



# CERTIFIKAT

**Solar Keymark Licence**  
**No. SP 50 93 01**

## Holder/Issued to/Manufacturer

Company: SUNMARK A/S  
Address: Jyllandsgade 30  
DK-6400 Sønderborg  
Denmark

## Product name and description

Solar Collector for water heating. For more technical information see Appendix.

Brand name:	GJ140A	Number of covers:	5 panes
Collector type:	Flat plate	Cover material:	Glass
Casing material:	Aluminium	Weight, empty:	325 kg
Absorber construction type:	Strips	Heat transfer fluid:	Water /glycol

## Certificate

The product mentioned above is found to comply with requirements in EN 12975 and the Specific CEN Keymark Scheme Rules for Solar Thermal Products.

## Marking

Products conforming to this certificate shall be marked in accordance with the requirements in the Specific CEN Keymark Scheme Rules for Solar Thermal Products – v 8.00. The marking shall, together with the Keymark logo show the identification code of the empowered certification body (SP Technical Research Institute of Sweden, No. 012), also see CEN-CENELEC Internal Regulations Part 4 Certification, Annex A.

## Validity

This certificate is valid as long as the conditions in the EN standard and Keymark Rules are fulfilled and the standard or rules are not modified significantly. The validity of the certificate can be checked on:

[http://www.estif.org/solarkeymark/Links/Internal\\_links/database/collector-database-updated.htm](http://www.estif.org/solarkeymark/Links/Internal_links/database/collector-database-updated.htm).

## Miscellaneous

The manufacturer's factory production control procedures are under surveillance by the responsibility of SP. This is the first edition of this certificate no. SP 50 93 01.

Sweden, Borås 11<sup>th</sup> November 2008

## SP Technical Research Institute of Sweden Certification

  
Lennart Månsson  
Certification Manager

  
Geron Johansson  
Certification Officer

Certificate issued by SP Certification, No. SP 50 93 01, dated 2008-11-11

Page 1 (1)

## SP Technical Research Institute of Sweden

Postal address	Phone / Fax	Reg. number	E-mail / Internet
SP	+4610 516 50 00	556464-6874	info@sp.se
Box 857	+4633 13 55 02		www.sp.se
SE-501 15 Borås			
SWEDEN			

Empowered Certification Body No. 012: SP Certification, Sweden  
For more information of Solar Keymark visit: [www.estif.org/solarkeymark/regcool.php](http://www.estif.org/solarkeymark/regcool.php)  
This certificate may not be reproduced other than in full,  
except with the prior written approval by SP.

<b>Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate</b> Kurzfassung EN 12975 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat Synthèse des résultats d'essais selon EN 12975, annexe au certificat Solar KEYMARK						<b>Registration No.</b> Registernummer Numéro d'enregistrement <b>SP 50 93 01</b>				
						<b>Date / Datum / Date</b> 11-11-2008				
						<b>Country/Land/Pays</b> Denmark				
<b>Company / Firma / Société</b> SUNMARK A/S		<b>Street / Straße / Rue</b> Jyllandsgade 30		<b>Website</b> <a href="http://www.sunmark.com">www.sunmark.com</a>						
<b>Postal Code, Place / PLZ, Ort / Code postal, Place</b> DK-6400 Sonderborg		<b>E-mail</b> <a href="mailto:info@sunmark.com">info@sunmark.com</a>		<b>Tel. / Fax</b> +45 62532610 / 62532666						
<b>Collector Type / Kollektorbauart / type de capteur</b> Flat plate / Flachkollektor / Capteur plan										
<b>To be roof integrated / im Dach eingegliedert zu sein / pour être intégré dans le toit</b> No / nein / non										
<b>Product name</b> Produktbezeichnung Modèle GJ140A	<b>Aperture area</b> Aperturfläche Superficie d'entrée [m <sup>2</sup> ] 13.88	<b>Gross length</b> Länge(Außenmaß) Longueur hors tout [mm] 5 690	<b>Gross width</b> Breite (Außenmaß) largeur hors tout [mm] 2 520	<b>Gross height</b> Höhe (Außenmaß) épaisseur hors tout [mm] 222	<b>Gross area</b> Bruttofläche Superficie hors-tout [m <sup>2</sup> ] 15.02	<b>Power output per collector unit</b> Leistung je Kollektormodul Puissance fournie par le capteur {note 1} G = 1000 W/m <sup>2</sup> T <sub>m</sub> -T <sub>a</sub> :				
						0 K	10 K	30 K	50 K	70 K
						[W]	[W]	[W]	[W]	[W]
						11 142	10 645	9 527	8 242	6 790
<b>Collector efficiency parameters related to aperture area</b> Kollektorleistungsparameter bezogen auf die Aperturfläche Paramètres de performances thermiques rapportées à la superficie d'entrée						{note 1}	η <sub>0a</sub>	0.803	-	
							a <sub>1a</sub>	3.43	W/(m <sup>2</sup> K)	
							a <sub>2a</sub>	0.0145	W/(m <sup>2</sup> K <sup>2</sup> )	
<b>Stagnation temperature / Stagnationstemperatur / Temperature de stagnation</b> {note 2}						t <sub>stg</sub>	184	°C		
<b>Effective thermal capacity / Effektive Wärmekapazität / Capacité thermique effective</b>						C <sub>eff</sub> = C/A <sub>a</sub>	8.028	kJ/(m <sup>2</sup> K)		
<b>Max. operation pressure / max. Betriebsdruck / pression d'opération de maximum</b> {note 3}						p <sub>max</sub>	800	kPa		
<b>Incidence angle modifiers K<sub>θ</sub>(θ)</b> Einfallswinkelkorrekturfaktoren K <sub>θ</sub> (θ) Facteur d'angle d'incidence K <sub>θ</sub> (θ)		G <sub>DIF</sub> /G <sub>TOT</sub> min max		θ <sub>T</sub> / θ <sub>L</sub> 50° K <sub>θ</sub> (θ <sub>T</sub> ) 0.97	10° 0.999	20° 0.996	30° 0.992	40° 0.983	60° 0.945	70° 0.895
		0.09 0.50		K <sub>θ</sub> (θ <sub>L</sub> ) 0.97	0.999	0.996	0.992	0.983	0.945	0.895
G <sub>DIF</sub> /G <sub>TOT</sub> : min&max while measuring / min&max während messen / min&max pendant qu'essayant										
<b>Testing Laboratory / Prüflaboratorium / Laboratoire d'essais</b> Website						SP Technical Research Inst. of Sweden <a href="http://www.sp.se">www.sp.se</a>				
<b>Test report id. number / Prüfberichtsnummer / numéro d'identification de rapport des essais</b>						P6 04789				
<b>Date of test report / Datum des Prüfberichts / date de rapport des essais</b>						09-07-2007 rev 27-10-2008				
<b>Perf. test method / Leistungstestmethode / méthode d'essai de performance</b>						EN 12975-2 6.3 (outdoor/außen/extérieur)				
<b>Comments of testing laboratory / Kommentare des Prüflaboratoriums / commentaires du laboratoire d'essais :</b> English: The heat loss coefficient a <sub>1a</sub> is including wind 3.0 m/s. The collector efficiency η <sub>0</sub> is weighted from 85% F'(α) <sub>en</sub> * K <sub>θ</sub> (15°) and 15% F'(α) <sub>en</sub> * K <sub>θd</sub> (Symbols according to EN 12975-2:2006).  Deutsch  Français										
Note 1	<b>Test conditions</b> Prüfbedingungen conditions d'essais	<b>Fluid</b> Flüssigkeit Liquide	<b>Water</b> Wasser Eau	<b>Flow rate</b> Durchfluss Débit	0.020	kg/s per m <sup>2</sup>				
	Note 2	<b>Irradiance / Bestrahlungsstärke / Irradiance G<sub>s</sub>=1000 W/m<sup>2</sup></b> <b>Ambient temperature / Umgebungstemperatur / Temperature ambiante: t<sub>a</sub>=30 °C</b>								
Note 3	<b>Given by manufacturer / Herstellerangaben / donnée par le fabricant</b>									

Version 0.2.6, 04-02-2008