PLASTIC PROCESS TECHNICIAN

APPENDIX A

O*NET CODE 51-4072.00

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

Approximate Hours

A. Overseeing Mold Tryout **500**

1. On first-run molds and modified molds:
   a. Safety
   b. Shutting down molding machine
   c. Operating tow motor to remove previous mold
   d. Installing new mold to 1/16 inch tolerance
   e. Hooking up water lines
   f. Wiring up mold temperature controller
   g. Hooking up water temperature controller
   h. Starting up molding machine

B. Sampling Production Materials **500**

1. Identifying materials (engineered resins, polypropylene, polyethylene), knowing their melting temperatures, and how to process them.
2. Performing visual inspection of incoming materials (raw resins).
3. On new materials and new lots of standard materials:
   a. Molding parts from sample resin
   b. Taking parts to lab
   c. Putting chemical solution in tank
   d. Submerging parts in solution or pressurizing them
   e. Putting parts in heat chamber
   f. Monitoring daily for failure
   g. Assessing why each failure occurs

C. Performing Minor Tool Repair **500**

1. Safety
2. Changing inserts in mold, according to work orders
3. Replacing core pin in mold
4. Unplugging water line in mold
5. Taking tools from production line at end of run
6. Disassembling and cleaning mold

D. Operation of Injection and Blow Molding Machines **1,500**

1. Troubleshooting Job Processes and Equipment (1,000 Hours)
    a. Working safely around machinery with moving parts.
    b. Setting up various molding machines, including setting limit switches correctly.
    c. Making continuous rounds of machines to check processing; answering problems calls; tending to machines in proper order of priority.
    d. Performing visual and manual inspection of product.
    e. Examining settings on programmable controller; adjusting such variables as barrel temperature weight of head, die gap, head temperature, and shotsize.
    f. Examining inside of molding machine; cleaning as needed.
    g. Adjusting pressure on valves.
    h. Adjusting “swing” of plastic
    i. Calling specialized worker, such as toolmaker, as needed.
    j. Changing fittings, bearings and seals on blow molder.
    k. Assisting with machine rebuilding: changing tie rods, gears, cylinders, valves, screws, barrels.
2. Setting Molds to Predesignated Settings (500 hours)
    a. Safety
    b. Putting inserts in molds
    c. Adjusting stroke of machine
    d. Adjusting blow pins
    e. Opening and closing gates

E. Process Management System **1,100**

1. Keeping Cycle Records (100 hours)
    a. Tallying daily and shift cycle records on preprinted form.
    b. Keyboarding to enter records into computer system.
2. Monitoring Scrap Reduction (1,000 hours)
    a. Keeping accurate records on daily basis of scrap produced.
    b. Determining whether scrap came from molding or from secondary operation.
    c. Calculating percentage of scrap against cycles of machine to include all variables such as speed, heat, profiles, molds.
    d. Assessing cause of scrap production.
    e. Making indicated repairs or arranging for repairs to be made.

F. Working with Product Development Teams **200**

1. Participating on Total Quality Management (TQM) Teams for new products or further development of existing product lines.
2. Generating ideas for new ways to mold faster or with higher quality.

G. Administering Production Control Procedures **1,000**

1. Work in Production Control Department with Master Scheduler, Inventory Coordinator, Production Clerk, Warehouse Foreperson, and Production Manager:
    a. Scheduling production runs
    b. Ensuring availability of parts
    c. Storing inventory
    d. Inputting proper information into computer

H. Participating in End-of-Run Meetings **500**

1. Attending all meetings, after each production run, that concern product apprentice was involved with.
2. Considering such topics as: machine utilization, efficiencies, quality, production schedules, tooling, and overall department performance.
3. Meeting, at end of each shift, with incoming shift.
4. Describing significant events that occurred during

5. Participating in End-of-Run Meetings shift, describing problems with particular machines
6. or products; active problem-solving.

I. Participating in Quality Planning and Control **1,000**

1. Quality Planning
   a. Acting as member of a team to set parameters at which to run parts.
   b. Acting as member of a team to decide on acceptable amount of scrap.
   c. Keeping log records (heats, times, etc.) for Statistical Process Control (SPC) analysis.
2. Quality Control
   a. Checking machine settings against set-up sheets (speeds, feeds, heats)
   b. Performing visual and manual inspection of molded parts
   c. Measuring parts against specifications to 10/1000 inch.
   d. Safely performing destructive testing on parts.
   e. Completing pre-printed form with results of measurements and tests.

J. Diagnosing and Repairing Electrical and Solid State Difficulties **500**

1. Safety, including lockout/tagout
2. Replacing fuses
3. Wiring-in thermocouples or a lead to the hot tip.
4. Troubleshooting and repairing limit switches on injection molder.

K. Diagnosing and Repairing Hydraulic Problems **200**

1. Safety
2. Replacing hoses and fittings
3. Replacing seals
4. Repairing hydraulic valves
5. Removing and replacing hydraulic cylinders, valves, accumulators.

L. Diagnosing and Repairing Pneumatic Applications and Components **200**

1. Safety
2. Checking oil on vacuum systems
3. Checking and replacing belts
4. Detecting and repairing leaks in lines
5. Replacing gauges
6. Troubleshooting air valves and air cylinders; changing or replacing valve.
7. Replacing or repairing sequential valves, hopper, loaders, filters, vacuum pump.

M. Diagnosing and Repairing Secondary Equipment Problems **300**

1. Safety
2. Chillers: starting up and shutting down, setting temperatures, checking for correct pressure readings, replacing fuses, cleaning filters, cleaning tanks.
3. Grinders: lubricating, sharpening blades, cleaning after each color change.
4. Materials Blender: stripping down, checking and changing fittings, cleaning out dust, lubricating, adjusting settings.
5. Conveyors: greasing changing belts.

Approximate Total Hours **8,000**

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to *https:/dol.ny.gov/public-work-and-prevailing-wage*

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APPENDIX B

RELATED INSTRUCTION

Safety

1. MSDS Sheets
2. Electrical Safety: Lockout and Tagout
3. Machinery Safety
4. Safety During Mold Changes
5. First Aid (6.5 hours minimum every 3 years)
6. Sexual Harassment Prevention Training – must comply with section 201-g of the Labor Law

Mathematics

1. Basic Math Skills
2. Algebra

Trade Theory and Science

1. Introduction to Plastics
2. Plastic Process
3. Plastics Manufacturing Processes
4. Introduction to Injection Molds (Toggle and Hydraulic Clamp Machines)
5. Physical Properties of Testing
6. Blueprint Reading for Machine Trades
7. Statistical Process Control
8. Robotics Theory and Operation
9. Basic Electricity and Wiring
    a. Fundamentals of Electronics
    b. Electronic Technology – Introduction
10. Commercial Wiring
11. Industrial Electricity I
12. Industrial Electricity II
13. Basic Hydraulic Components and Circuits
14. Pneumatic Components and Circuits

A minimum of 144 hours of related instruction are required for each apprentice for each year.

Appendix B topics are approved by New York State Education Department.