ = 0.85) in nm	338
1.2.2	**Luminous transmittance τ_v**		
1.2.2.1	**Luminous transmittance**		

Thickness in mm	τ_{vD65} in %	τ_{vA} in %
2.0	91.7	91.7

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Specification Physical and chemical properties			PCP B 270®i
1.2.3	**Special transmittance values in % (*d* = 2.0 mm)**		
1.2.3.1	**UV - transmittance**	τ_{UVA}	84
		τ_{UVB}	19
1.2.3.2	**IR - transmittance**	τ_A	91.9
1.2.3.3	**Solar direct transmittance**	τ_e	91.6
1.3	**Colour**		
1.3.1	**Visual evaluation**		disregarded
1.3.2	**Colorimetry (*d* = 2.0 mm)**		
		D_{65} *x*	0.313
	Chromaticity coordinates (colour locus) are referred	*y*	0.329
	to the namend Standard Illuminant according to	A *x*	0.448
	CIE 2°-observer	*y*	0.408
1.3.3			disregarded
1.3.4	**General colour rendering index R_a (*d* = 2.0 mm)**		100

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Specification Physical and chemical properties			PCP B 270®i
2.	**Thermal properties**		
2.1	**Viscosities and corresponding temperatures**		
	Designation	Viscosity lg η in dPas	Temperature ϑ in °C
	Strain point	14.5	**507** (~945 °F)
	Annealing point	13.0	**535** (~995 °F)
	Softening point	7.6	**711** (~1312 °F)
	Forming temperature	6.0	**811** (~1492 °F)
	Forming temperature	5.0	**897** (~1647 °F)
	Forming temperature	4.0	**1014** (~1857 °F)
2.2	**Transformation temperature *Tg* in °C**		**542** (~1008 °F)
2.3	**Coefficient of thermal expansion α**		
2.3.1	**Coefficient of mean linear thermal expansion α in 10^{-6} K^{-1} for the indicated temperature range (Static measurement)**		
		α(20 °C;300 °C)	9.4
		α(20 °C;200 °C)	9.0
		α(20 °C;100 °C)	8.6
2.3.2	**Coefficient of mean linear thermal expansion α in 10^{-6} K^{-1} for the indicated temperature range (Dynamic measurement)**		
		α(20 °C;100 °C)	8.6
		α(20 °C;150 °C)	8.8
		α(20 °C;200 °C)	9.0
		α(20 °C;250 °C)	9.2
		α(20 °C;300 °C)	9.4
		α(20 °C;350 °C)	9.6
		α(20 °C;400 °C)	9.7
		α(20 °C;450 °C)	9.9
		α(20 °C;500 °C)	◊

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Specification Physical and chemical properties		PCP B 270®i
2.4	**Fuseability**	
	Fusing with SCHOTT ARTISTA® glasstypes using an adapted temperature / time programme results in a technically stressfree compound with a maximum stress birefringence of 70 nm/cm.	
2.5	**Mean specific heat capacity c_p (20 °C to 100 °C) in J/ (g·K)**	0.8
2.6	**Thermal conductivity λ in W/ (m·K) for the indicated temperatures**	
	ϑ = 90 °C	1.02
2.7	**Specific thermal stress φ in N/ (mm²·K)**	0.86

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Specification Physical and chemical properties		PCP B 270®i
3.	**Mechanical properties**	
3.1	**Density ρ in g/cm³**	2.56
3.2	**Stress optical coefficient *C* in $1.02 \cdot 10^{-12}$ m²/N**	2.7
3.3	**Breaking strength**	
	Admissible value for the bending strength σ_{zul} of technically annealed glasses as calculation basis (air) in N/mm²	30
	A higher mechanical strength can be realized by chemical toughening according to the ion exchange procedure or by thermal toughening.	
3.3.1	**Chemical toughening**	
	Processing temperature ϑ in °C	440
	Processing time *t* in h	16
	Compressive stress *Ds* as birefringence in nm/cm	6460
	Penetration depth *Nz* up to neutral zone in µm	41
	Further information	see annex
3.3.2	**Thermal toughening**	possible
3.4	**Young´s modulus *E* in kN/mm²**	71
3.5	**Poisson´s ratio μ**	0.22
3.6	**Torsion modulus *G* in kN/mm²**	29
3.7	**Micro hardness**	
3.7.1	**Knoop hardness *HK* 0.1/20**	500
3.7.2	**Vickers hardness *HV* 0.2/25**	510

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Specification Physical and chemical properties		PCP B 270®i
4.	**Chemical properties**	
4.1	**Hydrolytic resistance acc. to DIN ISO 719**	
	Hydrolytic class	HGB 3
	Equivalent of alkali (Na_2O) per gram of glass grains in µg/g	136
4.2	**Acid resistance acc. to DIN 12116**	
	Acid class	S 2
	Half surface weight loss after 6 hours in mg/dm²	0.7
4.3	**Alkali resistance acc. to DIN ISO 695**	
	Class	A 1
	Surface weight loss after 3 hours in mg/dm²	71
4.4	**Hazardous Substances**	
	EC-directive 2002/95/EC (RoHS-directive)	fulfilled
	Certificate	on request

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Specification Physical and chemical properties			PCP B 270®i
5.	**Electrical properties**		
5.1	**Dielectric constant (Permittivity) ε_r at 1 MHz**		7.5
5.2	**Dissipation factor tan δ bei 1 MHz**		$31.8 \cdot 10^{-4}$
5.3	**Electric volume resistivity ρ_D in $\Omega \cdot$ cm** **at the specified temperatures**		
5.3.1	**ρ_D for alternating current 50 Hz and 3 kHz**		
	Frequency 50 Hz	ϑ = 25 °C	$5.4 \cdot 10^9$
		ϑ = 250 °C	$6.1 \cdot 10^7$
		ϑ = 350 °C	$1.6 \cdot 10^6$
	Frequency 3 kHz	ϑ = 25 °C	$9.1 \cdot 10^7$
		ϑ = 250 °C	$2.7 \cdot 10^7$
		ϑ = 350 °C	$1.5 \cdot 10^6$
5.3.2	**ρ_D for direct current**		
		ϑ = 25 °C	◊
		ϑ = 250 °C	◊
		ϑ = 350 °C	◊
		ϑ = 400 °C	◊
5.4	**Temperature t_{k100} in °C for a specific electric volume resistivity of 10^8 $\Omega \cdot$ cm**		◊

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Specification Physical and chemical properties			PCP B 270®i
6.	**Other properties**		
6.1	**Solarization**		
	Shifting of the edge wavelength λ_c (τ = 0.46) after UV-radiation in the direction of longer wavelength	$\Delta \lambda_c$ in nm	< 1
	Measuring and Test Procedures The sample will be irradiated with a UV - F 400 floodlamp. The irradiation time amounts to 7h; the distance between floodlamp and samplefastening is 14 cm.		
7.	**Annex** (diagrams, curves)		

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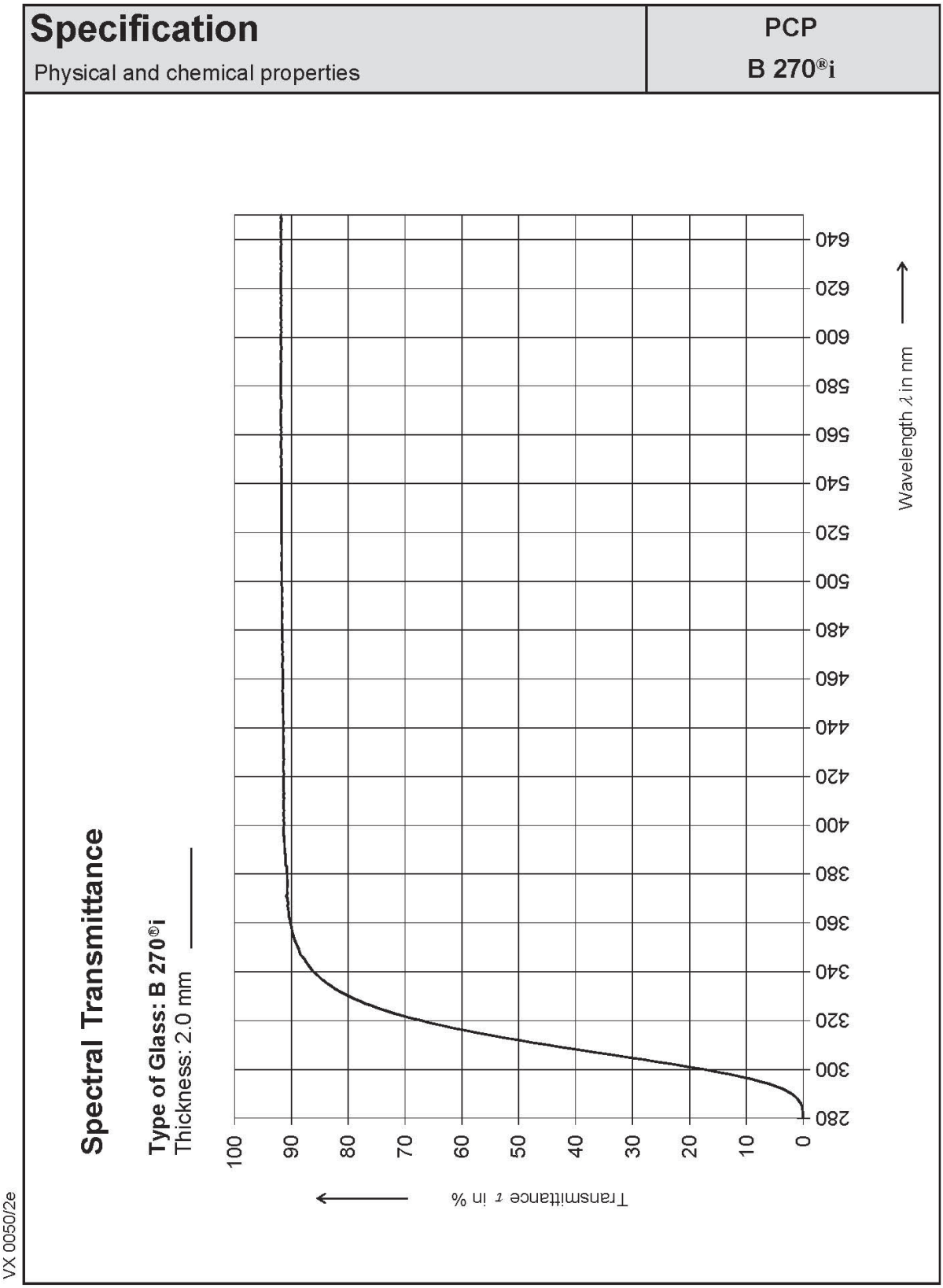
Specification Physical and chemical properties	PCP B 270®i



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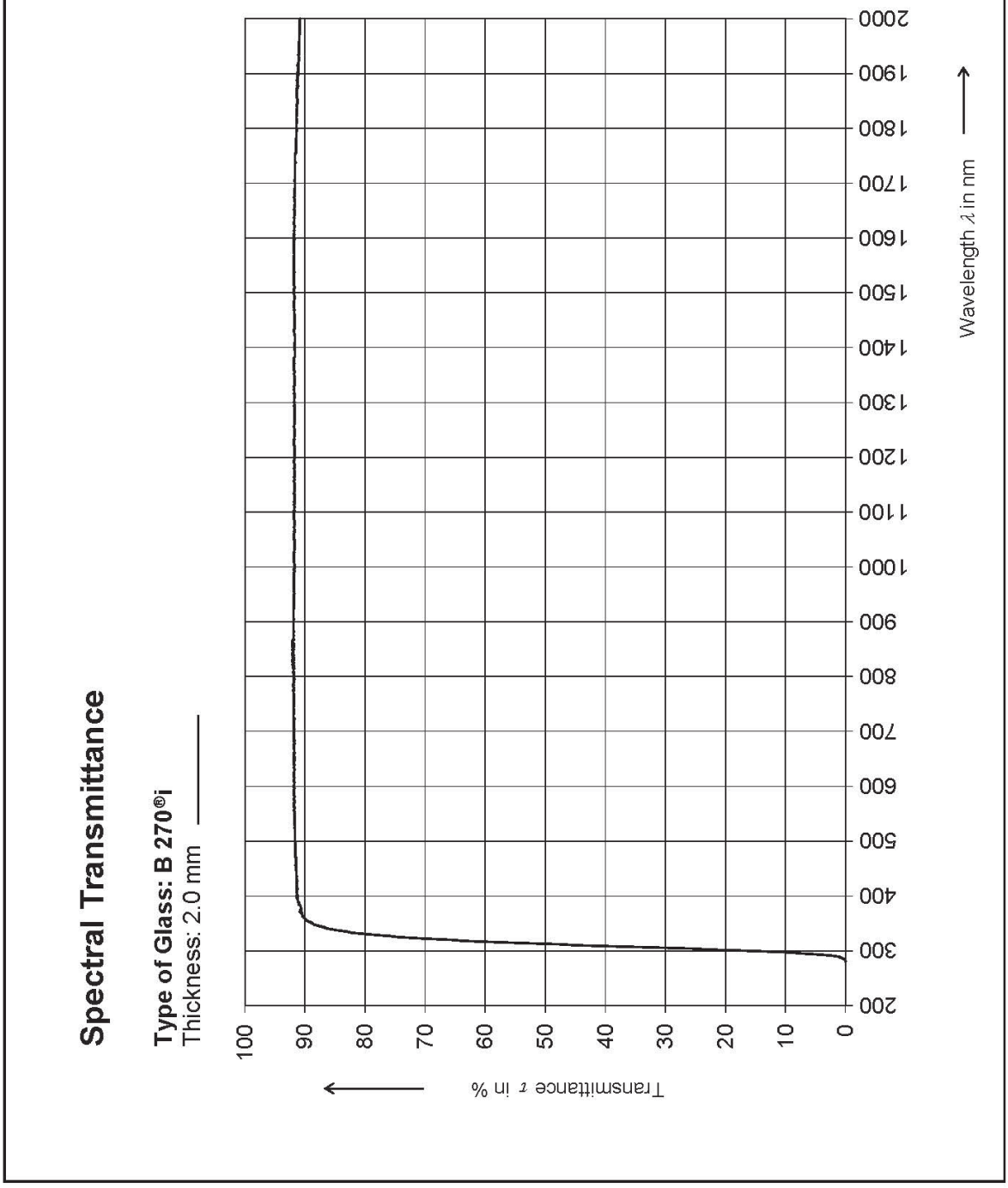

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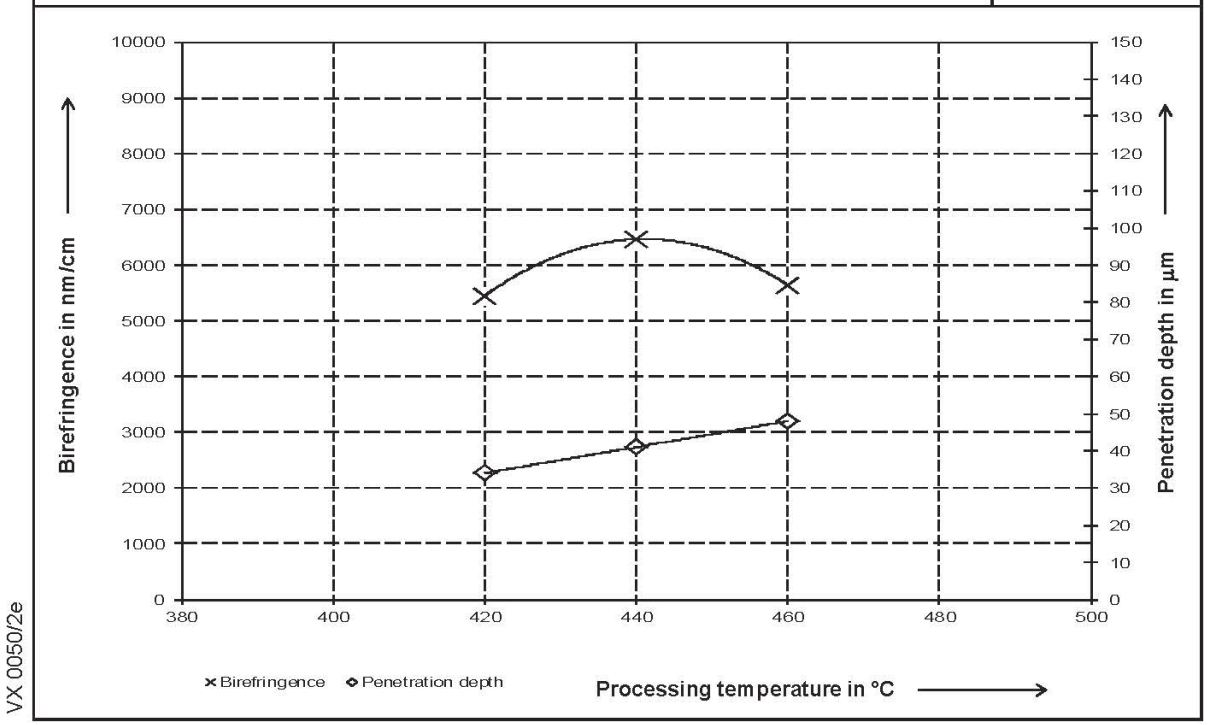
Specification Physical and chemical properties		PCP B 270®i
Chemical toughening parameter		
Glass and chemical toughening parameters		
Transformation temperature	°C	542
Glass thickness	mm	4.2
Processing time	h	16
Processing temperature	°C	440
Salt bath (* weight percentages)	KNO_3 in % *	99.5
	$SiO_2 \times H_2O$ in % *	0.5
Chemical toughening results *		
Penetration depth	µm	41
Birefringence	nm/cm	6460
* 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



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