

# Redox, Fining and Glass quality

## Advanced training

duration  
14 – 17:30 (CET)  
8 - 11:30 (EST)

date  
4 half-day  
April 19 - 22

location  
Online

You know that redox is a key element of glass production and that its consequences can be perceived all along the production chain. You want to understand how redox influences the melting and fining process in relation to foaming, seeds defects and colour variations. You will be able to diagnose better redox related issues and to find solutions faster.

### Contents

- Introduction and definition of redox : batch redox number, relation with oxygen partial pressure and temperature in the melt, optical measurements on the glass.
- Influence of redox on the radiative heat transfer and the glass colour : amber chromophore, reduced greens, decolouration.
- Cullet and redox control.
- Sulphur solubility, fining principle and mechanisms.
- Mechanisms and root causes of foaming in air-fuel and oxy-fuel furnaces.
- Seeds and bubble : identifying the origin. Case study brought by participants or from our archives.

### 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 advanced beginners to skilled professionals willing to deepen their knowledge.

### Investment

Training costs **€ 1950** per participant.

Price excludes tax and duties.

The 6th participant from the same company can join for free.

### After the training

- You can quantify the redox of a batch, melt and glass and you understand how the equilibrium redox is achieved.
- You realize what are the optimum fining conditions for your glass production.
- You can relate process issues such as foaming, high energy consumption or poor heating to the redox equilibrium.
- You can relate glass quality problems such as colour change, seeds and bubbles to redox issues
- You can perform faster trouble shooting and come up with ideas to solve the problem.

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.