

## **Annex H. Transition from EN 12975-2:2006 to EN ISO 9806:2013 to Specific Solar Keymark Scheme Rules**

### **Introduction**

Standards EN ISO 9806:2013 and EN 12975-2:2006 have been considered equivalent by the SKN (see D.3.M15). Being equivalent means that they are based on similar testing procedures and testing equipment. However, these standards are not identical, meaning that a certificate issued according to one standard cannot be replaced by a certificate issued according to the other.

This document is the result of analysing the identity of both standards and how these conclusions may be applied in the different scenarios under which the SKN certificates may be changed from complying with EN 12975-2:2006 to complying with EN ISO 9806 in the following years.

### **H.1 Transition from EN 12975-2:2006 to EN ISO 9806:2013 (testing)**

#### **Procedure for transition from EN 12975-2:2006 to EN ISO 9806:2013**

Solar Keymark Certificates will eventually be adapted to show compliance with EN ISO 9806:2013 in one of the following ways:

- a) Solar Keymark License holders can voluntarily ask for sample taking and complete testing according to EN ISO 9806:2013
- b) Solar Keymark License holders can voluntarily ask for sample taking, partial testing and a gap-test report according to ISO EN 9806:2013, following the table of this document.
- c) On the year that the Keymark certificate expires, the Certification Body has the obligation to renovate in compliance with EN ISO 9806:2103. Therefore samples must be taken and tested using method of a) or b)
- d) On the tenth year since the last complete retest, the collector family must be completely tested according to EN ISO 9806:2013

#### **How to proceed when following case b):**

In case a Solar Keymark license holder asks for its Keymark Certificate to be issued in compliance with EN ISO 9806:2013 testing method and wants to use its EN 12975-2:2006 test results, it is possible to take into account the tests already done, if the following activities take place:

Test/action according to EN ISO 9806:2013	Actions to be taken for partial testing and a Gap-Test report according to EN ISO 9806:2013
<p><b>6 Internal pressure test for fluid channels</b></p>	<p><b>6.1 Inorganic fluid channels</b></p> <p>a) In case the collector was protected from sun light during the previous test no action needed  b) In case the collector was not protected from sun light during the previous test sampling and new test are required</p> <p><b>6.2 Fluid channels made from organic materials</b></p> <p>a) In case the collector has undergone the complete exposure test before testing and the methods according to 6.3.2 or 6.3.3 have been used no action needed  b) In case the collector has not undergone a complete exposure test before testing sampling and new test are required  c) In case the previous test has been carried out according to EN 12975-2:2006, clause 5.2.2.2.2 sampling and new test are required</p>
<p><b>7 High temperature resistance test</b></p>	<p><b>All collector types:</b></p> <p>Re-evaluation of the test data to ensure that the steady state conditions according to clause 9.2 had been fulfilled in the previous test</p> <p>a) In case the steady state conditions had been fulfilled during the previous test no action needed  b) In case the steady state conditions had not been fulfilled during the previous test sampling and new test are required</p> <p><b>Uncovered collectors (without back side insulation):</b></p> <p>a) In case the collector was mounted on a black surface with an absorptance of <math>\alpha &gt; 0.8</math> in the previous test no action needed  b) In case the collector was not mounted on a black surface with an absorptance of <math>\alpha &gt; 0.8</math> in the previous test sampling and new test are required</p> <p><b>Collectors using external power sources and active or passive measures for normal operation and self-protection:</b></p> <p>a) If the previous test has been carried out with the active or passive measures for normal operation and self-protection, then no action is needed  b) If the previous test has not been carried out with the active or passive measures for normal operation and self-protection, then sampling and new test are required</p>
<p><b>10 Standard stagnation temperature</b></p>	<p>No action needed</p>
<p><b>11 Exposure test</b></p>	<p><b>All collectors:</b></p> <p>Class C is valid for all previous tested collectors, except uncovered collectors (see below)</p> <p>In case the manufacturer wants his collector to fall under class A or B re-evaluation of the previous test date is required:</p>

	<p>a) If re-evaluation of the data shows fulfillment of class A or B, then documentation must be added in new gap-test report.</p> <p>b) If re-evaluation of the data does not show fulfillment of class A or B, then sampling and new testing is required.</p> <p><b>Additional requirement for uncovered collectors:</b></p> <p>a) In case the collector was mounted on a black surface with an absorptance of <math>\alpha &gt; 0.8</math> in the previous test no action needed, class C</p> <p>b) In case the collector was not mounted on a black surface with an absorptance of <math>\alpha &gt; 0.8</math> in the previous test sampling and new test are required</p>
<b>12 External thermal shock test</b>	<p><b>All collectors:</b></p> <p>In case the aperture area based flow rate used in previous test was high enough to fulfill the requirements of the gross area based flow rate according to clause 12.3 no action needed -&gt; class C</p> <p><b>In case the manufacturer wants his collector to fall under class A or B re-evaluation of the previous test data is required.</b></p> <p>a) Re-evaluation of the data shows fulfillment of class A or B, documentation in new test report</p> <p>b) Re-evaluation of the data does not show fulfillment of class A or B, sampling an new testing required</p>
<b>13 Internal thermal shock test</b>	<p><b>All collectors:</b></p> <p>If the aperture area based flow rate used in previous test was high enough to fulfill the requirements of the gross area based flow rate according to clause 12.3, then the collector is a Class C.</p> <p><b>In case the manufacturer wants his collector to fall under class A or B re-evaluation of the previous test data is required.</b></p> <p>a) Re-evaluation of the data shows fulfillment of class A or B, documentation in new test report</p> <p>b) Re-evaluation of the data does not show fulfillment of class A or B, sampling an new testing required</p>
<b>14 Rain penetration test</b>	<p><b>All collectors:</b></p> <p>Sampling and new test is required.</p>
<b>15 Freeze resistance test</b>	<p><b>All collectors:</b></p> <p>a) In case the collector has gone through complete exposure test during the previous test no action needed</p> <p>b) In case the collector has not gone through complete exposure test during the previous test sampling and new test are required</p>
<b>16 Mechanical load test</b>	<p><b>All collectors:</b></p> <p><b>Flat plate (Positive and Negative pressure test):</b></p> <p>Sampling and new test may be required. The laboratory must check if testing</p>

	<p>conditions according to EN ISO 9806 were followed , specially regarding the mounting kit,and the exposure test.</p> <p><b>Evacuated tube collector</b></p> <p>Sampling and new test is required for the negative pressure test.</p> <p>Sampling and new test may be required for positive pressure test. The laboratory must check if testing conditions according to EN ISO 9806 were followed , especially regarding the mounting kit, and the exposure test.</p>
<b>17 Impact resistance test</b>	<p><b>All collectors:</b></p> <p>Sampling and new test is required. Height and ice ball diameter respectively can be chosen by the manufacturer.</p>
<b>18 Final inspection</b>	<p><b>All collectors:</b></p> <p>To be performed on each collector which went through testing of 9 to 17</p>
<b>20 Performance test</b>	<p><b>Concentrating collectors:</b></p> <p>a) Previously tested under quasi-dynamic conditions and T-Ratio of collector parameters larger than 3, re-evaluation of previous test data taking gross area into account</p> <p>b) Previously tested under quasi-dynamic conditions and T-Ratio of collector parameters smaller than 3, sampling and new testing required</p> <p>c) Previously tested under steady state conditions, sampling and new testing required</p> <p><b>Heat pipe collectors:</b></p> <p>a) Previously tested after complete exposure test, re-evaluation of previous test data taking gross area into account</p> <p>b) Previously not tested after complete exposure test, sampling and new test required</p> <p><b>Collectors with non-opaque backside:</b></p> <p>a) Previously tested with dark back ground (<math>\rho &lt; 0.2</math>), re-evaluation of previous test data taking gross area into account</p> <p>b) Previously not tested with dark back ground (<math>\rho &lt; 0.2</math>), sampling and new test required</p> <p><b>All other collectors:</b></p> <p>a) Steady state</p> <p>Complete re-evaluation of the test data of the previous test taking into account</p> <ul style="list-style-type: none"> <li>- Gross area</li> <li>- Additional steady state requirement (permitted deviation from the mean value of <math>\vartheta_e \pm 0.5</math> K)</li> <li>- Calculation of <math>K_d</math></li> <li>- New calculation procedure for effective thermal capacity</li> </ul> <p>Note: Table 10 seems to have a mistake (missing A1 factor) and this should be clarified within the SKN.</p>

	b) Quasi-dynamic - T-Ratio of collector parameters larger than 3, re-evaluation of previous test data taking gross area into account - T-Ratio of collector parameters smaller than 3, sampling and new testing required
<b>Air heating collectors</b>	a) Previous test was carried out according the requirements of EN ISO 9806:2013, no action needed b) Previous test was not carried out according the requirements of EN ISO 9806:2013, sampling and new test for all tests that did not fulfill the requirements needed
<b>Gap-Test report</b>	<b>All collectors:</b>  A complete new test report (gap-report) according to EN ISO 9806:2013 with clear reference to EN 12975-2:2006 test report if old testing results will be used for single tests.

### Information on data sheet

Regarding the information on data sheet (and therefore the annex to Keymark Certificate) in case of using method b):

- Both the old test reports according to EN 12975-2:2006 and the new gap test report according to EN ISO 9806:2013 must be referenced in the data sheet
- The following paragraph will be written on the bottom box of the data sheet which is made for comments: *"This data sheet shows compliance with EN ISO 9806:2013. A gap test report has been issued after sample taking and testing according to EN ISO 9806:2013 has taken place for complimentary testing in compliance with document SKN\_0241.RO"*

### Regarding accreditation procedures of certification bodies and test laboratories

In order for new Keymark Certificates to be granted taking into account the new EN ISO 9806:2013:

- Testing laboratories must adapt the scope of their accreditation to EN ISO 9806:2013 or previous versions of the standard in case the testing laboratory holds flexible accreditation
- Certification Bodies must adapt the scope of their accreditation to take into account EN ISO 9806:2013. In some countries the accreditation bodies will grant their accreditation certificates according to EN 12975-1 and in others this will be done according to the Scheme Rules. Accreditation audits take place every year so this adaptation should be finished for all certification bodies by 2015 at the latest.

### Performance of systems with collectors being non-opaque from the backside

The performance of systems with collectors being non-opaque from the backside shall be tested outdoors under the conditions as specified in ISO9806:2013, clause 21.6.

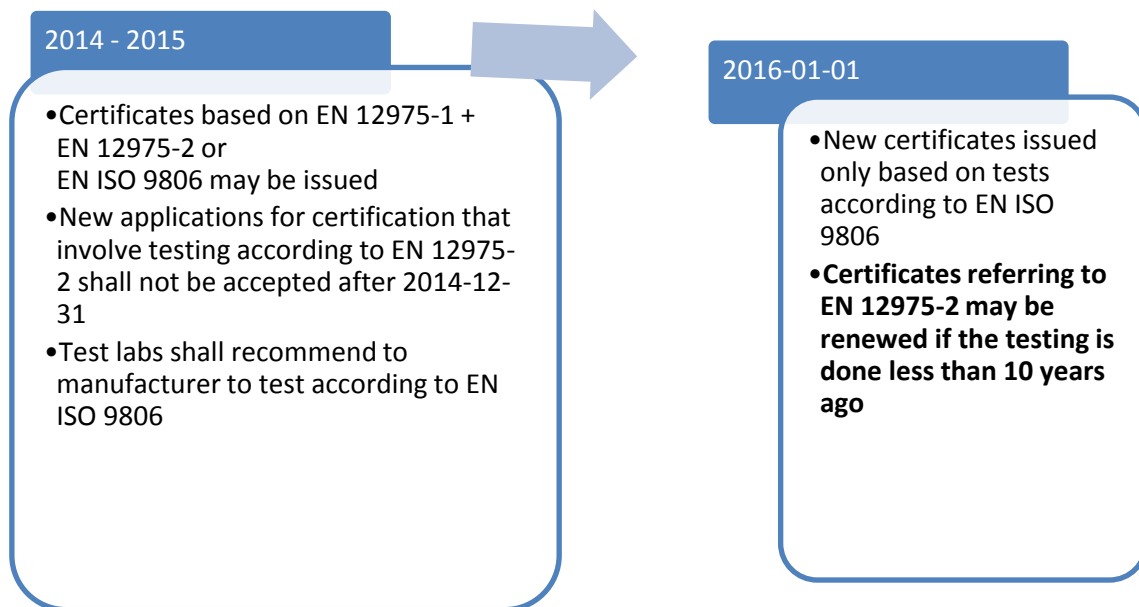
**Note:** In ISO9806:2013, clause 21.6 is – among others – the following stated: The solar reflectance of the background used during the performance test of collectors being non-opaque from the back shall not exceed 20 %. The solar reflectance of the background used shall be reported in the test report.

## **H.2 Transition from EN 12975-2:2006 to EN ISO 9806:2013 (Certification)**

Standards EN ISO 9806:2013 and EN 12975-2:2006 have been considered as equivalent by the SKN (see D.3.M15). The aim of this document is to harmonize the certification related answers from certification bodies (CB) to the customers concerning the transition from EN 12975 to EN ISO 9806 within Solar KEYMARK certification. Following these rules will ensure a transparent and fair procedure for the companies and all involved third parties.

The CB is obliged to communicate this transition period to his certificate holders:

**Figure 1: Most important due dates for the transition period**



### **Certification relevant items for the transition period from EN 12975-2 to EN ISO 9806**

#### **1. Extension of certificates**

*What is the appropriate time frame for the transition phase?*

- Normally, according to the scheme rules, the certificate is valid for 5 years.
- The time for transition period depends on the testing and certification fees for and on the testing capacities.

- The due date for transition all certificates to the new standard is **2025-12-31**
- After this due date all certificates which are not changed to the new standard will be withdrawn.
- The certificate will contain as a certification basis EN 12975-1:2006, ISO 9806:2013 and the scheme rules in its current valid version.

*What about the expiry date of certificates, which are issued before 2025-12-31?*

- The expiry date should not be longer than 2025-12-31.
- If tests are carried out according to former EN 12975-2, the certificate holder must be aware of that his certificate will be only valid until 2025-12-31.

## **2. Change or amendment procedure for collectors /systems**

*Will all applications for change or amendment lead to a gap report or complete test according to EN ISO 9806:2013?*

- The manufacturer can decide if he wants to do sample taking, partial testing and a gap test report according to ISO EN 9806:2013, following table 1 of this Annex.
- On the other hand he can decide to do already all required tests according to ISO 9806 to change the certificate to the new testing requirements (see SKN\_N0106\_AnnexH RO).

## **3. OEM/OBL certificates**

*What about customers who apply for an OBL certificate based on a valid OEM certificate tested according to EN 12975-2?*

The OBL certificate may be issued based on testing done according to EN 12975-2 at any time if its OEM certificate is also according to EN 12975-2, but the data sheet shall be based on the latest version of the SCenoCalc. All certificates based on EN 12975 will be withdrawn on 2025-12-31 at the latest

*What about the renewal of an OBL certificate which is based on EN 12975-2?*

If the OEM certificate is still based on EN 12975-2, then the OBL certificate will be renewed, but the data sheet shall be based on the latest version of ScenoCalc.

## **4. Other certification relevant aspects**

The scope of the scheme rules needs to contain all kind of collectors as mentioned in the ISO standard (products in the scope of EN 12975-1 and EN ISO 9806).

When using EN 12975-1 as basis for certification, the requirements for testing need to be changed from EN 12975-2 to EN ISO 9806. This is due to a transition period. The next revision of EN 12975-1 will solve this problem.