

MONSANTO CHEMICAL COMPANY
PLASTICS DIVISION
SPRINGFIELD, MASS.

MANUAL OF OPERATIONS

ULTRON POLYMERIZATION

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COPY NO.

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PERSONNEL

This personnel section of the Vinyl Chloride Polymerization Manual is written merely as a guide. The following job descriptions are included to depict operations performed by various operating personnel at Springfield, Massachusetts other than supervision:

901.0	Lead Operator
902.0	Operator A
903.0	Operator B
904.0	Process Helper
905.0	General Laborer
906.0	Janitor

901.0 Lead Operator

Responsible for the detailed direction, instruction, and leading of polymerization department personnel and performing similar, related, or more complex phases of the work most of the time. Checks department log sheets to determine status of material in process. Receives verbal or written instructions from supervision regarding schedule requirements, handling and storing of finished product, repair and maintenance of equipment, special processing procedures. Allocates work to be performed to members of the group. Checks operating conditions to see that process specifications are being maintained. May direct cleaning operations as necessary, including dismantling and clearing of process lines. Coordinates the batchwise transfer of materials during blending operations. Obtains any necessary supplies for use by the group according to standard procedures. Maintains shift log sheet of operations. Trains new employees as directed regarding operating procedures, safe practices, and detailed methods of performing assignments. Usually makes any necessary contacts for the group on such matters as repair and maintenance of equipment, operating difficulties, quality control. May report irregularities to supervision but has no authority to hire, fire, or discipline other employees. Must be thoroughly experienced and skilled in the performance of all operations normally performed by the group as well as with general company policies applicable.

902.0 Operator A

Operates a variety of equipment such as reaction kettles, premix tanks, filters and driers for the production of polyvinyl chloride resins.

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902.0 Operator A (Cont'd.)

Manipulates various switches and valves, adjusts control mechanisms, to charge and transfer materials either batch-wise or at controlled rates, and to regulate temperatures and pressures. Proportions reactants or other raw materials to the process as specified. Checks operating conditions by observation of flow meters and control panel indicators and gauges. Initiative required to determine operating irregularities with or without operation of alarm devices and to take action following only general procedures to correct such situations.

Takes samples at various points in the process for testing by others. Maintains log sheet of operations by recording data from instruments or meters and by making notations of irregular conditions. May be required to assist in the operation of scrubbers, centrifuge and drier, and remove or assist others in the removal of media from driers, filters or scrubbers, replacing with fresh charges, as necessary. Makes periodic checks of inert gas system and monomer relief valves to insure working efficiency. May be required to dismantle and clear process lines and to enter and clean out various items of equipment as necessary. Keeps working area clean.

903.0 Operator B

Operates equipment such as scrubbers, filters, driers, in connection with the production of polyvinyl chloride resins. Manipulates various switches and valves adjusts control mechanisms, to charge and transfer materials either batch-wise or at controlled rates and to regulate temperatures and pressures. Proportions reactants or other raw materials to the process, as specified. Checks operating conditions by observation of flow meters and control panel indicators and gauges. Follows standard operating procedures in transferring materials through the equipment concerned. Takes samples at various points in the process for testing by others. Maintains log sheet of operations by recording data from instruments or meters and by making notations of irregular conditions. Assists in the operation of re-action kettles, when required, and in the checking of inert gas system and monomer relief valves. May be required to dismantle and clear process lines and to enter and clean out various items of equipment, as necessary. Occasionally required to transfer monomer from tank cars to storage tanks. Keeps work area clean.

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904.0 PROCESS HELPER

Helps operators on various processes as assigned. Assists operators in charging and transferring materials through flow lines to and from various pieces of equipment. Assists in removing media from filters, drier, scrubbers, replacing with fresh charges where necessary. Operates container loading device to pack out finished product, filling containers to specified weight. Keeps record of materials packed out or transferred to other areas. Using hand truck, air hoist, elevator, moves materials about the area as required. Assists in inventorying materials in storage areas and hold tanks. May be required to assist in dismantling and clearing process lines and to enter and clean out various items of equipment as necessary. Keeps working area clean.

905.0 GENERAL LABORER

Performs a variety of odd handling operations throughout the department. Job includes moving materials to and from operating and storage areas, piling or stacking as necessary. Delivers empty containers to packing out stations for reuse. May be required to load finished product in sealed containers to carriers at shipping platforms, keeping tally of materials so handled. Assembles waste or scrap accumulations throughout the department and moves to disposal areas for further handling by others. May be required to unload incoming materials or empty containers from carriers to storage areas. Use hand truck, transporter, transtacker, as the occasion demands. Keeps working area clean.

906.0 JANITOR

Performs a variety of janitorial work throughout manufacturing or service departments as assigned, such as sweeping, dusting, scrubbing, mopping, wiping walls and disposing of rubbish accumulations, washing windows or glass partitions, cleaning and filling fire pails. Performs errands as directed to storeroom shops, laundry or cafeteria. Occasionally may move trucks to permit cleaning of area. May clean spillage or trash from outside platforms. May be exposed to fumes for short periods when cleaning up spillage or using solvent for cleaning purposes.

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SAFETY

The following rules should be observed by all personnel concerned with vinyl chloride polymerization:

1000.1 VINYL CHLORIDE MONOMER STORAGE

1. Safety glasses should be worn while working on lines.
2. All monomer leaks must be reported and repaired as soon as possible.
3. All associated equipment such as pumps, etc. must be thoroughly grounded.

1000.2 POLYMERIZATION KETTLES

1. Close control of reaction temperatures must be maintained at all times.
2. Safety valves must be inspected regularly for polymer accumulation as specified in operating procedure.
3. Kettles must not be entered until agitator switch and charging valves are locked out, kettle properly ventilated, and tank entry permit obtained.
4. A life belt must be worn when entering kettles.
5. Remain under the observation of some responsible person while working in the kettles.
6. Do not store slurry samples in tightly covered containers.

1000.3 CENTRIFUGING, DRYING AND PACKAGING

1. Observation doors in drier, elevator, etc. should be opened only for the necessary inspections. Hands, arms, or sticks, rods, etc. should never be inserted through these doors unless the equipment is stopped and completely locked out.
2. Do not enter drier or slurry tanks unless such equipment is properly locked out and the necessary permits obtained.
3. Learn the proper method of lifting. Use your legs, not your back.

1000.0

SAFETY

1000.4 BURNING STACK (As presently applied to Springfield, Mass. operations.)

1. Do not climb the burning stack while the polymerization kettles or the monomer pumps are operating.
2. Climb burning stack slowly to avoid excessive fatigue.
3. Rope off the opening leading from the ladder to the platform before doing any work at the top of the stack.
4. Do not climb the stack when it is wet or icy.

1000.5 GENERAL SAFETY RULES

1. Follow all operating instructions carefully. In case of confusion or doubt stop and obtain information. Never experiment.
2. Know the location and use of all safety equipment including gas masks, fire equipment, and alarms.
3. Report all injuries including burns, cuts, or bruises to the proper medical facilities immediately.
4. Do not operate machinery unless all guards are in place.
5. Vinyl chloride monomer, the basic raw material in this process, is extremely volatile and flammable. It also has anesthetic properties. It is a hazardous material and must be handled with care, particularly since pressures of 30 to 125 psi are normally encountered in transfer and polymerization. Avoid contact of monomer with skin and breathing of monomer vapors.
6. Purge all monomer storage tanks with inert gas or water before vinyl chloride monomer is introduced.
7. Never use brass, copper, silver, or mercury in contact with monomer since impurities in the monomer may form hazardous compounds if they react with these metals.
8. Use caution in disconnecting or opening lines, valves or equipment. Report all monomer leaks immediately.
9. Do not completely fill a VCM sample container.
10. Turn on any emergency ventilating fans when a monomer spill occurs or is anticipated.
11. Comply strictly with all plant regulations on the control of welding and the use of spark producing equipment and rules for locking out equipment.