

# Refractory selection, maintenance and related defects

## Introductory training

duration  
2 days

date  
May 9 - 10

location  
Eindhoven and/or Online

The refractory materials used in industrial melting furnaces are a huge investment for the glass manufacturer. Choosing the correct refractories is key in improving the furnace lifetime, reducing the energy costs and reducing the refractory related defects. The course will provide you with insight into why different parts of the furnace, including melter, refiner, working end/forehearth channels and regenerator chambers, require different refractory types with specific chemistry and properties. The course will also provide you with some maintenance techniques that can be used to increase the furnace lifetime and reduce the risk of refractory failures.

### Contents

- Key refractories, requirements and properties
- Interaction mechanisms of refractories in contact with the glass melt and in contact with flue gases
- Refractory testing and on-line monitoring techniques
- Preventive maintenance of furnace structure
- Corrective maintenance and hot repair of furnace structure
- Identifying and understanding refractory related solid defects and cords

### Training methods

We offer a blended learning approach by mixing e-learning, lectures, open discussions, exercises, and case studies in teams or individually. The number of participants per course is between 8 and 20 to maximize your learning experience. Participants always receive the presentations and a training certificate.

### Level of seniority

This training is meant for novice to advanced beginners who would like to improve their understanding and apply the knowledge during practical cases.

### Investment

Training costs **€ 1950** per participant. When onsite, price includes 2 lunches and 1 dinner. It excludes tax and duties. The 6th participant from the same company can join for free.

### After the training

- You have an overview of chemistry and properties of refractory types for the different parts of furnaces.
- You understand the corrosion of refractories in contact with the melt, in the superstructure, in the regenerators.
- You have knowledge of techniques for testing, monitoring and controlling the thickness of refractory walls.
- You understand the defect types that can originate from different refractories in the furnace.
- You will have some techniques for preventive and corrective maintenance of the furnace structure.

Cancellation fees apply. 1 week before training 50%; no show, full price. In case of an unexpected event, we are happy to look for rescheduling or voucher options. CelSian reserves the right to cancel up to two weeks prior to the training, proposing new dates or refunds. Are you registering as a group? You are entitled to a 15% discount on all courses: for 5 registrations, the 6th participant can join for free.



We welcome your questions by e-mail: [academy@celsian.nl](mailto:academy@celsian.nl) Register on [www.celsian.nl](http://www.celsian.nl)

Online access to this training can be offered and the training may be fully given online.