

DIN EN ISO 8840:2024-09 (E)

Refractory materials - Determination of bulk density of granular materials (grain density) (ISO 8840:2021)

Contents	Page
European foreword	3
Foreword	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Principle	6
5 Sampling	6
6 Preparation, number and test size of samples	6
6.1 Preparation of samples	6
6.2 Number of samples	6
6.3 Mass of test samples	6
7 Determination of mass of test sample	6
8 Determination of volume of test sample — Method 1: Mercury method with vacuum	7
8.1 Principle	7
8.2 Apparatus	8
8.3 Determination of mass of empty vacuum pycnometer	9
8.4 Determination of mass of pycnometer filled with mercury	10
8.5 Determination of mass of pycnometer containing test sample and filled with mercury	10
8.6 Calculation of volume of test sample	10
9 Determination of volume of test sample — Method 2: Arrested water absorption method	11
9.1 Apparatus	11
9.2 Determination of volume of test sample	11
9.3 Calculation of results	12
10 Determination of bulk density of test sample — Method 3: Vacuum method with spin dryer option	12
10.1 Principle	12
10.2 Apparatus and materials	12
10.3 Procedure	13
10.3.1 Determination of the mass of dry test piece (m_1)	13
10.3.2 Soaking of the test sample	14
10.3.3 Determination of the apparent mass of the immersed test sample (m_5) and the mass of the soaked test sample (m_3)	14
10.4 Calculation of results	16
10.4.1 Calculation of the volume of the test sample (V_R)	16
10.4.2 Calculation of the bulk density of the test sample (ρ_R)	16
10.5 Precision and bias	16
10.5.1 Interlaboratory data	16
10.5.2 Precision	16
10.5.3 Bias	17
11 Test report	17
Bibliography	18