DIN EN 15544:2023-04 (E)

One off Kachelgrundöfen / Putzgrundöfen (tiled / mortared stoves) - Dimensioning

Contents

Page

European foreword 3

Introduction 4

1 Scope 5

2 Normative references 6

3 Terms and definitions 6

4 Calculations 8
4.1 Nominal heat output 8
4.2 Load of fuel 9
4.2.1 Maximum load 9
4.2.2 Minimum load 9
4.3 Design of the essential dimensions 9
4.3.1 Combustion chamber dimensions 9
4.3.2 Calculated flue pipe length 11
4.3.3 Minimum flue pipe length 11
4.3.4 Gas slot profile 13
4.4 Calculation of the burning rate 14
4.5 Fixing of the air ratio 14
4.6 Combustion air flue gas 14
4.6.1 General 14
4.6.2 Combustion air flow rate 14
4.6.3 Flue gas flow rate 15
4.6.4 Flue gas mass flow rate 16
4.7 Calculations of the density 16
4.7.1 Combustion air density 16
4.7.2 Flue gas density 16
4.8 Calculation of the outside air temperature combustion air temperature and flue gas temperature 17
4.8.1 Mean outside air temperature and combustion air temperature 17
4.8.2 Mean combustion chamber temperature 17
4.8.3 Flue gas temperature in the flue pipe 17
4.8.4 Flue gas temperature in the connecting pipe 18
4.8.5 Flue gas temperature at chimney entrance mean flue gas temperature of the chimney and temperature of the chimney wall at the top of the chimney 18
4.9 Calculation of flow mechanics 18
4.9.1 General 18
4.9.2 Calculation of the standing pressure 18
4.9.3 Calculation of the flow velocity 19
4.9.4 Calculation of the static friction 19
4.9.5 Calculation of the resistance due to direction change 21
4.10 Operation control 22
4.10.1 Pressure condition 22
4.10.2 Dew point condition 22
4.10.3 Energy efficiency 23
4.10.4 Flue gas triple of variates 23

Bibliography 24