



Glass and pharmacy: PHAR

➤ **Purpose of the training**

Acquire a whole knowledge concerning manufacturing, processing and use of glass in the pharmaceutical sector.

➤ **Relevant staff**

All people who are involved in the manufacture or use of glass packaging in the pharmaceutical sector:

- Staff concerned with manufacturing of mold-blowing vials and drawing tubes
- Staff concerned with pharmaceutical glass processing, vial and syringes manufacturers
- Staff concerned with pharmaceutical packaging: purchasing, development service, conditioning, quality

➤ **Program** (adapt to the needs of interns)

- General overview on the glass material
 - Glassy-state
 - Composition (role of major elements)
 - Coloration
- Large families of silicate glass
 - Sodalime glass - Borosilicate glass
 - Types of pharmacy glass (Type I, II, III, IV)
- Main properties of glass (mechanical resistance, expansion, transmission)
- Melting glass
- Manufacturing mold-blowing bottles
- Manufacturing glass tube and its transformation (vial, syringe)
- Glass annealing
 - Thermal stress (temporary, permanent)
 - Glass annealing
- Using glass in pharmacy
 - Properties and surface treatments
 - Norm and pharmacopoeia
- Glass flaws
 - Manufacturing defects
 - Criticality of the defects
- Glass cracks: cause, appearance and reason for cracks
- Items at the customer's
 - Strain related to the use of articles (sterilization, lyophilization, capping, crimping)

➤ **Duration of training**

1 to 2 days depending on the desired program

➤ **Place of training**

At your choice (your site or elsewhere)

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