



STANDARD OPERATING PROCEDURE

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1.0 OBJECTIVE:

To lay down a procedure for Cleaning of Manufacturing Plant.

2.0 SCOPE:

This SOP is applicable to the Cleaning of Manufacturing Line consist of Water Phase Vessel (capacity 1000 kg), Wax Phase Vessel (capacity 1000 kg), Manufacturing Vessel (capacity 1500 kg), Lobe Pump and inline Homogenizer in Manufacturing of External Preparation Area.

3.0 RESPONSIBILITY:

Production: Associates/Officer /Executive/Assistant Manager.

Head Production: To ensure execution & compliance.

Head QA: To ensure the compliance.

4.0 PROCEDURE :

4.1 "TYPE A" Cleaning (Change over from one batch to next batch of the same product, same potency and have similar product with ascending potency)

4.1.1 Cleaning procedure for Water Phase Vessel

- 4.1.1.1 Remove the "UNDER PROCESS" label and Affix duly filled "TO BE CLEANED" status label on water phase vessel with date and signature of the Production Officer.
Enter the cleaning start time in equipment usage log sheet as per SOP.



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- 4.1.1.2 Ensure that the main power supply of control panel is on. Remove the cone filter from transfer line and connect distance piece for cleaning.
- 4.1.1.3 Start heating of water phase vessel, load purified water about 400 kg and heat up to 70 to 80 °c, stir hot purified water for 10 min.
- 4.1.1.4 Transfer the water from water phase vessel to manufacturing vessel with the help of vacuum.
- 4.1.1.5 Rinse the vessel with sufficient quantity of purified water and transfer to manufacturing vessel.
- 4.1.1.6 Drain water from transfer line after dismantling triclover clamp to remove any stagnant water.
- 4.1.1.7 Wipe the dismantled parts with dry lint free cloth and compressed air.
- 4.1.1.8 Dry the vessel by applying steam in jacket of vessel and then apply vacuum in water phase vessel. Clean outside with compressed air and dry lint free cloth.
- 4.1.1.9 Check cleanliness of vessel visually inside and outside.
- 4.1.1.10 Replace the “TO BE CLEANED” status label with Type A “CLEANED” status label with date and signature of the Production officer
- 4.1.1.11 Record the completion time of cleaning activity in equipment usage log sheet as per SOP.
- 4.1.2 Cleaning procedure for Wax phase Vessel**
- 4.1.2.1 Remove the “UNDER PROCESS” label and Affix duly filled “TO BE CLEANED” status label on wax phase vessel with date and signature of the Production Officer. Enter the cleaning start time in equipment usage log sheet as per SOP.



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4.1.2.2 Ensure that the main power supply of control panel is on. Remove the cone filter from transfer line and connect distance piece for cleaning.

4.1.2.3 Start heating of wax phase vessel, load purified water about 400 kg of vessel and heat up to 70 to 80 °c, stir hot purified water for 10 min.

4.1.2.4 Transfer the water from wax phase vessel to manufacturing vessel with the help of vacuum.

4.1.2.5 Rinse the vessel with sufficient quantity of purified water and transfer to manufacturing vessel.

4.1.2.6 Drain water from transfer line after dismantling triclover clamp to remove any stagnant water.

4.1.2.7 Wipe the dismantled parts with dry lint free cloth and compressed air.

4.1.2.8 Dry the vessel by applying steam in jacket of wax phase vessel and then apply vacuum in wax phase vessel. Clean outside with compressed air and dry lint free cloth.

4.1.2.9 Check cleanliness of vessel visually inside and outside.

4.1.2.10 Replace the “TO BE CLEANED “status label with Type A “CLEANED” status label with date and signature of the Production officer.

4.1.2.10 Record the completion time of cleaning activity in equipment usage log sheet as per SOP.

4.1.3 Cleaning Procedure For Main Manufacturing Vessel

4.1.3.1 Remove the “UNDER PROCESS” label and Affix duly filled “TO BE CLEANED” status label on manufacturing vessel with date and signature of the Production Officer.

4.1.3.2 Enter the cleaning starting time in equipment usage log sheet as SOP.



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- 4.1.3.3 Ensure that the main power supply is ON.
- 4.1.3.4 Close outlet valves of vessel.
- 4.1.3.5 Transfer water from water phase and wax phase vessel from step no. 4.1.1.4 to 4.1.1.5 and 4.1.2.4 to 4.1.2.5 respectively into manufacturing vessel. Circulate through lobe pump, homogenizer and recirculation line for 15 min under continues stirring.
- 4.1.3.6 Disconnect the product transfer line (from lobe pump to bulk holding tank) located in manufacturing area and connect hose pipe with the disconnected end part of product transfer line in manufacturing area and then drain out the water from manufacturing vessel through transfer line with help of lobe pump into the drain of manufacturing area.
- 4.1.3.7 Load purified water about 600 kg and heat up to 70 to 80 °C with continue stirring at slow speed. Circulate the hot water through lobe pump, Homogenizer and circulation pipe through spray ball for 15 minutes and drain the water completely through lobe pump and product transfer line into the drain of manufacturing area.
- 4.1.3.8 Remove the hose pipe connected for draining and disconnect all the parts of the bulk transfer line and dry the disconnected parts of the bulk transfer line with compressed air and lint free cloth. Then assemble the pipe line.
- 4.1.3.9 Dry the vessel by applying steam in jacket of manufacturing vessel and then apply vacuum in manufacturing vessel. Clean outside with compressed air and dry lint free cloth.
- 4.1.3.10 Check cleanliness of vessel visually inside and outside.
- 4.1.3.11 Replace the “TO BE CLEANED” status label with Type A “CLEANED” status label with date and signature of the Production officer.
- 4.1.3.12 Record the completion of cleaning activity in equipment usage log sheet as per SOP.



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4.1.4 Cleaning Procedure For Lobe Pump.

4.1.4.1 Remove the “UNDER PROCESS” label and Affix duly filled “TO BE CLEANED” status label on lobe pump with date and signature of the Production Officer. Enter the cleaning starting time in equipment usage log sheet as per SOP.

4.1.4.2 Clean the lobe pump as per step no. 4.1.3.5 to 4.1.3.7.

4.1.4.3 Dry the lobe pump and chamber with compressed air

4.1.4.4 Wipe outside of pump with clean dry lint free cloth.

4.1.4.5 Replace the “TO BE CLEANED” status label with Type A “CLEANED” status label with date and signature of the Production officer.

4.1.4.6 Record the completion of cleaning activity in equipment usage log sheet as per SOP.

4.1.5 Cleaning Procedure For Homogenizer

4.1.5.1 Remove the “UNDER PROCESS” label and Affix duly filled “TO BE CLEANED” status label on homogenizer with date and signature of the Production Officer. Enter the cleaning start time in equipment usage log sheet as per SOP.

4.1.5.2 Clean the homogenizer as per step no. 4.1.3.5 to 4.1.3.7.

4.1.5.3 Clean outside of homogenizer with clean dry lint free cloth.

4.1.5.4 Replace the “TO BE CLEANED” status label with Type A “CLEANED” status label with date and signature of the Production officer.

Record the completion of cleaning activity in equipment usage log sheet as per SOP.

4.2 “TYPE B” Cleaning (change over from one batch to next batch of different product/ after maintenance activity of contact parts/descending potency)

4.2.1 Cleaning Procedure for Water Phase Vessel



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- 4.2.1.1 Follow the procedure from step 4.1.1.1 to 4.1.1.4.
- 4.2.1.2 Load 150 kgs of 1% w/v SLS solution in water phase vessel, stir for 10 minutes by stirrer and transfer to manufacturing vessel with help of vacuum.
- 4.2.1.3 Rinse with sufficient quantity of purified water to remove traces of foam and transfer to manufacturing vessel for twice if required and disconnect the transfer line from water to main mixing tank.
- 4.2.1.4 Rinse the vessel with purified water and drain till pH of rinse water is in range of 5-7.
- 4.2.1.5 Clean the dismantled parts such as triclover clamps, valves, gaskets and transfer line with 1% w/v SLS solution followed by rinsing with sufficient quantity of purified water to remove traces of previous product and foam.
- 4.2.1.6 Assemble the disconnected parts.
- 4.2.1.7 Certify the cleanliness by production officer.
- 4.2.1.8 If equipment found visually clean, then intimate the IPQA to examine. Then finally rinse with approximately 20 Kg of purified water and collect 100 ml of rinse sample from transfer pipe line during transferring into manufacturing vessel, each for previous residue and cleaning agent and sent to QC for analysis
- 4.2.1.9 Dry the vessel by applying steam in jacket of water phase vessel and then apply vacuum in water phase vessel. Clean outside with compressed air and dry lint free cloth.
- 4.2.1.10 After rinse water sample passed by QC, disconnected the transfer pipe line and dry with compressed air and lint free cloth and finally assemble dismantled parts and process line connections.
- 4.2.1.11 Label vessel as Type B "CLEANED" status label with date and signature of the production officer.



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4.2.1.12 Record the cleaning completion time of water phase vessel in equipment usage log sheet as per SOP.

4.2.2 Cleaning Procedure For Wax Phase Vessel

4.2.2.1 Follow the procedure from step 4.1.2.1 to 4.1.2.4.

4.2.2.2 Load 150 kg of 1% w/v SLS solution in wax phase vessel, stir for 10 minutes by stirrer and transfer to manufacturing vessel with help of vacuum.

4.2.2.3 Rinse with sufficient quantity of purified water to remove traces of foam and transfer to manufacturing vessel for twice if required and disconnect the transfer line from wax phase vessel to main manufacturing vessel.

4.2.2.4 Rinse with sufficient quantity of purified water and drain till pH of rinse water is in range of 5-7.

4.2.2.5 Clean the dismantled parts such as triclover clamps, valves, gaskets and transfer line with 1% w/v SLS solution followed by rinsing with sufficient quantity of purified water to remove traces of previous product and foam.

4.2.2.6 Assemble the disconnected parts.

4.2.2.7 Certify the cleanliness by production officer.

4.2.2.8 If equipment found visually clean, then intimate the IPQA to examine. Then finally rinse with approximately 20 Kg of purified water and collect 100ml of rinse sample from transfer pipe line during transferring into manufacturing vessel, each for previous residue and cleaning agent and sent to QC for analysis

4.2.2.9 Dry the vessel by applying steam in jacket of wax phase vessel and then apply vacuum in wax phase vessel. Clean outside with compressed air and dry lint free cloth.



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4.2.2.10 After rinse water sample to be passed by QC, disconnected the transfer pipe line and dry with compressed air and lint free cloth and finally assemble dismantled parts and process line connections.

4.2.2.11 Label vessel as Type B "CLEANED" status label with date and signature of the production officer.

4.2.2.12 Record the cleaning completion time of wax phase vessel in equipment usage log sheet as per SOP.

4.2.3 Cleaning Procedure For Main Manufacturing Vessel

4.2.3.1 Follow the procedure from step 4.1.3.1 to 4.1.3.6.

4.2.3.2 Circulate the 1% w/v SLS solution previously transferred from water phase vessel and wax phase vessel from step no. 4.2.1.2 and 4.2.2.2 through the lobe pump, homogenizer, circulation pipe and spray ball for 20 min. and drain out from the manufacturing vessel through bulk transfer pipe line with the help of lobe pump into the drain of manufacturing area.

4.2.3.3 Again load approximately 200 kg of purified water and circulate through lobe pump, homogenizer and spray ball for 20 min. to remove foam traces and drain out from the manufacturing vessel through bulk transfer pipe line with the help of lobe pump into the drain of manufacturing area.

4.2.3.4 If required follow step no. 4.2.3.3 for twice to remove traces of foam.

4.2.3.5 Dismantle circulation pipes, lobe pump, homogenizer, spray ball assembly and product transfer pump which carry bulk from lobe pump to storage.

4.2.3.6 Lift top dish of vessel by operating hydraulic system.



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4.2.3.7 Clean all disconnected parts like API addition funnel, lobe pump, homogenizer, gaskets of top dish and manhole with 1% w/v SLS solution and purified water.

4.2.3.8 Assemble the circulation pipes, lobe pump, homogenizer, spray ball assembly and product transfer pump which carry bulk from lobe pump to storage vessel.

4.2.3.9 Place top dish by operating hydraulic system.

4.2.3.10 Rinse vessel with purified water approximately 50 kg of purified water and re-circulate through lobe pump, homogenizer and spray ball.

4.2.3.11 Drain through lobe pump and bulk transfer line as mentioned in step no. 4.1.3.6. During draining collect 100 ml of rinse water sample for manufacturing vessel, homogenizer, lobe pump and pipe line.

4.2.3.12 After rinse water sample passed by QC, dismantle circulation pipes, lobe pump, homogenizer, spray ball assembly and product transfer pump which carry bulk from lobe pump to storage.

4.2.3.13 Dry all the dismantled parts with dry lint free cloth and compressed air.

4.2.3.14 Assemble the dismantled parts and process line connections.

4.2.3.15 Dry the vessel by applying steam in jacket of manufacturing vessel and then apply vacuum in manufacturing vessel. Clean outside with compressed air and dry lint free cloth.

4.2.3.16 Label vessel as Type B "CLEANED" status label with date and signature of the production officer.

4.2.3.17 Record the cleaning completion time of manufacturing vessel in equipment usage log sheet as per SOP.

4.2.4 Cleaning Procedure For Lobe Pump



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- 4.2.4.1 Follow the procedure from step 4.2.3.1 to 4.2.3.5.
- 4.2.4.2 Open cover of chamber of lobe pump by unscrewing nut.
- 4.2.4.3 Clean clamps, gaskets, lobe and chamber of pump with 1% w/v SLS solution
- 4.2.4.4 Rinse clamps, gaskets, lobe and chamber of pump with Purified water until traces of previous product and foam are removed.
- 4.2.4.5 Take rinse water sample as per step no. 4.2.3.11.
- 4.2.4.6 Label Lobe pump as Type B “CLEANED” status label with date and signature of the of the production officer.

4.2.5 Cleaning Procedure For Homogenizer

- 4.2.5.1 Follow the procedure as per step no. 4.2.3.1 to 4.2.3.5
- 4.2.5.2 Open chamber and Clean rotor blades, stater heads, inlet, outlet, chamber and clamps, with 1% w/v SLS solution.
- 4.2.5.3 Rinse Recirculation line and parts of homogenizer with purified water until traces of previous product and foam are removed.
- 4.2.5.4 Take rinse water sample as per step no. 4.2.3.11.
- 4.2.5.5 Label homogenizer as Type B “CLEANED” status label with date and signature of the production officer.
- 4.2.5.6 Record the cleaning completion time of homogenizer in equipment usage log sheet as per SOP.

4.3 Frequency

- 4.3.1 Type ‘A’ cleaning is applicable after completion of every batch of same product.



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4.3.2 Type 'B' cleaning is applicable in case of product change over or after maintenance activity of contact parts.

5.0 ANNEXURE (S) :

Nil

6.0 REFERENCE (S):

SOP- Procedure of filling of equipment log book.

SOP- Process for Waste disposal.

SOP- Preparation, approval, distribution control, revision and destruction of Standard Operating Procedure

7.0 ABBREVIATION (S) / DEFINITION (S):

HMI : Human-Machine Interface

SOP , : Standard Operating Procedure

QA : Quality Assurance

QC : Quality Control

BMR : Batch Manufacturing Record

RPM : Rotation Per Minute

MMT : Main Manufacturing Tank

REVISION CARD

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