



NATIONAL PETROCHEMICAL COMPANY
STANDARDS

MATERIAL STANDARD
FOR
REFRACTORY LININGS

NPCS-MS-HM-10

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1. SCOPE

- 1.1 This standard covers the minimum requirements for refractory materials used in fired heaters, stacks, incinerators, boilers, reactor furnaces such as Nitrogen and Sulfur furnaces, process equipment, etc .
- 1.2 The type of refractory, thickness and other relevant details shall be show on equipment data sheet and/or project specification.
- 1.3 Exception or variation shown in the project specification take precedence over requirements shown herein.
- 1.4 No variation from the project specification and this standard are permitted unless approved in writing by NPC .
- 1.5 In case of conflict between this standard and other documents, they shall be brought to the attention of NPC for clarification.

2. REFERENCE STANDARDS

Always the latest edition shall be used.

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| ASTM | AMERICAN SOCIETY FOR TESTING OF MATERIALS |
| ASTM A479 | Stainless Steel and Heat-Resisting Steel Bars and Shapes for Use in Boiler and Pressure Vessels. |
| ASTM C27 | Fireclay and High Aluminum Refractory Brick. |
| ASTM C71 | Standard Definition of Terms Relating to Refractories. |
| ASTM C93 | Test Methods for Cold Crushing Strength and Modules of Rupture of Insulating Firebrick. |
| ASTM C105 | Ground Fireclay as a Mortar for Laying-Up Fireclay Brick. |

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ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars Using 2" or 50 mm Cube Specimens.
ASTM C133	Test Method for Cold Crushing Strength and Modulus of Rupture of Refractory Brick and Shapes.
ASTM C134	Standard Test Methods for Size and Bulk Density or Refractory Brick and Insulating Firebrick.
ASTM C150	Specification for Portland Cement.
ASTM C167	Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations.
ASTM C198	Test Method for Cold Bonding Strength of Refractory Mortar.
ASTM C199	Test Method for Refractoriness of Refractory Mortar.
ASTM C201	Test Method for Thermal Conductivity of Refractories.
ASTM C202	Standard Test Method for Thermal Conductivity of Refractory Brick.
ASTM C332	Specification for Light Weight Aggregates for Insulation Concretes.
ASTM C401	Standard Classification of Castable Refractories.
ASTM C417	Standard Test Method for Thermal Conductivity of Unfired Monolithic Refractories.
ASTM C573	Standard Methods for Chemical Analysis of Fire Clay and High Alumina Refractories.
ASTM C577	Standard Test Method of Permeability of Refractories.