

Keymark Certificate

Solar thermal energy



078/000259

AENOR, Spanish Association for Standardization and Certification, certifies that the organization

BDR THERMEA GROUP B.V

| | |
|-----------------------|---|
| registered office | MARCHANTSTRAAT, 55 7300 AA APELDOORN (Holanda - Países Bajos) |
| supplies | Solar collectors |
| in compliance with | UNE-EN 12975-1:2006 (EN 12975-1:2006) |
| Trade Mark | DE DIETRICH CH250 SL |
| Technical information | Specified in Annexs to the Certificate |
| Production site | CL MANGANÉS, 2 08755 CASTELLBISBAL (Barcelona - España) |
| Certification scheme | In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 78.01. |
| First issued on | 2016-02-16 |
| Validity date | 2021-02-16 |


AENOR Asociación Española de Normalización y Certificación

Avelino BRITO
Chief Executive Officer

AENOR Asociación Española de Normalización y Certificación

Génova, 6. 28004 Madrid. España
Tel. 902 102 201 - www.aenor.es



| | | | | | | | | | | | |
|---|--|------------------------------|------------------------|------------|-------|--|-----------------------------|------------------------------------|-------|-------|------|
| Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate | | | | | | Licence Number | | 078/000259 | | | |
| | | | | | | Issued | | 2016-02-16 | | | |
| Company holding the | | BDR THERMEA GROUP B.V. | | | | Country | | NETHERLANDS | | | |
| Brand (optional) | | -- | | | | Website | | www.bdrthermea.com | | | |
| Street, street number | | MARCHANSTRAAT 55 | | | | E-mail | | oleguer.fuertes@baxi.es | | | |
| Postal Code / City, province | | 7300 AA | | APPELDOORN | | Tel/Fax | | 34 936 82 80 40 / 34 32 | | | |
| Collector Type (flat plate glazed/un-glazed; evacuate tubular) | | | | | | Flat plate collector - glazed | | | | | |
| Thermal / photo voltaic hybrid collector? (PVT collector) | | | | | | No | | | | | |
| Integration in the roof possible ? (manufacturers declaration) | | | | | | No | | | | | |
| | | | | | | Power output per collector module | | | | | |
| | | | | | | G = 1000 W/m ² | | | | | |
| Collector name | | | | | | T _m -T _a | | | | | |
| | | | | | | 0 K | 10 K | 30 K | 50 K | 70 K | |
| | | | | | | W | W | W | W | W | |
| DE DIETRICH CH250 SL | | 2,40 | 2.191 | 1.151 | 46 | 2,52 | 1.776 | 1.679 | 1.466 | 1.228 | 965 |
| Performance test method | | | | | | Glazed liquid heating collector - steady state - indoor | | | | | |
| Performance parameters related to aperture | | | | | | η ₀ | a ₁ | a ₂ | | | |
| Units | | | | | | - | W/(m ² K) | W/(m ² K ²) | | | |
| Test results - Flow rate and fluid see note 1 | | | | | | 0,740 | 3,915 | 0,013 | | | |
| Bi-directional incidence angle modifiers? | | No | | | | K _θ values are obligatory for 50°. | | | | | |
| Incidence angle modifiers K _θ (θ) | | Angle | 10° | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| | | K _θ (θ) | | | | | 0,95 | | | | 0,00 |
| Incidence angle modifier not bi-directional - leave fields blank | | | | | | | | | | | |
| Stagnation temperature - Weather conditions see note 2 | | | | | | T _{stg} | 212,3 °C | | | | |
| Effective thermal capacity | | | | | | c _{eff} = C/Ag | 3,619 kJ/(m ² K) | | | | |
| Max. intende operation temperature - see note 3 | | | | | | T _{max,op} | 180 °C | | | | |
| Max. operation pressure - see note 3 | | | | | | p _{max,op} | 1000 kPa | | | | |
| Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m ² aperture area | | | | | | | | | | | |
| Flow rate | kg/(s m ²) | 0,000 | 0,013 | 0,028 | 0,043 | 0,060 | 0,075 | | | | |
| Pressure drop, ΔP | Pa | 0 | 40 | 165 | 378 | 691 | 988 | | | | |
| Optional weather data | | Location | | | | Link | | | | | |
| Testing Laboratory | | Fundación CENER-CIEMAT, LEST | | | | | | | | | |
| Website | | www.cener.com | | | | | | | | | |
| Test report id. number | | 30.2755.0-2-1 | | | | Date of test report | | 28/12/2015 | | | |
| | | 30.2755.0-3-1 R | | | | | | 04/02/2016 | | | |
| During the test GDIF/GTOT was always between | | 0,1 | and | 0,11 | | | | | | | |
| Comments of testing laboratory: | | | | | | | | | | | |
| -- | | | | | | | | | | | |
| Note 1 | Flow rate | 0,020 | kg/(s m ²) | Fluid | Water | | | | | | |
| Note 2 | Irradiance, G = 1000 W/m ² ; Ambient temperature, T _a =30 °C | | | | | | | | | | |
| Note 3 | Given by manufacturer | | | | | | | | | | |
| | | | | | |  Datasheet version: 4.06, 2014-01-15 | | | | | |
| AENOR - Génova, 6. - 28004 - Madrid, España - Tel. 902 102 201 - www.aenor.es | | | | | | | | | | | |
| Product certification body accredited by ENAC, number 01/C-PR002.078 | | | | | | | | | | | |



| | | |
|---|----------------|------------|
| Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate | Licence Number | 078/000259 |
| | Issued | 16/02/2016 |

| Annual collector output kWh/module | | | | | | | | | | | | |
|------------------------------------|---|-------|-------|-------|-------|------|-----------|------|------|----------|-------|------|
| Collector name | Location and collector temperature (Tm) | | | | | | | | | | | |
| | Athens | | | Davos | | | Stockholm | | | Würzburg | | |
| | 25°C | 50°C | 75°C | 25°C | 50°C | 75°C | 25°C | 50°C | 75°C | 25°C | 50°C | 75°C |
| DE DIETRICH CH250 SL | 2.849 | 1.957 | 1.212 | 2.116 | 1.402 | 825 | 1.570 | 980 | 557 | 1.710 | 1.060 | 592 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Collector mounting: Fixed or tracking Fixed; slope = latitude - 15° (rounded to nearest 5°)

| Overview of locations | | | | |
|-----------------------|------------|-------------------------|-------|--|
| Location | Latitude ° | Gtot kWh/m ² | Ta °C | Collector orientation or tracking mode |
| Athens | 38 | 1.765 | 18,5 | South, 25° |
| Davos | 47 | 1.714 | 3,2 | South, 30° |
| Stockholm | 59 | 1.166 | 7,5 | South, 45° |
| Würzburg | 50 | 1.244 | 9,0 | South, 35° |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| | | |
|------|--|--------------------|
| Gtot | Annual total irradiation on collector plane | kWh/m ² |
| Ta | Mean annual ambient air temperature | °C |
| Tm | Constant collector operating temperature (mean of in- and outlet temperatures) | °C |

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (Tm). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.