

<b>Specification</b> Physical and chemical properties	<b>PCP</b> <b>D 9148</b>
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## Rosalite 9148 UV

**D 9148**

Colour: dark rose

Application: light tinted sunglare filter with  
contrast intensification red / yellow  
and high UV - absorption  
filter category 1 acc. to DIN EN 1836

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".

We retain 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.

Values marked with  $\diamond$  do not apply to the type of glass or no values are available.

Requirements deviating from these specifications must be defined in writing in a **customer agreement**.

<b>Specification</b>		<b>PCP</b>					
Physical and chemical properties		<b>D 9148</b>					
<b>1.</b>	<b>Optical properties</b>						
<b>1.1</b>	<b>Refractive indices (20 °C)</b>						
	Pretreatment of samples	$n_g$	1,5602				
	[ x ] Condition as supplied	$n_{F'}$	1,5547				
	[ ] annealed at 40 °C/h	$n_F$	1,5541				
		$n_e$	1,5490				
		$n_d$	1,5464				
		$n_D$	1,5464				
		$n_{C'}$	1,5437				
		$n_C$	1,5432				
<b>1.1.1</b>	<b>Abbe value</b>	$v_e$	49.8 ± 0.6				
		$v_d$	49,9				
<b>1.2</b>	<b>Transmittance data</b>						
<b>1.2.1</b>	<b>Spectral transmittance <math>\tau(\lambda)</math></b>						
<b>1.2.1.1</b>	<b><math>\tau(\lambda)</math> - curve</b>						
	Plot of spectral transmittance $\tau(\lambda)$ for $d = 1.9$ mm ( $\lambda = 300$ nm to 1500 nm)	see annex					
<b>1.2.1.2</b>	<b><math>\tau(\lambda)</math> - individual values in % (<math>d = 1.9</math> mm)</b>						
	$\tau(\lambda)_{max}$ for the $\lambda$ - range 280 to 315 nm	< 0.001					
	$\tau(\lambda)_{max}$ for the $\lambda$ - range 315 to 350 nm	< 0.05					
	$\tau_{380}$	1,6					
	$\tau(\lambda)_{min}$ for the $\lambda$ - range 500 to 650 nm	9					
<b>1.2.1.3</b>	<b>Edge wavelength (<math>d = 1.9</math> mm)</b>						
	Edge wavelength $\lambda_c$ ( $\tau = 0.46$ ) in nm	◇					
<b>1.2.2</b>	<b>Luminous transmittance <math>\tau_v</math></b>						
<b>1.2.2.1</b>	<b>Luminous transmittance <math>\tau_{vD65}</math> in % at nominal thickness</b>	48.0 * ± 2.5					
	<b><math>d = 1.9</math> mm</b> * nominal transmittance						
	Luminous transmittance as a function of thickness						
	Thickness in mm	1.4	1.9	3.0	4.0	5.0	6.0
	$\tau_{vD65}$ in %	◇	48.0	◇	◇	◇	◇
	$\tau_{vA}$ in %	◇	51,2	◇	◇	◇	◇
	$\tau_{vC}$ in %	◇	48.3	◇	◇	◇	◇

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<b>1.2.2.2</b>	<b>Scale number/ Filter category</b>		
	$N$ for mean thickness $d = 1.8$ mm ( $\tau_{VD65} = 50.1$ %)		5 - 1.7
	$N$ for mean thickness $d =$ mm ( $\tau_{VD65} =$ %)		
	filter category for nominal transmittance $\tau_{VD65} = 48.0$ %		1
<b>1.2.3</b>	<b>Special transmittance values in % (<math>d = 1.9</math> mm)</b>		
<b>1.2.3.1</b>	<b>UV - transmittance</b>		
		$\tau_{UVA}$	0.2
		$\tau_{SUV}$	0.1
		$\tau_{SUVA}$	$\leq 0.2$
		$\tau_{SUVB}$	$< 0.05$
<b>1.2.3.2</b>	<b>IR - transmittance</b>	$\tau_{SIR}$	88,5
<b>1.2.3.3</b>	<b>Solar blue - light transmittance</b>	$\tau_{sb}$	34,5
<b>1.3</b>	<b>Colour</b>		
<b>1.3.1</b>	<b>Visual evaluation</b>		$\diamond$
<b>1.3.2</b>	<b>Colorimetry</b>		
	Chromaticity coordinates	A $x_{10}$ $y_{10}$	0,357 <sub>0</sub> 0,348 <sub>0</sub>
	Chromaticity coordinates (colour locus) are referred to the Standard Illuminant $D_{65}$ according CIE 10°-observer for the nominal transmittance $\tau_{VD65} = 48.0$ % (refer to 1.2.2.1)	B $x_{10}$ $y_{10}$	0,363 <sub>0</sub> 0,348 <sub>0</sub>
	In case of verification, the measured values may additionally deviate by the measuring uncertainty of the used measuring devices.	C $x_{10}$ $y_{10}$	0,369 <sub>0</sub> 0,356 <sub>0</sub>
	part of chromaticity coordinates	D $x_{10}$ $y_{10}$	0,363 <sub>0</sub> 0,356 <sub>0</sub>
			see annex
<b>1.3.3</b>	<b>Signal light recognition</b>		
	Relative visual attenuation coefficient (quotient) $Q$ for signal light recognition referred to the nominal transmittance $\tau_{VD65} = 48.0$ % (refer to 1.2.2.1)	$Q_{blau}$ $Q_{grün}$ $Q_{gelb}$ $Q_{rot}$	0.84 0.87 1,16 1,24
<b>1.3.4</b>	<b>Yellowness index (<math>d = 10</math> mm)</b>		
		$Y_i$	$\diamond$

<b>Specification</b>		<b>PCP</b>	
Physical and chemical properties		<b>D 9148</b>	
<b>2. Thermal properties</b>			
<b>2.1 Viscosities and corresponding temperatures</b>			
Designation		Viscosity lg $\eta$ in dPas	Temperature $\vartheta$ in °C
Strain point		14.5	525
Annealing point		13.0	556
Softening point		7.6	743
Forming temperature		6.0	846
Forming temperature		5.0	934
Forming temperature		4.0	1050
<b>2.2 Transformation temperature <math>T_g</math> in °C</b>			562
<b>2.3 Coefficient of mean linear thermal expansion <math>\alpha(20\text{ °C};300\text{ °C})</math> in <math>10^{-6}\text{ K}^{-1}</math> (Static measurement)</b>			8,6
<b>2.4 Fuseability</b>			◇
<b>2.5 Mean specific heat capacity <math>c_p(20\text{ °C to }100\text{ °C})</math> in <math>\text{J}/(\text{g} \cdot \text{K})</math></b>			◇

<b>Specification</b>		<b>PCP</b>
Physical and chemical properties		<b>D 9148</b>
<b>3.</b>	<b>Mechanical properties</b>	
<b>3.1</b>	Density $\rho$ in g/cm <sup>3</sup>	2,70
<b>3.2</b>	Stress optical coefficient $C$ in $1.02 \cdot 10^{-12}$ m <sup>2</sup> /N	2,61
<b>3.3</b>	<b>Breaking strength</b>	
	<p>A higher mechanical strength can be realized by chemical toughening according to the ion exchange procedure or by thermal toughening.</p> <p>Both toughening methods may cause slight transmittance - and colourchanges.</p>	
<b>3.3.1</b>	<b>Chemical toughening</b>	
	Processing temperature $\vartheta$ in °C	450
	Processing time $t$ in h	16
	Compressive stress $D_s$ as birefringence in nm/cm	9400
	Penetration depth $N_z$ up to neutral zone in $\mu\text{m}$	61
<b>3.3.2</b>	<b>Thermal toughening</b>	
	Recommended minimum thickness $d$ in mm for toughened safety glass lenses without corrective effect as per ball drop test (DIN EN 168)	2.5
<b>3.4</b>	Young´s modulus $E$ in kN/mm <sup>2</sup>	◇
<b>3.5</b>	Poisson´s ratio $\mu$	◇
<b>3.6</b>	Torsion modulus $G$ in kN/mm <sup>2</sup>	◇
<b>3.7</b>	Knoop hardness $HK$ 0.1/20	◇

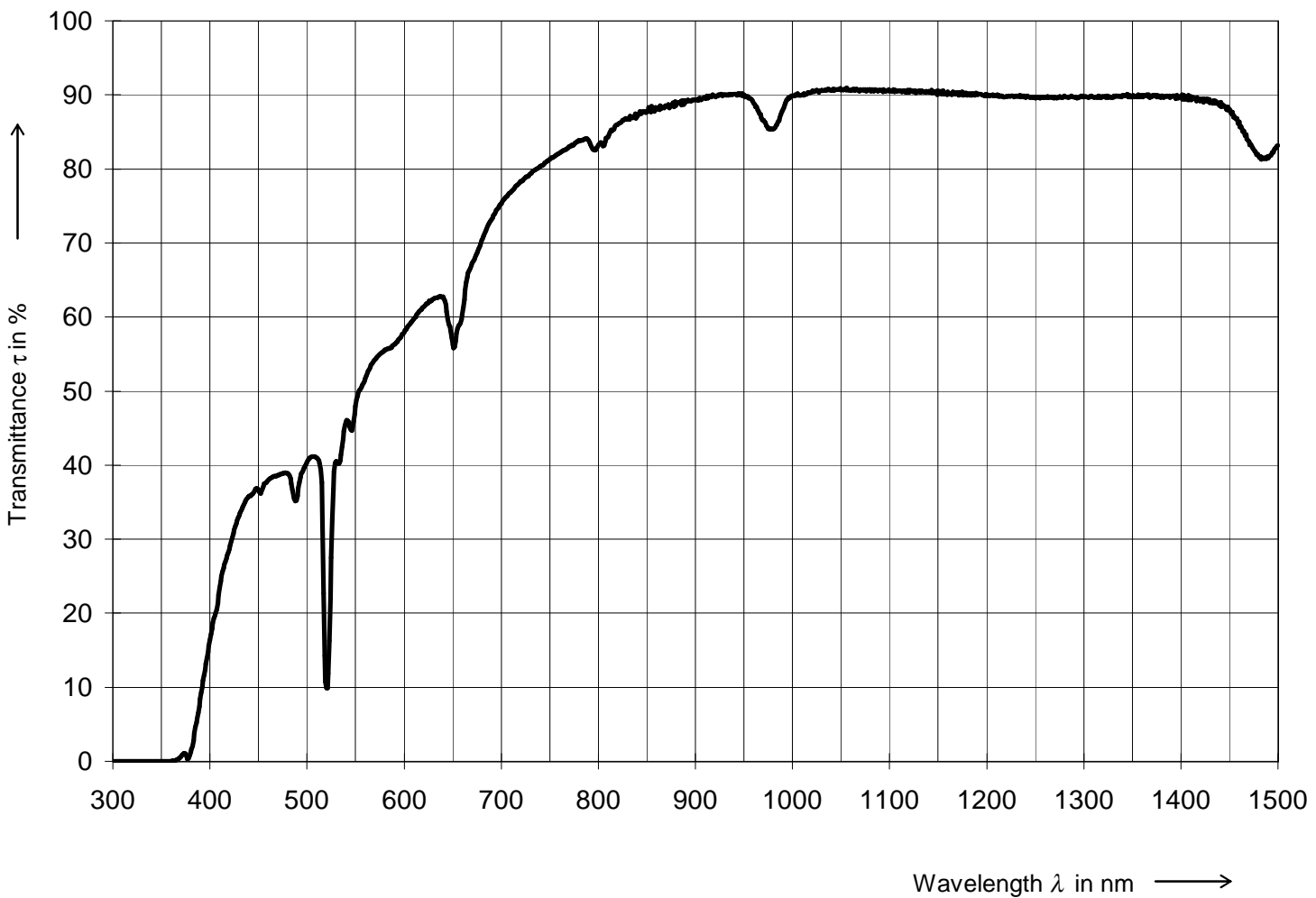
<b>Specification</b>		<b>PCP D 9148</b>	
Physical and chemical properties			
<b>4.</b>	<b>Chemical properties</b>		
<b>4.1</b>	<b>Hydrolytic resistance acc. to DIN ISO 719</b>		
		Hydrolytic class	HGB 3
	Equivalent of alkali (Na <sub>2</sub> O) per gram of glass grains in µg/g		131
<b>4.2</b>	<b>Acid resistance acc. to DIN 12 116</b>		
		Acid class	S 1
	Half surface weight loss after 6 hours in mg/dm <sup>2</sup>		0,6
<b>4.3</b>	<b>Alkali resistance acc. to DIN ISO 695</b>		
		Class	A 1
	Surface weight loss after 3 hours in mg/dm <sup>2</sup>		63,0
<b>4.4</b>	<b>Hazardous Substances</b>		
	EC-directive 2002/95/EC (RoHS-directive)		on request
<b>5.</b>	<b>Electrical properties</b>		disregarded
<b>6.</b>	<b>Other properties</b>		
<b>6.1</b>	<b>Colour variation</b>		
	After long exposure to sun, the pink tint may intensify slightly due to the special chemical composition, i. e. by changed valency of the colour oxides.		
<b>7.</b>	<b>Annex (diagrams, curves)</b>		

**Specification**  
Physical and chemical properties

**PCP**  
**D 9148**

# Spectral Transmittance

Type of Glass: Rosalite 9148 UV  
Thickness: 1.90 mm



**Spezifikation**  
Physical and chemical properties

**PCP**  
**D 9148**

## Chromaticity coordinates

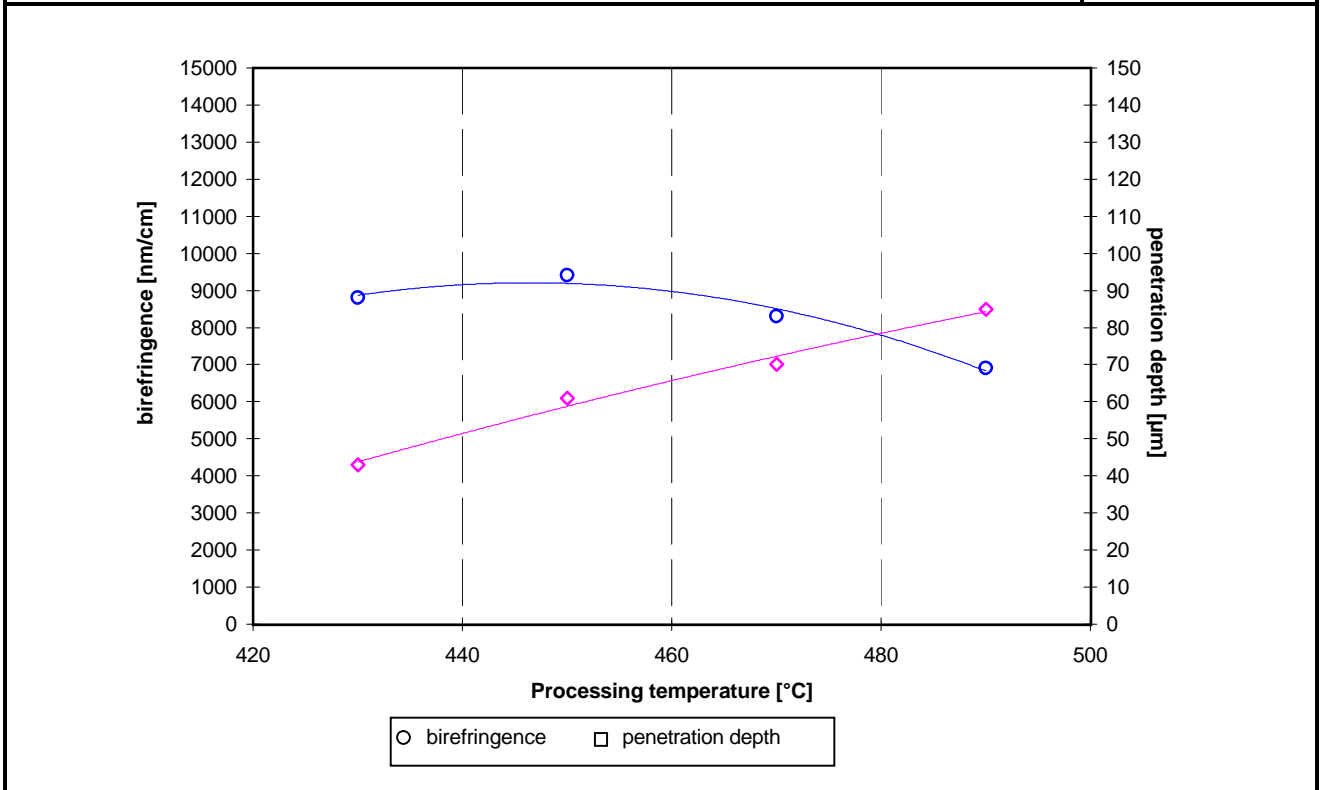
Type of Glass: Rosalite 9148 UV  
Thickness: 1,90 mm





Annex 3.3.1

<b>Specification</b>		<b>PCP</b>	
Physical and chemical properties		<b>D 9148</b>	
<b>Chemical toughening parameter</b>			
<b>Glass and chemical toughening parameters</b>			
<b>Transformation temperature</b>	°C	562	
<b>Glass thickness</b>	mm	2	
<b>Processing time</b>	h	16	
<b>Processing temperature</b>	°C	450	
<b>Salt bath (* weight percentages)</b>	KNO <sub>3</sub> in % *	99,5	
	SiO <sub>2</sub> x H <sub>2</sub> O in % *	0,5	
<b>Chemical toughening results *</b>			
<b>Penetration depth</b>	μm	61	
<b>Birefringence</b>	nm/cm	9400	
* measured across at a sample piece ground down to 0.3 mm ± 0.05 mm			
<b>Ball drop test acc. FDA</b>	% failed	not carried out	
<b>Ball drop test acc. DIN</b>	% failed	not carried out	



Form 0050/1e