

DIN EN 12977-1:2018-07 (E)

Thermal solar systems and components - Custom built systems - Part 1: General requirements for solar water heaters and combisystems

| Contents | | Page |
|---|--|-------------|
| European foreword | | 4 |
| Introduction | | 5 |
| Table 1 -- Division for factory made and custom built solar heating systems | | 6 |
| 1 | Scope | 7 |
| 2 | Normative references | 7 |
| 3 | Terms and definitions | 8 |
| 4 | Symbols and abbreviations | 10 |
| 5 | System classification | 10 |
| 5.1 | Small custom built systems | 10 |
| Table 2 -- Classes of small custom built systems according to their purpose | | 10 |
| 5.2 | Large custom built systems | 10 |
| Table 3 -- Classification of large systems | | 11 |
| 6 | Requirements | 11 |
| 6.1 | Introduction | 11 |
| 6.2 | General | 11 |
| 6.2.1 | Suitability for drinking water | 11 |
| 6.2.2 | Water contamination | 11 |
| 6.2.3 | Freeze resistance | 11 |
| 6.2.4 | High-temperature protection | 11 |
| 6.2.5 | Reverse circulation prevention | 12 |
| 6.2.6 | Pressure resistance | 12 |
| 6.2.7 | Electrical safety | 12 |
| 6.3 | Materials | 12 |
| 6.4 | Components and pipework | 12 |
| 6.4.1 | Collector and collector array | 12 |
| 6.4.2 | Supporting frame | 13 |
| 6.4.3 | Collector and other loops | 13 |
| 6.4.4 | Circulation pumps | 13 |
| 6.4.5 | Expansion vessels | 13 |
| 6.4.6 | Heat exchangers | 14 |
| 6.4.7 | Water store(s) | 14 |
| 6.4.8 | Pipework | 14 |
| 6.4.9 | Thermal insulation | 15 |
| 6.4.10 | Control equipment | 15 |
| 6.5 | Safety equipment and indicators | 15 |
| 6.5.1 | Safety valves | 15 |
| 6.5.2 | Safety lines and expansion lines | 15 |
| 6.5.3 | Blow-off lines | 16 |
| 6.5.4 | Store isolation valve | 16 |
| 6.5.5 | Indicators | 16 |
| 6.6 | Installation | 16 |

| | | |
|--|--|-----------|
| 6.6.1 | Roof tightness | 16 |
| 6.6.2 | Lightning | 16 |
| 6.6.3 | Snow and wind loads | 16 |
| 6.7 | Initial operation and commissioning | 16 |
| 6.8 | Documentation | 17 |
| 6.8.1 | General | 17 |
| 6.8.2 | Assortment file for small systems | 17 |
| 6.8.3 | Documentation for small systems | 17 |
| 6.8.4 | Documentation for large systems | 18 |
| 6.9 | System performance | 19 |
| 6.10 | Water wastage | 19 |
| Annex A (informative) Implementation for Ecodesign and Energy labelling | | 20 |
| A.1 | Standing loss | 20 |
| A.2 | Nominal store volume | 20 |
| A.3 | Volume of the non-solar heat storage | 20 |
| Annex ZA (informative) Relationship between this European Standard and the energy labelling requirements of Commission Delegated Regulation (EC) No 811/2013 aimed to be covered | | 21 |
| Table ZA.1 -- Correspondence between this European Standard and Commission Delegated Regulation (EC) No 811/2013 of 18th February 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of space heaters, combination heaters, packages of space heaters, temperature control and solar device and packages of combination heater, temperature control and solar device and Commission's standardization request 'M/535/C(2015) 2626' | | 21 |
| Annex ZB (informative) Relationship between this European Standard and the energy labelling requirements of Commission Delegated Regulation (EC) No 812/2013 aimed to be covered | | 22 |
| Table ZB.1 -- Correspondence between this European Standard and Commission Delegated Regulation (EC) No 812/2013 of 18th February 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of water heaters, hot water storage tanks and packages of water heater and solar device and Commission's standardization request 'M/534/C(2015) 2625' | | 22 |
| Annex ZC (informative) Relationship between this European Standard and the ecodesign requirements of Commission Regulation (EC) No 814/2013 aimed to be covered | | 23 |
| Table ZC.1 -- Correspondence between this European Standard and Commission Regulation (EU/EC) No 814/2013 of 2nd August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for water heaters and hot water storage tanks and Commission's standardization request 'M/534/C(2015) 2625' | | 23 |
| Bibliography | | 24 |