Refactories
Properties, Selection and Testing

15 - 19 Dec 2019, Dubai
26 - 30 Jul 2020, Dubai
WHY CHOOSE THIS TRAINING COURSE?

Refractoriness is the ability to withstand high temperatures. In general, any material which in service greater than 600 °C is called refractory. Refractories are vital components of industrial manufacturing and are used in just about every type of industrial process that utilises heat and, in many cases, chemical processing. The right definition is that refractories should withstand high temperature, resistance to thermal and thermo chemical load, possess high-volume stability, resistant to erosion and abrasion, be tough, and resistant to chemical corrosion etc. There is no refractory material which possess all these properties 100 %. Overall it is a compromise with all these properties. Choice of refractories depend on the operating and mechanical conditions of the kiln.

The right choice of refractory material can lead to the safe, low maintenance and cost-effective protection of vital industrial heat processing equipment for a five to ten-year period. However, the wrong choice can lead to downtime, equipment failure and accidents.

The aim of this AZTech training course is to gain knowledge about the classification of refractory and insulation materials, their chemical and physical properties, conditions for their use and application. The delegates will become well-versed in the use of suitable refractory materials and thermal insulation materials for the type of equipment in practice and be able to design the possibilities of solving their application.

This training course will feature:

- Types of Refractories and Selection
- Properties of Refractories
- Manufacturing methods of Refractories
- Refractories Wear, attack and Failure
- Testing Methods and Safety

WHAT ARE THE GOALS?

Refractories are at the centre of process, manufacturing and petrochemical industries. The engineer is, in particular, interested in safe containment of heat related processes. Hence, this training course focuses on the central areas of the selection and safe use of refractory materials and guides the delegates in developing both fundamental and practical understandings of key issues. Delegates will be able to recognize refractory material, divide refractory materials according to their characteristics and make informed decisions about the application of refractory ceramic materials in practice that will be used in a variety of industries.

WHO IS THIS TRAINING COURSE FOR?

This training course is suitable to a wide range of Technical professionals but will greatly benefit:

- Technical & non-technical personnel in process and manufacturing industries with a need to understand and discuss fundamental issues related to the use of refractory materials.
- Maintenance and project engineers, production engineers, trainee mechanical engineers and plant operators.
- Non-experienced personnel needing a basic understanding of refractory materials concepts

HOW WILL THIS TRAINING COURSE BE PRESENTED?

This AZTech training course will utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This includes combined sound engineering principles, methods, and applicable codes & standards and best industry practices. Case studies and examples will cover a range of levels, making the course also suitable for non-technical staff.

The training course combines structured and focused presentations and discussions of topics covered with relevant examples and question & answer sessions to maximize the benefits to the participants. Participants will be provided with comprehensive course notes and copies of all presentation material. These will be very valuable for detailed study and future reference.
THE COURSE CONTENT

Day One: Refractories Types and Selection

- Introduction
- Types of Refractories; Clay, non-Clay, Silica Brick, Mortar, High Alumina, Monolithic, etc.
- Shaped and Unshaped Refractories
- Classification of Refractories; Chemical Composition, Physical Form, Oxide content, etc.
- Selection of Refractories
- Refractory Furnace
- Relevant Standards

Day Two: Refractories Properties

- Porosity
- Permeability
- Bulk Density
- Melting Point
- Chemical Composition
- Heat Insulation
- Insulation Characteristics
- Reversible Thermal Expansion
- Thermal Conductivity
- Phase Diagrams

Day Three: Method of Manufacture

- Mixing and Mixing Machines
- Moulding
- Drying
- Firing
- Hot Pressing

Day Four: Refractory Testing and effects on Wear, Attack, Failure and Safety

- Refractoriness Under Load (Differential)
- Creep Testing at High Temperature
- Bending (Modulus of Rupture)
- Compressive and Crushing Testing
- Wedge Splitting Test
- Weibull Analysis

Day Five: Refractory Testing and effects on Wear, Attack, Failure and Safety (continued)

- Thermal Expansion and In-Service Problems
- Thermal Conductivity
- Specific Thermal Capacity
- Abrasion Resistance Test
- Thermal Shock Resistance (Spalling)
- Pyrometric Cone Equivalent (PCE)
- Relevant Standards

THE CERTIFICATE
AZTech Certificate of Completion for delegates who attend and complete the training course

COURSE SCHEDULE:
15 - 19 Dec 2019, Dubai
26 - 30 Jul 2020, Dubai

Refractories
**Refractories**  
Properties, Selection and Testing

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<tr>
<th>DATE</th>
<th>VENUE</th>
<th>FEES(USD)</th>
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<tbody>
<tr>
<td>15 - 19 Dec 2019</td>
<td>Dubai - UAE</td>
<td>$4,950</td>
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**HOTEL ACCOMMODATION**  
Hotel accommodation is not included in the Registration Fee. A reduced corporate rate and a limited number of rooms are available for attendees wishing to stay at the hotel venue. Please make your request for accommodation at least 3 weeks prior to the commencement of the course.

**CANCELLATION & SUBSTITUTION**  
You must notify the Registrar of cancellations at least 2 weeks before a scheduled seminar in order to be eligible for a credit. If you cannot attend, you may send a replacement from your organisation at no charge. There is a $250 handling charge for all cancellations or rescheduling. We reserve the right to cancel or postpone a seminar or related event, change venue, substitution of the Instructor and alter the course content at our sole discretion. If this occurs, our responsibility is limited to a refund of any registration fee(s) already paid. We are not responsible for airline tickets, hotels costs, other tickets or payments, or any similar fee penalties or related or unrelated losses, costs and/ or expenses registrant may incur or have incurred as a result of any trip cancellations or changes.

**EVENT DISCLAIMER**  
We reserve the right to cancel or postpone a seminar or related event, change venue, substitution of the Instructor and alter the course content at our sole discretion. If this occurs, our responsibility is limited to a refund of any registration fee(s) already paid. We are not responsible for airline tickets, hotels costs, other tickets or payments, or any similar fee penalties or related or unrelated losses, costs and/or expenses registrant may incur or have incurred as a result of any trip cancellations or changes.

**CERTIFICATION**  
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**MODE OF PAYMENT**

- PLEASE INVOICE MY COMPANY  
- PLEASE INVOICE ME  
- PLEASE FIND ENCLOSED A CHEQUE PAYABLE TO AZTECH  
- ONLINE / CREDIT CARD

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