

# DIN EN 15502-2-2:2014-10 (E)

## Gas-fired central heating boilers - Part 2-2: Specific standard for type B1 appliances

---

| Contents                                                                                                                      | Page |
|-------------------------------------------------------------------------------------------------------------------------------|------|
| Foreword .....                                                                                                                | 5    |
| Introduction .....                                                                                                            | 6    |
| 1 Scope .....                                                                                                                 | 8    |
| 2 Normative references .....                                                                                                  | 9    |
| 3 Terms, definitions and symbols .....                                                                                        | 9    |
| 3.1 Terms and definitions .....                                                                                               | 9    |
| 3.2 Symbols .....                                                                                                             | 10   |
| 4 Classification .....                                                                                                        | 10   |
| 5 Construction .....                                                                                                          | 10   |
| 5.1 General .....                                                                                                             | 10   |
| 5.2 Conversion to different gases .....                                                                                       | 10   |
| 5.3 Materials .....                                                                                                           | 10   |
| 5.3.1 General .....                                                                                                           | 10   |
| 5.3.2 Materials and thicknesses of walls or tubes with water side operating pressure for<br>boilers of pressure class-3 ..... | 10   |
| 5.3.3 Domestic water connections .....                                                                                        | 10   |
| 5.3.4 Thermal insulation .....                                                                                                | 11   |
| 5.4 Method of construction .....                                                                                              | 11   |
| 5.4.1 Design .....                                                                                                            | 11   |
| 5.4.2 Checking the state of operation .....                                                                                   | 11   |
| 5.4.3 Use and servicing .....                                                                                                 | 11   |
| 5.4.4 Connections to the gas and water pipes .....                                                                            | 11   |
| 5.4.5 Soundness .....                                                                                                         | 11   |
| 5.4.6 Supply of combustion air and evacuation of the combustion products .....                                                | 11   |
| 5.4.7 Dampers .....                                                                                                           | 11   |
| 5.4.8 Air proving for type B12 and B13 boilers .....                                                                          | 11   |
| 5.4.9 Gas/air ratio controls for type B12 and B13 boilers .....                                                               | 11   |
| 5.4.10 Fan for type B12 and B13 boilers .....                                                                                 | 12   |
| 5.4.11 Drainage .....                                                                                                         | 12   |
| 5.4.12 Operational safety in the event of failure of the auxiliary energy .....                                               | 12   |
| 5.4.13 Special provision for Low Temperature Boilers and Condensing Boilers .....                                             | 12   |
| 5.5 Burners .....                                                                                                             | 12   |
| 5.6 Pressure test points .....                                                                                                | 12   |
| 5.7 Requirements for the application of control and safety devices .....                                                      | 12   |
| 5.7.101 Combustion products discharge safety device .....                                                                     | 12   |
| 6 Electrical safety .....                                                                                                     | 12   |
| 7 Controls .....                                                                                                              | 13   |
| 7.101 Combustion Products Safety Discharge Device .....                                                                       | 13   |
| 7.101.1 Construction requirements .....                                                                                       | 13   |
| 7.101.2 Performance .....                                                                                                     | 13   |
| 8 Operational requirements .....                                                                                              | 14   |
| 8.1 General .....                                                                                                             | 14   |
| 8.1.1 Characteristics of the reference and limit gases .....                                                                  | 14   |

|          |                                                                                               |    |
|----------|-----------------------------------------------------------------------------------------------|----|
| 8.1.2    | General test conditions .....                                                                 | 14 |
| 8.2      | Soundness .....                                                                               | 15 |
| 8.2.1    | Soundness of the gas circuit .....                                                            | 15 |
| 8.2.2    | Soundness of the combustion circuit .....                                                     | 15 |
| 8.2.3    | Soundness of the water circuit .....                                                          | 16 |
| 8.2.4    | Soundness of the domestic water circuit .....                                                 | 16 |
| 8.3      | Hydraulic resistance .....                                                                    | 16 |
| 8.4      | Heat inputs and heat output .....                                                             | 16 |
| 8.5      | Limiting temperatures .....                                                                   | 16 |
| 8.5.1    | General .....                                                                                 | 16 |
| 8.5.2    | Limiting temperatures of the adjusting, control and safety devices .....                      | 16 |
| 8.5.3    | Limiting temperatures of the side walls, the front and the top .....                          | 16 |
| 8.5.4    | Limiting temperatures of the test panels and the floor .....                                  | 16 |
| 8.6      | Ignition, cross lighting, flame stability .....                                               | 17 |
| 8.6.1    | General .....                                                                                 | 17 |
| 8.6.2    | Limit conditions .....                                                                        | 17 |
| 8.6.3    | Special conditions .....                                                                      | 17 |
| 8.6.4    | Reduction of the gas rate of the ignition burner .....                                        | 17 |
| 8.6.101  | Resistance to draught for type B boilers .....                                                | 17 |
| 8.7      | Reduction of the gas pressure .....                                                           | 18 |
| 8.8      | Defective closure of the gas valve immediately upstream of the main burner .....              | 18 |
| 8.9      | Pre-purge .....                                                                               | 18 |
| 8.9.101  | General .....                                                                                 | 18 |
| 8.9.102  | Verification of the protected nature of a combustion chamber .....                            | 19 |
| 8.10     | Functioning of a permanent ignition burner when the fan stops during the standby time ..      | 20 |
| 8.11     | Adjustment, control and safety devices .....                                                  | 20 |
| 8.11.101 | Air proving device for type B12 and B13 boilers .....                                         | 20 |
| 8.11.102 | Combustion products discharge safety device .....                                             | 21 |
| 8.12     | Carbon monoxide .....                                                                         | 22 |
| 8.12.101 | Supplementary test for natural draught boilers .....                                          | 23 |
| 8.13     | NOx .....                                                                                     | 23 |
| 8.14     | Special provisions for boilers intended to be installed in a partially protected place .....  | 23 |
| 8.14.101 | Resistance to draught for boilers intended to be installed in a partially protected place ... | 23 |
| 8.15     | Formation of condensate .....                                                                 | 24 |
| 8.16     | Temperature of combustion products .....                                                      | 24 |
| 8.101    | Occurrence of the formation of condensate in the flue system .....                            | 24 |
| 8.101.1  | Potential condensation in the flue .....                                                      | 24 |
| 8.101.2  | Non-condensation in the flue .....                                                            | 25 |
| 9        | Useful efficiencies .....                                                                     | 25 |
| 9.1      | General .....                                                                                 | 25 |
| 9.2      | Useful efficiency at the nominal heat input .....                                             | 26 |
| 9.2.1    | Requirements .....                                                                            | 26 |
| 9.2.2    | Tests .....                                                                                   | 26 |
| 9.3      | Useful efficiency at part load .....                                                          | 26 |
| 9.4      | Losses of combination boilers .....                                                           | 26 |
| 10       | Electric auxiliary energy .....                                                               | 26 |
| 11       | Risk assessment .....                                                                         | 26 |
| 12       | Marking and instructions .....                                                                | 26 |
| 12.1     | Boiler marking .....                                                                          | 26 |
| 12.1.1   | Data plate .....                                                                              | 26 |
| 12.1.2   | Supplementary markings .....                                                                  | 26 |
| 12.1.3   | Packaging .....                                                                               | 26 |
| 12.1.4   | Warnings on the boiler and the packaging .....                                                | 26 |
| 12.1.5   | Other information .....                                                                       | 27 |
| 12.2     | Instructions .....                                                                            | 27 |
| 12.2.1   | Technical instructions .....                                                                  | 27 |
| 12.2.2   | User's instructions .....                                                                     | 28 |
| 12.2.3   | Conversion instruction .....                                                                  | 28 |

|      |                                                                                                                                                                                                                                                  |    |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 12.3 | <b>Presentation .....</b>                                                                                                                                                                                                                        | 28 |
| 12.4 | <b>Supplementary marking and instructions in the case of boilers to be installed in partially protected places .....</b>                                                                                                                         | 28 |
| 101  | <b>Figures .....</b>                                                                                                                                                                                                                             | 29 |
| 102  | <b>Listing of tables and numbers .....</b>                                                                                                                                                                                                       | 35 |
| 103  | <b>Annexes .....</b>                                                                                                                                                                                                                             | 35 |
|      | <b>Annex I (informative) Compilation of the test conditions for the various gas families .....</b>                                                                                                                                               | 37 |
|      | <b>Annex V (informative) Standards replaced by this standard in combination with EN 15502-1 .....</b>                                                                                                                                            | 40 |
|      | <b>Annex ZA (informative) Clauses of this European Standard addressing essential requirements or provisions of EU Directive 2009/142/EC, "Directive relating to appliances burning gaseous fuels (codified version)" (GAD) .....</b>             | 42 |
|      | <b>Annex ZB (informative) Clauses of this European standard addressing the methods for the verification of the efficiency of the EU Directive 92/42/EEC, relating to the efficiency of new hot boilers with an output of 4 kW - 400 kW .....</b> | 45 |
|      | <b>Bibliography .....</b>                                                                                                                                                                                                                        | 46 |