PERFORMANCE QUALIFICATION PROTOCOL FOR MULTI-MIX MANUFACTURING PLANT

EQUIPMENT ID. No.	
LOCATION	**MANUFACTURING LINE**
DATE OF QUALIFICATION	
SUPERSEDE PROTOCOL No.	**NIL**

PROTOCOL CONTENTS

1.0 PROTOCOL APPROVAL :

INITIATED BY:

DESIGNATION	NAME	SIGNATURE	DATE
OFFICER / EXECUTIVE (QUALITY ASSURANCE)			

REVIEWED BY:

DESIGNATION	NAME	SIGNATURE	DATE
HEAD (PRODUCTION)			
HEAD (QUALITY CONTROL)			
HEAD (ENGINEERING)			

APPROVED BY:

DESIGNATION	NAME	SIGNATURE	DATE
HEAD (QUALITY ASSURANCE)			

2.0 OBJECTIVE:

- To provide documented evidence that the Equipment is performing as per the parameter defined in Operational Qualification and that it gives result as per the predetermined acceptance criteria.
- To demonstrate that the system will operate reproducibly and consistently within its operating range.
- To confirm the suitability of the Standard Operating Procedures for all routine activities associated with the system.

3.0 SCOPE :

- The Protocol covers all aspects of Performance Qualification run for at least three batches for the Multi Mix manufacturing Plant.
- This Protocol will define the methods and documentation used to qualify the Multi Mix Plant for PQ.

4.0 RESPONSIBILITY:

The Validation Group, comprising of a representative from each of the following Departments, shall be responsible for the overall compliance of this Protocol:

DEPARTMENTS	RESPONSIBILITIES
Quality Assurance	• Preparation, Review, Approval and Compilation of the Performance Qualification Protocol cum Report. • Co-ordination with Quality Control, Production and Engineering to carryout Performance Qualification Activity • Monitoring of Performance Qualification.
Production	• Review of Protocol cum Report. • To co-ordinate and support Performance Qualification Activity.
Quality Control	• Review of Protocol Analytical Support (Microbiological Testing / Analysis)

5.0 EQUIPMENT DETAILS:

Equipment Name	Multi Mix manufacturing Plant
Manufacturer's Name	Propack Technologies Pvt. Ltd.
Supplier's Name	Propack Technologies Pvt. Ltd.
Model	
Capacity	500 kg
Location of Installation	Manufacturing Line
Equipment ID No.	

6.0 SYSTEM DESCRIPTION:

To design and manufacture multi mix plant for processing of ointment / cream / gels / lotion as per product safety, cGMP guideline and to provide assurance that the equipment is manufactured as per the URS and it complies with the scope of supply.

1. Multi mixer manufacturing vessel
2. Water Phase Vessel
3. Wax phase vessel
4. Transfer pump
5. Electric control panel
6. Vacuum pump
7. Utility system
8. Batch storage vessel working platform
9. Homogenizer
10. Meter in jump

Multi Mixer manufacturing vessel:

It consists of cylindrical shell and jacketed vessel. It is fitted with the top mounted SS 316 shaft with anchor having baffles and Teflon scrappers moving in a clockwise direction. One more baffles system is mounted in the inner side of the vessel. The vessel is provided with pressure release vent, safety valve rupture disc, gauge and a temperature sensor with digital display. The vessel is provided with bottom homogenizer and unloading of finished product to storage vessel using lobe pump. The vessel is also provided with steam and cooling water to the jacketed tank. The vessel is also provided with light glass, sight glass, charge hole and hand hold on top dished end.

High speed homogenizer is installed at the manufacturing vessel. It is a silverson type homogenizer and consists of slit sleeve type SS 316 blade and rotates at 2800 RPM.

Wax phase Vessel:

It is fitted with bottom mounted stirrer coupled to SS 316 shaft with agitator, pressure gauge, vent valve, safety valve rupture disc, and a temperature sensor with digital display. It is provided with bottom outlet connected to manufacturing vessel through a conical filter having SS mesh screen of 100# filter of melted waxes. It is also provided with the steam supply to the jacket.

Water Phase vessel:

It is fitted with bottom mounted stirrer coupled to SS 316 shaft with agitator, pressure gauge, vent valve, safety valve rupture disc, and a temperature sensor with digital display. It is provided with bottom outlet connected to manufacturing vessel through a conical filter having SS mesh screen of 100# filter of melted waxes. It is also provided with the steam supply to the jacket.

Utility system:

A utility pendant is provided to bring the utility lines from the service floor to the platform so as to run the utility line below the platform.

There is a manual mode of operation for manufacturing plant-400 kg. For manual mode selector switches are provided on control panel to control the parameter.

- Water inlet : 1” dia. TC flanged end.
- Water outlet : 1” dia. TC flanged end.
- Cooling water inlet : 1” dia. TC flanged end.
- Cooling water outlet : 1” dia. TC flanged end.

7.0 REASON FOR QUALIFICATION:

After completion of the Operation Qualification of the equipments, it is imperative to perform the Performance Qualification. The study will establish that the parameters are followed, critical variables are under control and the quality of the output is, as desired.

8.0 SITE OF STUDY:

Manufacturing line.

9.0 FREQUENCY OF QUALIFICATION:

- After two years.
- After any major breakdown or after major modification.
- After Change of Location

10.0 PRE-QUALIFICATION REQUIREMENTS:

The results of any tests should meet the limits and acceptance criteria specified in the test documents. Any deviations or issues should be rectified and documented prior to PQ commencing.

10.1 Verification of Documents:

Record the observations for documents in the below mentioned table.

S. No.	Document Name	Document / SOP No.	Completed (Yes/No)	Checked By (Engineering) Sign/Date	Verified By (QA) Sign/Date
1.	Executed and approved Design Qualification cum report				
2.	Executed and approved Installation Qualification cum report				
3.	Executed and approved Operational Qualification cum report				
4.	PQ Protocol approved				
5.	SOP for Operation & Cleaning of manufacturing vessel				
6.	SOP for Preventive Maintenance manufacturing vessel				

Checked By
Production
Sign/Date: ……

Verified By
Quality Assurance
Sign/Date: ……

Inference:

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Reviewed By
Manager QA
Sign/Date: ……

10.2 Training Record of Validation Team:

- All the persons involved in the execution of qualification activity must be trained in all aspects of the qualification activity including the test methodology, acceptance criteria and safety precautions to be followed during working.
- Verify the training records and record the details in table mentioned in performance qualification report.

10.3 Calibration of Test Instruments:

- Calibration of all the instruments used for qualification should be mentioned along with Calibration Certificates.

11.0 TESTS AND CHECKS:

11.1 Equipment Volumetric Capacity (In Liters) Test By Chemical Method :

11.1.1 Objective:

- The purpose of this test is to demonstrate that Vessel Capacity provided is as agreed with the Equipment supplier and meeting User Requirement

11.1.2 Equipment / Instrument Used:

- Process Water: Calibrated Vessel/ QC equipment to measure required quantity for charging Purified Water, Sodium chloride. (0.9%) packs.

11.1.3 Method Applied:

- Charge 100 litres of Process Water using calibrated cylinder/ vessel or through load cell. Witness the quantity of Water received by the vessel.
- Add Nacl (0.9%) to100 L charged vessel.
- Operate the equipment at process parameters as per SOP on operation of multi mix manufacturing plant.
- After the completion of cycle take 100 mL of rinse sample & send to QC lab for assay.
- Repeat above process by adding water 100 L in each interval up to manufacturing capacity.

11.1.4 Acceptance Criteria:

- Assay of Nacl should be between 0.882% w/v – 0.912% w/v
- Equipment runs trouble free without any problems after charging material up to working volume i.e. 600 Liters.

11.1.5 Result Recording:

- Measure the Equipment Volumetric Capacity (in liters) and calculate the result and record the results in Performance Qualification Report.

11.2 TEMPERATURE VERIFICATION:

11.2.1 Objective:

The purpose of this test is to ensure that Equipment is providing required temperature.

11.2.2 Test Method:

Charge the Material as defined in BMR. Set process parameters as defined in BMR. Take the temperature Readings after different time intervals.

Record the test data and any observations throughout the process as per BMR.

11.2.3 Acceptance Criteria:

At different time interval, sample should reach set temperature.

11.3 MIXING UNIFORMITY OF PLACEBO OR DRUG PRODUCT:

11.3.1 Objective:

To verify the mixing Uniformity of the Multi mix manufacturing plant by mixing of the Placebo or drug product for pre specified time and then evaluating the collected sample from different location for analysis.

11.3.2 Test Method:

- Charge the Material as defined in BMR of Dummy Batch. Set process parameters as defined in BMR.
- The test shall be performing on different parameter such as Minimum speed and maximum speed with minimum and maximum temperature.
- Take the Samples after final mixing.
- Sample shall be collected at two locations at identified.
- Sample to be taken at Top, Bottom 150 gm. From each location
- Collected sample shall be kept in glass bottle or sample polybag and send to QC for Testing of Description, pH and assay.
- Record the test data and any observations throughout the process as required per BMR. Three consecutive trials must be tested as described before, in order to demonstrate Consistent performance.

11.3.3 Acceptance Criteria:

- At different time Interval product should be homogeneous.

- Operation of Equipment should be trouble free throughout the operation cycle.

Test Material / Equipment:

- Raw Materials & Water in sufficient quantity as per BMR.
- Sample collection using calibrated sampling rod.
- Sample containers or sample polybag

11.4 Test Program and Sampling Points

Test	Number of Tests / Samples per Day	Number of Trial for Testing / Sampling	Acceptance Criteria	Acceptable (Y/N)
Equipment Volumetric Capacity Verification by chemical method	Two sample locations at Top & Bottom One composite sample	Three	Description: pH Assay: 0.882% W/V – 0.912%W/V	
Temperature verification	NA	Three	70 ± 2%	
Mixing Uniformity of Placebo or Drug Product	Two sample locations at Top & Bottom One composite sample	Three	Description: As per Product specification pH: 5.5 – 7.5 Assay: 90 to 110 %	

Checked By
Production……
Sign & Date

Verified By
Quality Assurance ……
Sign & Date)

Inference:……

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Reviewed By:……
Manager QA
Sign & Date

12.0 CHECKLIST OF ALL TESTS AND CHECKS:

This checklist is provided to ensure that all tests or checks required for this protocol have been executed.

TESTS OR CHECKS	EXECUTED [Y/N]	COMMENT
Equipment Volumetric Capacity Verification by chemical method		
Temperature verification		
Mixing Uniformity of Placebo or Drug Product		

Checked By
Production……
Sign & Date

Verified By
Quality Assurance……..….
Sign & Date

Inference:…….

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Reviewed By
Manager QA……..……..
Sign & Date

13.0 REFERENCES:

- Validation Master Plan.
- Schedule – M – "Good Manufacturing Practices and Requirements of Premises, Plant and Equipment for Pharmaceutical Products."
- WHO Essential Drugs and Medicines Policy, QA of Pharmaceuticals, Vol-2. Good Manufacturing Practices and Inspection.

14.0 DOCUMENTS TO BE ATTACHED:

- Raw data of Trial batches
- Equipment Usage Logbook
- QC testing raw data and Certificate
- Any Other Relevant Documents

15.0 NON COMPLIANCE:

- In case of any Non compliance observed during PQ, inform to Head QA for necessary action. Document the details observed.
- The Head QA will study the impact of Non compliance. If Non compliance is acceptable and it does not have an impact on performance of the Qualification, prepare final conclusion.

16.0 DEVIATION FROM PRE-DEFINED SPECIFICATION, IF ANY

- In case of any deviation observed during PQ, inform to Head QA for necessary action.
- Document the deviation detail in observed deviation section.
- The Head QA will study the impact of deviation. If deviation is acceptable and it does not have an Impact on performance of the Qualification, prepare final conclusion & prepare final conclusion.

17.0 CHANGE CONTROL, IF ANY

- If any change control is required during PQ, inform to Head QA for necessary action.
- Document the details observed.
- The Head QA will study the impact of change. If change is acceptable and it does not have an Impact on performance of the Qualification, prepare final conclusion & prepare final conclusion.

18.0 ABBREVIATIONS:

No.	:	Number
WHO	:	World Health Organization
FDA	:	Food and Drug Administration
CFR	:	Code of Federal Regulations
cGMP	:	current Good Manufacturing Practices
EU	:	European Union
IQ	:	Installation Qualification
mm	:	Millimetre
Amp.	:	Ampere