Institute of Refractories Engineers

EXERCISE ANSWERS

IRE Training Day
31 October 2013

Sheffield

Sam Franklin

Hot Metal Ladle

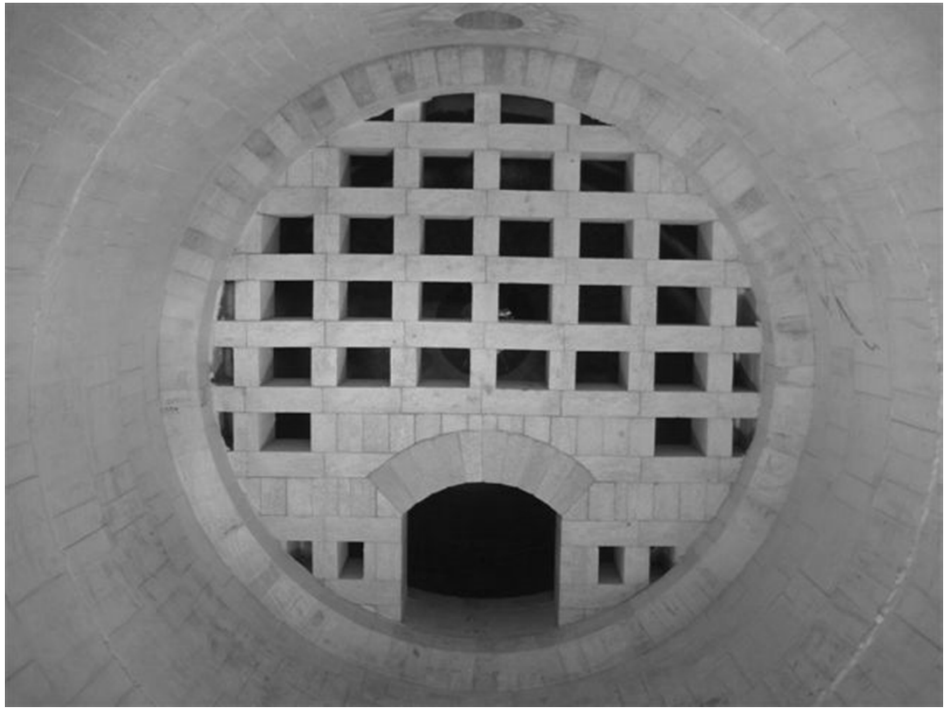
- Thermal Shock Resistance
- Mechanical resistance, esp in lip
- CO resistance in safety lining

- High fired andalusite brick
  - High mullite content
  - High firing temp to enhance CO resistance
  - Increase alumina content to ~65% for greater mullite content and better slag resistance

Sulphur Recovery Unit

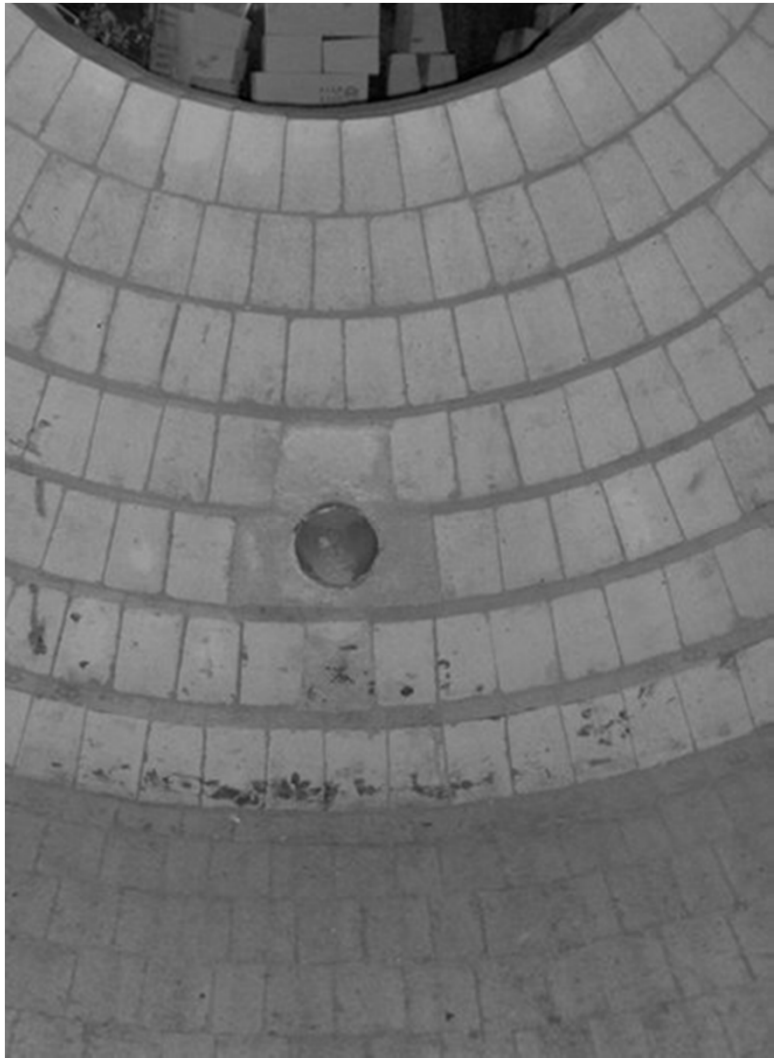
- Acid Resistance
- Low silica content – hydrogen attack
- High temps
- Flame impingement

- Mullite bonded corundum
  - WFA based with mullite bond
  - Low porosity and permeability
  - Good thermal shock resistance



Thermal Oxidiser

- Main walls
  - Moderate temperature
  - Low temperature fluctuations
  - Flint clay brick
- Combustion chamber walls
  - Thermal shock
  - Moderate temperature
  - Andalusite brick
- Burner quarl
  - Thermal shock
  - Thermal stresses
  - Mullite bonded WFA



Cement Kiln

- High Temperature Abrasion
- Alkali Attack
- Loads from rotation
- Tight lining needed

- Fired Bauxite brick

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CONCLUSIONS

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What are Alumina Refractories

- Wide range of
  - Raw Materials
  - Chemistries
  - Properties

- Wide range of applications in all industries

- Continuing to be developped

Finally

- Feedback Form

- Safe Journey