

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Ceramic Technology

Semester: 4

Subject Name: REFRACTORY – II

Sr. No.	Course Content
1.	INTRODUCTION 1.1 Scope of refractory industry in relation to others industry.
2.	RAW MATERIALS 2.1 Detail study of acidic, basic and natural refractory raw materials. 2.2 Detail study of raw materials used for making insulation bricks. 2.3 Details of various type of clay used as refractory clays.
3.	MANUFACTURING PROCESS 3.1 Various method of manufacture of refractory products. 3.2 Manufacturing process of fire bricks. 3.3 Manufacturing process of Silica Bricks. 3.4 Manufacturing process of Magnesite bricks. 3.5 Manufacturing process of Dolomite bricks. 3.6 Manufacturing process of Crome - Magnesite bricks. 3.7 Manufacturing process of Mullite refractories. 3.8 Manufacturing of Sillimanite and zirconis bricks. 3.9 Manufacturing of Insulating bricks. 3.10 Properties and uses of Refractory bricks.
4.	DRYING AND FIRING 4.1 The Mechanism of drying. 4.2 Shrinkage determination of refractory bricks. 4.3 Method of determining of drying strength. 4.4 Factor influencing drying efficiency. 4.5 Various stages of firing of refractories. 4.6 Loading method of refractories in the various types of kilns. 4.7 Effect of heat on raw clays. 4.8 Firing properties of non-clay refractory materials.
5.	PROPERTIES 5.1 Method of determining fusion point, load bearing capacity, expansion and shrinkage of refractories, bulk density, thermal conductivity, electrical conductivity, abrasion resistance and spalling resistance. 5.2 Details of factors governing refractory failures. 5.3 Details of reaction between refractory and slags.
6.	USES 6.1 Use of refractories in ferrous industries. 6.2 Use of refractories in non-ferrous industries.

	6.3 Use of refractories in boilers. 6.4 Use of refractories in Power plants and other industries.
7.	POLLUTION CONTROL AND SAFETY 7.1 Various reasons of pollution in Refractory industries. 7.2 Precautions required during Refractory manufacturing process.

LABORATORY EXPERIMENTS:

1.	Preparation of I.S. 7 bricks.
2.	Preparation of I.S. 6 bricks.
3.	Preparation of I.S. 8 bricks.
4.	Preparation of Insulating bricks.
5.	Preparation of acid resistance bricks.
6.	Firing and study of firebricks.
7	Preparation of high alumina bricks.
8	To determine the porosity of a given refractory bricks.
9	To determine the cold crushing strength of a given refractory bricks.
10	To determine the pyrometric cone equivalent of the given sample.
11	To Visit of refractory industry.

Reference Books:

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| 1. | Refractory | M.L.Mishra |
| 2. | Refractory | Rashid chest |
| 3. | A hand books of modern
Pottery manufacturer | H. N. Bose |
| 3. | Refractory | F.H.Norton |
| 4. | Refracty Materials | A.B.Searle |