



## TiNOX TCA AI

### Temperature controlling selective solar Absorber material

The **TiNOX TCA** coating reduces the stagnation temperature of typical flat plate collectors by up to 50°C while -keeping the collector efficiency on a high level at the same time. The coating is based on the well-established TiNOX energy coating, which is known for its exceptional stability.

#### OPTICAL PROPERTIES

		Typical	Standards
SOLAR ABSORPTION	$\alpha_{sol}$	91 % $\pm$ 2 %	ASTM E 891-87 and ISO 9845-1
TEMPERATURE CONTROLLED EMISSIVITY	$\epsilon_{30^\circ C}$	18 % $\pm$ 2 %	DIN ISO 22975-3
	$\epsilon_{80^\circ C}$	21 % $\pm$ 2 %	DIN ISO 22975-3
	$\epsilon_{200^\circ C}$	32 % $\pm$ 2 %	DIN ISO 22975-3
COLOUR ANGLE h		270° - 300°	CIE Lab (D65 / 10°)

#### TECHNICAL DATA

COATING METHOD	PVD	AIR TO AIR COIL COATING
ABSORBER COATING	SELECTIVE SOLAR ABSORBER COATING with STAGNATION CONTROL	ANODISED ALUMINIUM SUBSTRATE / CERMET ABSORBER MULTILAYER / SILICA GLASS ANTI REFLECTION AND PROTECTION LAYER

#### ENVIRONMENTAL STABILITY

Conditions	Time	PC = $-\Delta\alpha + 0.5\Delta\epsilon$ *	Cross hatch test	Standards
Temperature 291°C	600 h	< 2%	✓	DIN ISO 22975-3
Humidity at 40°C condensing	600 h	< 1%	✓	DIN ISO 22975-3
CLIMATE CHAMBER 85°C – 85% r.H.	1000 h	< 1%	✓	
UV 0,53W/mm <sup>2</sup> @ 340nm	100 h	< 1%	✓	

\*) Performance criterion "PC" as defined in DIN ISO 22975-3.



### MECHANICAL STABILITY

	Value	Standards
CROSS HATCH TEST	No more than 2 of 100 test fields delaminating	ISO 2409 / ASTM D 3359
ADMISSIBLE BENDING RADIUS	≥ 10 mm	
SCRATCH RESISTANCE	good	(due to protection layer)

### SUBSTRATE: MECHANICAL PROPERTIES

	Value	Standards
ALUMINIUM ALLOY	EN-AW 3000 series	EN 573-3
TEMPER	H 16 (hard)	EN 515
TENSILE STRENGTH	≥ 170 N/mm <sup>2</sup>	EN 485-2
YIELD STRENGTH 0.2%	≥ 150 N/mm <sup>2</sup>	EN 485-2
ELONGATION A <sub>50</sub>	> 1 %	EN 485-2
ROUGHNESS:	Ra < 0.5 μm	

### SUBSTRATE: PHYSICAL PROPERTIES

	Value	Standards
THERMAL CONDUCTIVITY	> 190 W/mK	
Density	2.71 g/cm <sup>3</sup>	

### AVAILABLE SIZES

THICKNESS	0.3mm - 0.5mm
WIDTH	≤ 1250mm

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All information provided is based on up-to-date values where possible. Optical values are average results from 0.4mm substrate and are published for guidance only; they may vary according to raw material thickness. For more detailed information please contact our technical sales department. Physical characteristics of the materials are in accordance with EN (European Committee for Standardization).

#### **General tolerance**

Gauge tolerance: ± 0.03 mm  
 Width tolerance: ± 0.15 mm  
 Length-cut sheets: ± 1 mm/m

#### **Note**

All materials listed above can be delivered in various sizes and shapes according to customer requirements. Products with protective tape are guaranteed for six months after delivery if they are stored in a conditioned room (temperature 20-30°C and relative humidity 50-60%) and kept away from sunlight and any heating source. Protective tape is not UV resistant.

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