DEP SPECIFICATION

CLASSIFICATION OF REFRACTORY BRICKS AND SHAPES

DEP 44.24.90.32-Gen.

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DESIGN AND ENGINEERING PRACTICE

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1 INTRODUCTION

1.1 SCOPE

This new DEP specifies requirements and gives recommendations for testing, documentation, and classification of refractory bricks and pre-cast refractory shapes used in high temperature and acid-resistant process applications.

This DEP covers refractory bricks and shapes for equipment applications and other applications where bricks and fired shapes are required. This DEP also covers acid-resistant refractory bricks as well as bricks and shapes made of special composites.

This DEP covers various shaped materials with the general chemical classification of alumina–silica.

Requirements and recommendations for testing, documentation, and classification of unshaped refractory are found in DEP 64.24.32.30-Gen., which should be read in conjunction with this DEP, if shaped and unshaped refractory are required.

The contents of this DEP were in a former appendix of DEP 44.24.90.31-Gen.

1.2 ASSOCIATED DEPS

This DEP may be used in conjunction with one or more of the following DEPs for refractory bricks and shapes.

DEP 44.24.90.31-Gen.	Refractory bricks and shapes
DEP 44.24.90.33-Gen.	Specification for sampling and testing of refractory bricks and shapes
DEP 44.24.90.34-Gen.	Classification specification and testing of ancillary materials for refractory brick construction
DEP 44.24.90.35-Gen.	Specification and quality control for precast or specialty cast refractory baffle wall tile (shapes)
DEP 64.24.32.31-Gen.	Construction details for refractory brick construction

1.3 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

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This DEP is intended for use in facilities related to oil and gas production, gas handling, oil refining, chemical processing, gasification, distribution and supply/marketing. This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process shall be implemented. This is of particular importance when existing facilities are to be modified.

If national and/or local regulations exist in which some of the requirements could be more stringent than in this DEP, the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable with regards to the safety, environmental, economic and legal aspects. In all cases, the Contractor, shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned, the objective being to obtain agreement to follow this DEP as closely as possible.

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1.4 DEFINITIONS

1.4.1 General definitions

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Refractory Contractor** is the party that carries out all or part of the construction design, engineering, material procurement and installation of refractory materials. The Refractory Contractor has overall responsibly for the quality control of the products and services including those of any sub-contractors or Suppliers related to the installation.

The **Manufacturer/Supplier** is the party that manufactures or supplies materials, equipment and services to perform the duties specified by the Refractory Contractor. The Manufacturer may undertake all or part of the duties of the Refractory Contractor.

NOTE: For the purposes of this DEP, the Manufacturer/Supplier is the party that manufactures the refractory products and/or ancillaries for supply to the Refractory Contractor, Principal or another Supplier and has primary responsibility for material design properties, manufacturing quality control at the manufacturing site and specific procedures such as but not limited to those for product mixing, installation and start-up.

The **Principal** is the party that initiates the project and ultimately pays for it. The Principal may also include an agent or consultant, authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

1.4.2 Specific definitions

Term	Definition
Andalusite	A member of the sillimanite group of materials (Alumina Silicate) that decomposes on heating beginning at 1350°C (2460°F) to form mullite and free silica.
Brick	A non-metallic shape that is comprised of specially formulated and sized raw materials formed into a green shape typically by pressing then fired or “burned” to achieve strength and other high temperature properties. Some bricks such as insulating bricks may also require after treatments such as “machining”. Raw material formulations for brick manufacture are typically exclusive to the manufacture of bricks.
Corundum	A natural or synthetic mineral consisting solely of alumina. The common source of corundum as a raw material aggregate is made by refining bauxite ore high in alumina content. The process produces a product (alumina trihydrate) that is calcined then sintered or fused like mullite and sized to produce the corundum-based aggregate.
Fireclay	An earthy or stony material aggregate of sufficient purity and refractoriness which has the essential constituent hydrous silicates of aluminum, with or without free silica. Fireclay is plastic when sufficiently pulverized and wetted and rigid when subsequently dried.
Flint Clay	A hard or flint-like fireclay with low natural plasticity. Flint clays are typically calcined to remove harmful oxides and make them volume stable as refractory aggregate base materials. There are a wide variety of calcined flint clays available to refractory Manufacturers. Calcined flint clays, beneficiated and mined outside the USA, are also referred to as fireclay Chamotte.

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