

---

F Unj fgh|Hj [ cgh\ 'cV]\_cj Ub] 'c[ b^Yj nXfÿb] ]nXY\_cj '!'" "XY.'6 Uh] b]dfc]nj cX]n  
cX'+i 'Xc" \$'i 'dfYcghUj[ Uc[ `^\_U

Classification of dense shaped refractory products - Part 3: Basic products containing from 7% to 30% residual carbon

Klassifizierung dichter geformter feuerfester Erzeugnisse - Teil 3: Basische Erzeugnisse mit einem Massenanteil an Restkohlenstoff von 7% bis 30%

Classification des produits réfractaires façonnés denses - Partie 3: Produits basiques contenant de 7% a 30% de carbone résiduel

(standards.iteh.ai)  
SIST EN 12475-3:1998  
<https://standards.iteh.ai/catalog/standards/sist/bc2e44d3-5008-40ae-905b-72a7e3596e70/sist-en-12475-3-1998>

**Ta slovenski standard je istoveten z: EN 12475-3:1998**

---

**ICS:**

81.080            Ognjevzdržni materiali            Refractories

**SIST EN 12475-3:1998**                            **en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 12475-3:1998

<https://standards.iteh.ai/catalog/standards/sist/bc2e44d3-5008-40ae-905b-72a7e3596e70/sist-en-12475-3-1998>

EUROPEAN STANDARD

EN 12475-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 1998

ICS

Descriptors: refractory materials, shaped refractories, dense shaped refractory products, nomenclature, classifications, designation, raw materials, magnesia refractories, dolomite: minerals, carbon

English version

## Classification of dense shaped refractory products - Part 3: Basic products containing from 7% to 30% residual carbon

Classification des produits réfractaires façonnés denses -  
Partie 3: Produits basiques contenant de 7% à 30% de  
carbone résiduel

Klassifizierung dichter geformter feuerfester Erzeugnisse -  
Teil 3: Basische Erzeugnisse mit einem Massenanteil an  
Restkohlenstoff von 7% bis 30%

This European Standard was approved by CEN on 18 January 1998.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

<https://standards.iteh.ai/catalog/standards/sist/bc2e44d3-5008-40ae-905b-72a7e3596e70/sist-en-12475-3-1998>



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

**Contents**

		Page
	<b>Foreword</b>	
1	Scope	3
2	Normative references	4
3	Classification	4
4	Designation	8

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 12475-3:1998

<https://standards.iteh.ai/catalog/standards/sist/bc2e44d3-5008-40ac-905b-72a7e3596e70/sist-en-12475-3-1998>



## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 187 "Refractory products and materials", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by month of August 1998, and conflicting national standards shall be withdrawn at the latest by month of August 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

EN 12475 Classification of dense shaped refractories consists of four Parts:

Part 1 : Alumina-silica products

Part 2 : Basic products containing less than 7 % carbon

Part 3 : Basic products containing from 7 % to 30 % residual carbon

Part 4 : Special products

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 12475-3:1998

<https://standards.iteh.ai/catalog/standards/sist/bc2e44d3-5008-40ae-905b-72a7e3596e70/sist-en-12475-3-1998>

## 1 Scope

This part of EN 12475 specifies the classification and designation of dense shaped basic refractory products containing equal to or more than 7 % and less than 30 % residual carbon after coking. It is applicable to products with or without antioxidant additives, with or without metal plates and reinforcement.

NOTE 1 : EN 12475-2 covers the classification of dense shaped basic products containing less than 7 % carbon.

NOTE 2 : All bricks can be encased in metal plate and be reinforced by means of an internal metal plate.

## 2 Normative references

This European standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

EN ISO 10058 :	Magnesites and dolomites - Chemical analysis
prEN 955-3 :	Chemical analysis of refractory products - Part 3: Chrome bearing materials
prEN 955-5 :	Chemical analysis of refractory products - Part 5: XRF analysis by the fused cast bead method
EN 993-3 :	Methods of test for dense shaped refractory products - Part 3: Tests for products containing carbon

## 3 Classification

### 3.1 Basis of classification

Dense shaped basic products containing more than or equal to 7 % and less than 30 % residual carbon after coking shall be classified according to the following five criteria:

- a) the type of product;
- b) the group determined by its magnesia content, its carbon content and the presence of antioxidant additives;
- c) the state of the raw materials;
- d) the nature of the bond;
- e) any post treatment.

### 3.2 Type of product

The types of dense shaped basic refractory products included in this classification are:

- a) magnesia carbon (MC);
- b) magnesia doloma carbon (MDC);
- c) doloma carbon (DC).

These product types shall be classified in accordance with table 1 by their chemical analysis carried out on the calcined samples in accordance with EN ISO 10058, prEN 955-3 or prEN 955-5. Residual carbon content shall be determined in accordance with EN 993-3.

### 3.3 Classification groups

The product types shall be classified into groups according to their magnesia and carbon contents and according to the presence or not of antioxidant additives.

The product types without antioxidant additives shall be classified into groups according to table 1. Two criteria shall be used for defining the group classification:

1) the magnesia content of the product type with each group generally covering a range of magnesia content of 5% to 10%;

2) the residual carbon content after carbonization with each group covering ranges of residual carbon content of 5% when the total carbon content is above 10%.

<https://standards.iteh.ai/catalog/standards/sist/bc2e44d3-5008-40ae-905b-73a7e3596e70/sist-en-12475-3-1998>

For magnesia doloma carbon and doloma carbon products, limits on lime content is imposed on the various groups.

The product types with antioxidant additives shall be classified according to the same criteria with the addition of a suffix A indicating the presence of antioxidant additives.

**Table 1 : Classification of magnesia carbon, magnesia doloma carbon and doloma carbon products**

Product type	Group	Contents (m%) (calcined sample)		Residual carbon content (m%)
		MgO	CaO	
Magnesia carbon	MC 98/7	MgO ≥ 98		7 ≤ C < 10
	MC 98/10	MgO ≥ 98		10 ≤ C < 15
	MC 98/15	MgO ≥ 98		15 ≤ C < 20
	MC 98/20	MgO ≥ 98		20 ≤ C < 25
	MC 98/25	MgO ≥ 98		25 ≤ C < 30
Magnesia carbon	MC 95/7	95 ≤ MgO < 98		7 ≤ C < 10
	MC 95/10	95 ≤ MgO < 98		10 ≤ C < 15
	MC 95/15	95 ≤ MgO < 98		15 ≤ C < 20
	MC 95/20	95 ≤ MgO < 98		20 ≤ C < 25
	MC 95/25	95 ≤ MgO < 98		25 ≤ C < 30
Magnesia carbon	MC 90/7	90 ≤ MgO < 95		7 ≤ C < 10
	MC 90/10	90 ≤ MgO < 95		10 ≤ C < 15
	MC 90/15	90 ≤ MgO < 95		15 ≤ C < 20
	MC 90/20	90 ≤ MgO < 95		20 ≤ C < 25
	MC 90/25	90 ≤ MgO < 95		25 ≤ C < 30
Magnesia carbon	MC 85/7	85 ≤ MgO < 90		7 ≤ C < 10
	MC 85/10	85 ≤ MgO < 90		10 ≤ C < 15
	MC 85/15	85 ≤ MgO < 90		15 ≤ C < 20
	MC 85/20	85 ≤ MgO < 90		20 ≤ C < 25
	MC 85/25	85 ≤ MgO < 90		25 ≤ C < 30
Magnesia carbon	MC 80/7	80 ≤ MgO < 85		7 ≤ C < 10
	MC 80/10	80 ≤ MgO < 85		10 ≤ C < 15
	MC 80/15	80 ≤ MgO < 85		15 ≤ C < 20
	MC 80/20	80 ≤ MgO < 85		20 ≤ C < 25
	MC 80/25	80 ≤ MgO < 85		25 ≤ C < 30
Magnesia doloma carbon	MDC 80/7	80 ≤ MgO < 90	CaO ≥ 10	7 ≤ C < 10
	MDC 80/10	80 ≤ MgO < 90	CaO ≥ 10	10 ≤ C < 15
	MDC 80/15	80 ≤ MgO < 90	CaO ≥ 10	15 ≤ C < 20
	MDC 80/20	80 ≤ MgO < 90	CaO ≥ 10	20 ≤ C < 25
	MDC 80/25	80 ≤ MgO < 90	CaO ≥ 10	25 ≤ C < 30
Magnesia doloma carbon	MDC 70/7	70 ≤ MgO < 80	CaO ≥ 20	7 ≤ C < 10
	MDC 70/10	70 ≤ MgO < 80	CaO ≥ 20	10 ≤ C < 15
	MDC 70/15	70 ≤ MgO < 80	CaO ≥ 20	15 ≤ C < 20
	MDC 70/20	70 ≤ MgO < 80	CaO ≥ 20	20 ≤ C < 25
	MDC 70/25	70 ≤ MgO < 80	CaO ≥ 20	25 ≤ C < 30

(continued)



Table 1 (concluded)

Magnesia doloma carbon	MDC 60/7	$60 \leq \text{MgO} < 70$	$\text{CaO} \geq 30$	$7 \leq C < 10$
	MDC 60/10	$60 \leq \text{MgO} < 70$	$\text{CaO} \geq 30$	$10 \leq C < 15$
	MDC 60/15	$60 \leq \text{MgO} < 70$	$\text{CaO} \geq 30$	$15 \leq C < 20$
	MDC 60/20	$60 \leq \text{MgO} < 70$	$\text{CaO} \geq 30$	$20 \leq C < 25$
	MDC 60/25	$60 \leq \text{MgO} < 70$	$\text{CaO} \geq 30$	$25 \leq C < 30$
Magnesia doloma carbon	MDC 50/7	$50 \leq \text{MgO} < 60$	$\text{CaO} \geq 40$	$7 \leq C < 10$
	MDC 50/10	$50 \leq \text{MgO} < 60$	$\text{CaO} \geq 40$	$10 \leq C < 15$
	MDC 50/15	$50 \leq \text{MgO} < 60$	$\text{CaO} \geq 40$	$15 \leq C < 20$
	MDC 50/20	$50 \leq \text{MgO} < 60$	$\text{CaO} \geq 40$	$20 \leq C < 25$
	MDC 50/25	$50 \leq \text{MgO} < 60$	$\text{CaO} \geq 40$	$25 \leq C < 30$
Magnesia doloma carbon	MDC 40/7	$40 \leq \text{MgO} < 50$	$\text{CaO} \geq 50$	$7 \leq C < 10$
	MDC 40/10	$40 \leq \text{MgO} < 50$	$\text{CaO} \geq 50$	$10 \leq C < 15$
	MDC 40/15	$40 \leq \text{MgO} < 50$	$\text{CaO} \geq 50$	$15 \leq C < 20$
	MDC 40/20	$40 \leq \text{MgO} < 50$	$\text{CaO} \geq 50$	$20 \leq C < 25$
	MDC 40/25	$40 \leq \text{MgO} < 50$	$\text{CaO} \geq 50$	$25 \leq C < 30$
Doloma carbon	DC 40/7	$\text{MgO} < 40$	$\text{CaO} \geq 50$	$7 \leq C < 10$
	DC 40/10	$\text{MgO} < 40$	$\text{CaO} \geq 50$	$10 \leq C < 15$
	DC 40/15	$\text{MgO} < 40$	$\text{CaO} \geq 50$	$15 \leq C < 20$
	DC 40/20	$\text{MgO} < 40$	$\text{CaO} \geq 50$	$20 \leq C < 25$
	DC 40/25	$\text{MgO} < 40$	$\text{CaO} \geq 50$	$25 \leq C < 30$

### 3.4 State of raw materials

SIST EN 12475-3:1998

[https://standards.iteh.ai/catalog/standards/sist/bc2e44d3-5008-40ae-905b-](https://standards.iteh.ai/catalog/standards/sist/bc2e44d3-5008-40ae-905b-72a7e3596e70/sist-en-12475-3-1998)
[72a7e3596e70/sist-en-12475-3-1998](https://standards.iteh.ai/catalog/standards/sist/bc2e44d3-5008-40ae-905b-72a7e3596e70/sist-en-12475-3-1998)

The raw materials shall be classified by using one of the four designations as follows:

- a) naturally occurring (raw or sintered);
- b) synthetic sintered;
- c) co-clinker;
- d) fused.

### 3.5 Nature of the bond

The bonding system shall be classified by using one of the two designations as follows:

- a) organic chemical bond: formed at ambient temperature or higher temperatures;
- b) inorganic chemical bond: formed by chemical reaction.

### 3.6 Post treatment

The post treatment shall be classified by using one, or both, of the two designations as follows:

- a) tempering (at a temperature up to 800°C);
- b) impregnation.