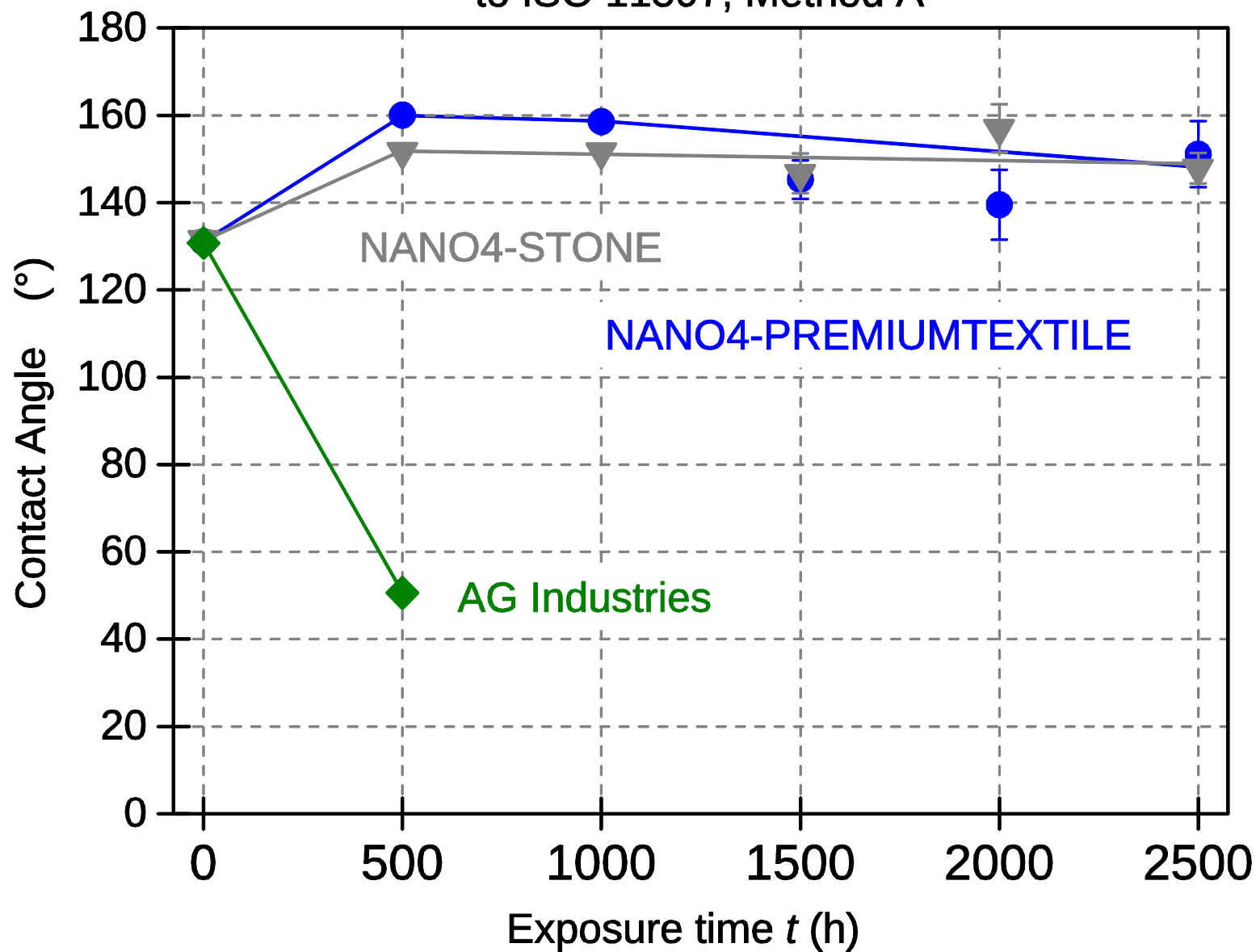


Exposure to fluorescent UV lamps according
to ISO 11507, Method A



Experimental details

Exposure of fluorescent UV lamps according to ISO 11507, Method A (2007-02) [1]

Test conditions:

Lamp type:	UV-A-340 (Type II)
Irradiance E_{λ} :	$0.76 \text{ W} \cdot \text{m}^{-2} \cdot \text{nm}^{-1}$
Black panel temperature:	$60 \text{ }^{\circ}\text{C} \pm 3 \text{ }^{\circ}\text{C}$
Black panel temperature during condensation:	$50 \text{ }^{\circ}\text{C} \pm 3 \text{ }^{\circ}\text{C}$
Method A:	
Dry phase	4 hours
Condensation	4 hours (UV lamps off)
Exposure time:	2500 h



Fig. 1: Accelerated Weathering Tester QUV/SPRAY and water treatment plant type ELIX 15 (left side) and test specimen mounted on flat specimen holders (right side)

Contact angle measurements according to DIN 55660-1 und DIN 55660-2 [2, 3]

Test conditions:

Test liquid:	distillated water
Drop capacity:	4 μl
Number of drops:	10
Manner of the contact angle measurements:	static
Numerical method (measurement range):	
Young-Laplace equation	20° till 110° and 110° till 180°

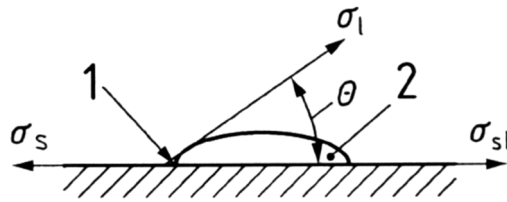


Fig. 2: Schematic representation of the contact angle measurements; 1 – three phase point, 2 – liquid, σ_l – surface energy of the liquid, σ_s – free surface of the solid state surface, σ_{sl} – interface energy between solid state surface and liquid, θ – contact angle [2]

Results

The results of the contact angle measurements for NANO-PREMIUMTEXTILE shows Tab. 1. The graphic representation of the change of the contact angle in dependence on the exposure with fluorescent UV lamps visualizes Fig. 3.

Tab. 1: Results of the contact angle in dependence on the exposure time

Exposure time	NANO-PREMIUMTEXTILE
Initial value	131.0 ± 1.9
500 h	160.1 ± 0.7
1000 h	158.6 ± 0.7
1500 h	145.3 ± 4.4
2000 h	139.5 ± 8.0
2500 h	151.1 ± 7.5

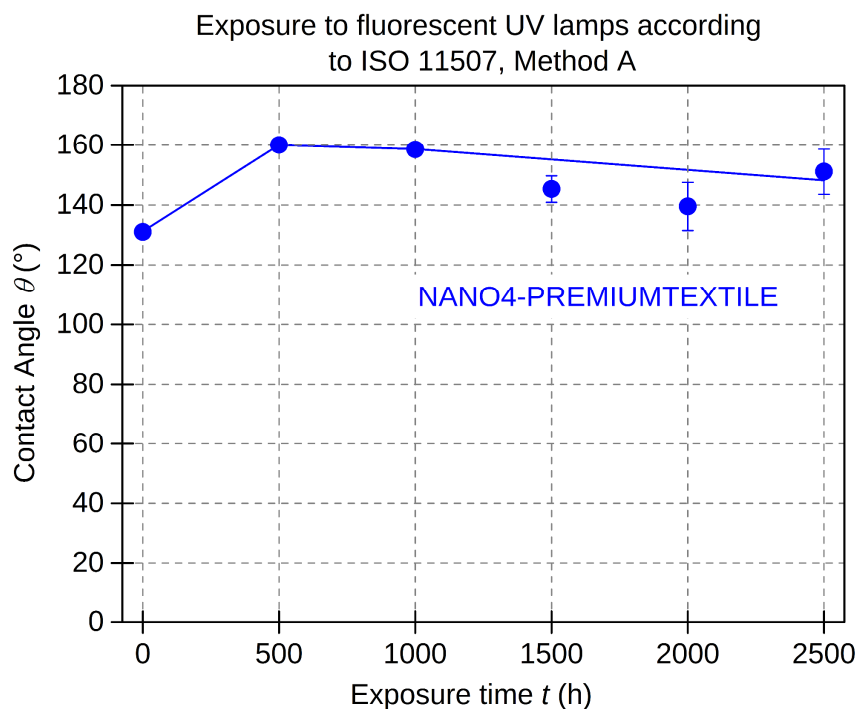


Fig. 3: Graphic representation of the contact angle in dependence on the exposure with fluorescent UV lamps

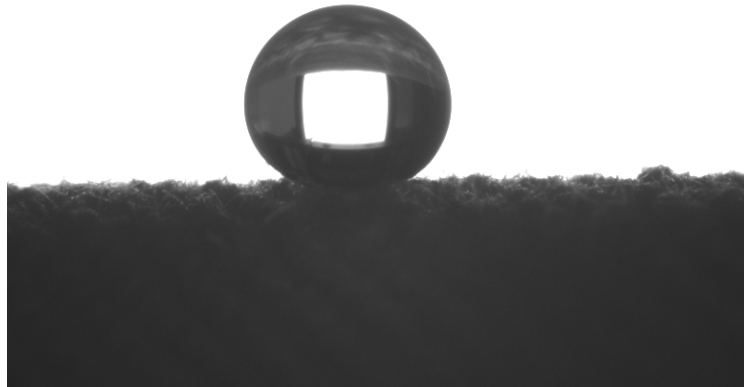
Exposure time (h)	Photos
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Initial value	no photo
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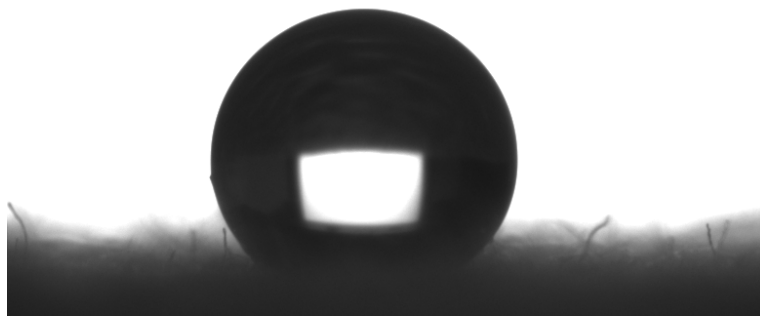
500



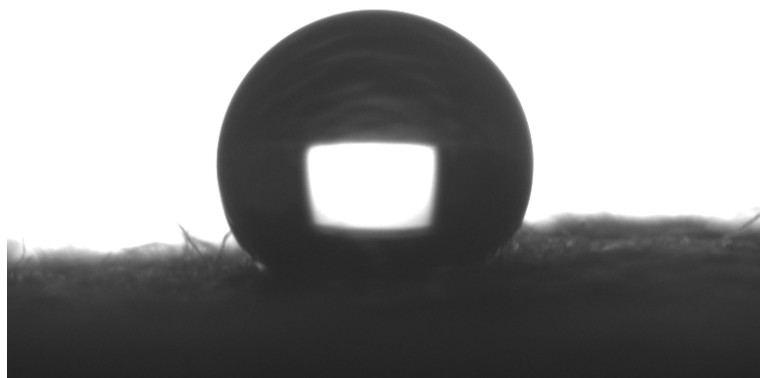
1.000



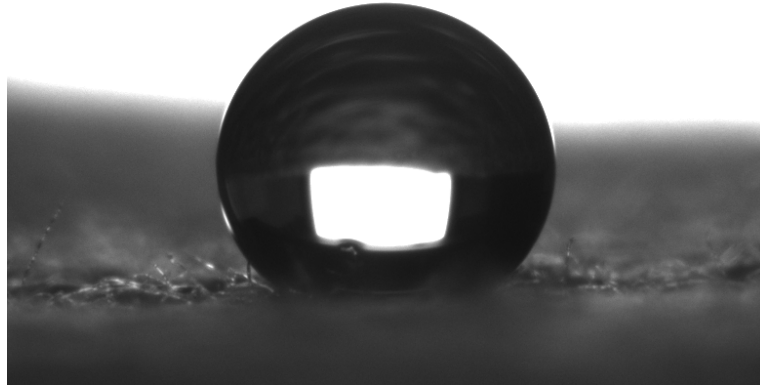
1.500



2.000



2.500



Literature

- [1] ISO 11507 (2007-02): Paints and varnishes – Exposure of coatings to artificial weathering – Exposure to fluorescent UV lamps and water
- [2] DIN 55660-1 (2011-12): Beschichtungsstoffe – Benetzbarkeit – Teil 1: Begriffe und allgemeine Grundlagen
- [3] DIN 55660-2 (2011-12): Beschichtungsstoffe – Benetzbarkeit – Teil 2: Bestimmung der freien Oberflächenenergie fester Oberflächen durch Messung des Kontaktwinkels