Solar Keymark Scheme rules- Annex N1

Correction file for ISO 9806:2017 to be taken into account when testing collectors for Solar Keymark certification

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MB/ NC[1]	Line number (e.g. 17)	Clause/ Subclause (e.g. 3.1)	Paragraph/ Figure/ Table/ (e.g. Table 1)	Type of comment[2]	Comments	Proposed change	Observations of the secretariat
SKN		5.1	Table 1	GE/TE	The index [f] contains wrong content which shall not considered. [f] Half-exposure is required before the test. ~~In case the heat transfer medium is in direct contact with polymeric materials, this test shall be performed at standard stagnation temperature.~~	The index [f] contains wrong content which shall not considered. [f] Half-exposure is required before the test. ~~In case the heat transfer medium is in direct contact with polymeric materials, this test shall be performed at standard stagnation temperature.~~	
SKN		9.4			The standard stagnation temperature is only defined for non-WISC collectors (Formula 2 of ISO 9806:2017). This should be generalized to be applicable for all types of collectors	See line below	

The standard stagnation temperature θ_{stg} for the irradiance G_S = 1 000 W/m² and ambient temperature θ_{as} = 30 °C is then calculated using Formula (2)*:*

$$\vartheta_{\mathrm{stg}} = 1{,}2 \cdot \left(\vartheta_{\mathrm{as}} + \frac{-a_1 + \sqrt{a_1^2 + 4\eta_{0,\mathrm{hem}} a_2 G_{\mathrm{S}}}}{2a_2} \right) \qquad (2)$$

The factor of 1,2 is introduced to compensate for the wind speed of 2 m/s – 4 m/s during the performance measurements which is higher than in stagnation conditions. For quasi-dynamic measurements, ($\eta_{0,hem}$·1 000 W/m²) is replaced by{$\eta_{0,b}$·[$K_{b(0,0)}$·850 W/m²+K_d·150 W/m2]}.

Is replaced by:

The standard stagnation temperature $\vartheta_{\mathrm{stag}}$ is defined as the lowest positive value of $\vartheta_{\mathrm{stag}}$ satisfying Equation (2):

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2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

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					$\left[\begin{array}{l}\eta_{0,\mathrm{b}}G_b+\eta_{0,\mathrm{b}}K_{\mathrm{d}}G_{\mathrm{d}}-a_1\left(\vartheta_{\mathrm{stag}}-\vartheta_{\mathrm{a}}\right)-a_2\left(\vartheta_{\mathrm{stag}}-\vartheta_{\mathrm{a}}\right)^2-a_3u'\left(\vartheta_{\mathrm{stag}}-\vartheta_{\mathrm{a}}\right)+\\ a_4\left(E_{\mathrm{L}}-\sigma T_{\mathrm{a}}^4\right)-a_6u'G-a_7u'\left(E_{\mathrm{L}}-\sigma T_{\mathrm{a}}^4\right)-a_8\left(\vartheta_{\mathrm{stag}}-\vartheta_{\mathrm{a}}\right)^4\end{array}\right]=0$ *(2)* *Where* $G_b = 850\ W/m^2$ $G_d = 150\ W/m^2$ $\theta_a = 30°C$ $E_L-\sigma\cdot T_a^4 = -100\ W/m^2$ $u' = -3\ m/s$ *For non-WISC collectors the derived temperature shall be multiplied by a factor 1,2 to compensate for the wind speed of 2 m/s – 4 m/s during the performance measurements which is higher than in stagnation conditions.*		
SKN		10			The statement in EN ISO 9806:2017; Clause 10 "…,50 % of the initial outdoor exposure" has to be interpreted in that way, that the 50 % is related to the total amount of 30 exposure days. Hence, the collector has to be exposed for 15 days in vertical orientation. Ambient conditions during the exposure such as radiation, temperature are not relevant.	Add text to EN ISO 9806:2017; Clause 10 "…,50 % of the initial outdoor exposure" has to be interpreted in that way, that the 50 % is related to the total amount of 30 exposure days. Hence, the collector has to be exposed for 15 days in vertical orientation. Ambient conditions during the exposure such as radiation, temperature are not relevant.	
		24.1.2		GE/TE	The text below from Clause 24.1.2 is valid for all test methods and therefore shall be considered as part Clause 24.1.1 General. If the value for (ε/α) is known from other measurements, it can be used for the modelling of the extracted power. A corresponding reference shall be given in the test report. Formula (12) allows linking the current parameters to the	Move text to Clause 24.1.1 General. This was the intention of the WG1.	

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					performance parameters defined in previous versions of this standard.		
		24.1.3		GE/TE	The text below from Clause 24.1.3 is valid for all test methods and therefore shall be considered as part of Clause 24.1.1 General. Furthermore the following corrections shall be applied: - For collectors with concentration ration $C_R < 20$, the use of $\eta_{0,b}$, ~~$K_\theta(\theta_L, \theta_L)$~~ $\underline{K_\theta(\theta_L, \theta_T)}$, K_d, and the coefficients a_1, a_2, and a_5 are mandatory and they shall be identified. The parameter a_8 maybe set to 0. - For ~~covered~~ non-WISC collectors tested with artificial wind source at a speed between 2 m/s and 4 m/s, the coefficients a3, a4, a6 and a7 are set to 0. - For WISC collectors or collectors with a concentration ratio $\underline{C_R < 20}$, the parameter a_8 may be set to 0.	The text below from Clause 24.1.3 is valid for all test methods and therefore shall be considered as part of Clause 24.1.1 General. Furthermore the following corrections shall be applied: - For collectors with concentration ration $C_R < 20$, the use of $\eta_{0,b}$, ~~$K_\theta(\theta_L, \theta_L)$~~ $\underline{K_\theta(\theta_L, \theta_T)}$, K_d, and the coefficients a_1, a_2, and a_5 are mandatory and they shall be identified. The parameter a_8 maybe set to 0. - For ~~covered~~ non-WISC collectors tested with artificial wind source at a speed between 2 m/s and 4 m/s, the coefficients a3, a4, a6 and a7 are set to 0. - For WISC collectors or collectors with a concentration ratio $\underline{C_R < 20}$, the parameter a_8 may be set to 0.	

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