

# MOULDSHOP TRAINING

## Empakglass Training & Support Programs

We combine the power of technology with knowledge and experience, so our customers gain a competitive edge in the container Glass Industry.

Choosing the right strategic partners is the key success factor to any business therefore EMPAKGLASS is the right partner choice for you.

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PERFORMANCE SOLUTIONS

## Empakglass Training & Support Programs

DETAILED TRAINING PROGRAM

### MOULDSHOP TRAINING

## INTRO

The Mould Division of Empakglass prepared the Mouldshop training which provides a complete overview of the different technical aspects related with the management and operation of a mouldshop in a glass container plant.

During the training are discussed the materials, treatments and technology used for the construction of each mould component. Comprehensive guidelines are given regarding the key elements of managing a mouldshop. This training provides a roadmap for establishing standard operation procedures for all activities concerning a mouldshop and to troubleshoot glass defects associated with mould components maintenance.

The detail level of the training is adjustable for both more experienced and industry newcomers.

The training is structured in a 10 days schedule with both theoretical and practical components side-by-side.



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Please contact us with your questions, even if you do not find the topic on this brochure, we will come back to you with an answer and proposal for solutions.

Inquires/orders can be made directly to: [management@empakglass.com](mailto:management@empakglass.com)

Standard quotes have been defined. Depending on the customer's needs, modified quotes will be issued.

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### 1. MOULDING COMPONENTS

Mould equipment parts. Blank mould. Baffle and funnel (B&B). Finish equipment (B&B): neck ring, thimble, plunger. Finish equipment (P&B): neck ring, plunger, cooling tube. Blow mould. Bottom plate. Blow head.



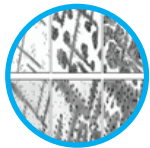
### 2. PROCESSES OVERVIEW

Basic overview of forming processes: B&B, P&B and NNPB.



### 3. PROCESSES IN DETAIL: FORMING

B&B process stages in detail. P&B (NNPB) process stages in detail.



### 4. MATERIALS SPECIFICATIONS

Materials used as mould components. Materials nomenclature. Materials by component type. Steels. Stainless steels. Cast irons. Flake cast iron - parameters that influence the casting and properties. Cast iron casting process. Flake cast iron annealing process. Metallographic structures for flake cast iron. Spheroidal cast iron metallographic structures. Copper alloys (Minox). Parameters that influence the casting and properties of copper alloys. Bronze alloys stress relieve process. Nickel alloys (Dameron and Inconel). Cobalt alloy (Stellite). Fe-Cr-B alloys.



### 5. PRACTICAL APPLICATIONS

Practical examples on metallurgy assessment. Case I, Case II, Case III, Case IV - Cast Iron. Case V, Case VI - Minox Samples (Bronze alloy). Case VII, Case VIII - Nickel Samples (Dameron).



### 6. POWDER ALLOYS

High speed projection alloy for thermal deposition. Powder metallic all alloys. Chemical compositions of the metallic powders. Nickel alloy fusion powder. Cored wire continuous electrode. Cored wire continuous electrode. Nickel alloy spray fusion powder. Tungsten carbides / Nickel alloy powder. Microstructure of the coating layer.

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### 7. EDGE METALLIZATION

Edges metallization, preheating and controlled cooling.



### 8. PLUNGER COATING

Process parameters for plunger coating. Plunger coating microstructure.



### 9. MOULDSHOP MANAGEMENT PROCESS

Mouldshop acquisition flowchart. Mouldshop interaction with IS production flowchart. Mouldshop department follow-up. Mould quality control department.



### 10. MOULD QUALITY DEPARTMENT

Overview of the molding components. Tool component specification checklist: Blow mould, bottom plate, blank mould, baffle, NNPB and P&B plungers, B&B plunger, cooling tubes, funnels, guide rings and neckring (TO, CM, PT, GPI, PILFERPROOF, RD, Crown, Cylindrical) dimensions - construction specifications, blowhead dimensions, take-out dimensions, thimbles dimensions.



### 11. MOULD EQUIPMENT MAINTENANCE

Maintenance process flow and job change preparation. Running moulds maintenance. Production-end moulds maintenance. Stocking. Mould and neckring maintenance. Workbench operations. Conventional lathe operations. Detailed maintenance. Volume inspection. Warehouse safekeeping and storage.



### 12. MOULDSHOP AND MAINTENANCE EQUIPMENTS

Measuring equipment. Go-no go gauges. Bench apparatus.

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### 13. JOB CHANGE PROCEDURES

Procedures to be followed before the job change. Procedures to be followed after the job change.



### 14. MOULDING MACHINERY

Machines and equipment. Conventional lathe. Milling machine. Rectifying table. Plunger polishing table. Mould polishing table. Mould cleaning machine. Mould heating oven. CNC Machines.



### 15. IN PRACTICE WHAT IS IMPORTANT

Hollow milling and contact points. Blank moulds. Blank moulds & neckrings. Blank moulds & baffle. Plunger & neckrings. Blow moulds. The analysis.



### 16. TROUBLESHOOTING OF GLASS DEFECTS ASSOCIATED WITH MOULD COMPONENT STATUS

Causes, for different defects, associated with mould component status.

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