PERFORMANCE QUALIFICATION PROTOCOL FOR MULTI-MIX MANUFACTURING PLANT MANUFACTURING LINE

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

PHARMA DEVILS	PERFORMANCE QUALIFICATION PROTOCOL FOR MULTI-MIX MANUFACTURING PLANT	PROTOCOL No.:

PROTOCOL CONTENTS

1.0 PROTOCOL APPROVAL:

PREPARED BY:

DESIGNATION	NAME	SIGNATURE	DATE
OFFICER/EXECUTIVE (QUALITY ASSURANCE)			

REVIEWED BY:

OPERATING MANAGER (QUALITY ASSURANCE)			
HEAD (QUALITY CONTROL)			
HEAD (ENGINEERING)			
HEAD (PRODUCTION)			

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 and Approval of Performance Qualification Protocol. • Co-ordination with Quality Control, Production and Engineering to carryout Performance Qualification Activity. • Monitoring of Performance Qualification.
Production	• Review of Performance Qualification Protocol. • To execute the performance qualification activity as per protocol.
Quality Control	• Review of Performance Qualification Protocol. • Analytical Support (Chemical Analysis).
Engineering	• Review of Performance Qualification Protocol. • To provide supporting utilities during performance qualification activity. • To co-ordinate and support Performance Qualification Activity.

5.0 EQUIPMENT DETAILS:

Equipment Name	Multi Mix manufacturing Plant		
ID. Number			
Capacity	**Type of vessel**	**Working Capacity**	**Gross Capacity**
	Wax Phase Vessel	30 Liters	40 Liters
	Water Phase Vessel	30 Liters	40 Liters
	Main Manufacturing Vessel	60 Liters	75 Liters
Manufacturer's Name			
Supplier's Name			
Location of Installation	Manufacturing Line		

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 Equipment’s, 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

- Periodic re-qualification at frequency of every 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	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 of 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 & 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:

For Wax Phase Vessel:

- Charge 10 liters of Process Water using calibrated cylinder / vessel. Witness the quantity of water received by the vessel.
- Add Nacl (0.9 %) to10 liter charged vessel.
- Set the agitator speed to optimum RPM _____for 5 minutes. Operate the equipment as per respective SOP of operation of multi mix manufacturing plant.
- After the completion of cycle take 10 ml sample & send to QC lab for assay.
- Repeat above process by adding water 10 liter in each interval up to manufacturing capacity i.e. 30 liter.

For Water Phase Vessel:

- Charge 10 liters of Process Water using calibrated cylinder / vessel. Witness the quantity of water received by the vessel.
- Add Nacl (0.9%) to 10 liter charged vessel.

- Set the agitator speed to optimum RPM _____for 5 minutes. Operate the equipment as per respective SOP of operation of multi mix manufacturing plant.
- After the completion of cycle take 10 ml sample & send to QC lab for assay.
- Repeat above process by adding water 10 liter in each interval up to manufacturing capacity i.e. 30 liter.

For Main Manufacturing Vessel:

- Charge 20 liters of Process water using calibrated cylinder / vessel. Witness the quantity of water received by the vessel.
- Add NaCl (0.9 %) to 20 liter charged vessel.
- Set the agitator speed to optimum RPM _____for 5 minutes. Operate the equipment as per respective SOP of operation of multi mix manufacturing plant.
- After the completion of cycle take 10 ml of sample & send to QC lab for assay.
- Repeat above process by adding water 20 liter in each interval up to manufacturing capacity i.e. 60 liter.

11.1.4 Acceptance Criteria:

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

11.1.5 Result Recording:

Record the results in Performance Qualification Report.

11.2 Mixing Uniformity of Placebo or Drug product:

11.2.1 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 locations for analysis.

11.2.2 Test Method:

- Charge the Material as defined in batch manufacturing record (Ref. BMR).
- Set the process parameters as defined in batch manufacturing record (Ref. BMR).
- Take the Samples after final mixing.
- Sample to be taken from Top, Middle and Bottom of vessel (Quantity: 150 g 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.

11.2.3 Acceptance Criteria:

- At different locations, product should be homogeneous.
- Operation of Equipment should be trouble free throughout the operation cycle.

11.2.4 Test Material / Equipment:

- Raw Materials & Water in sufficient quantity as per batch manufacturing record (Ref. BMR).
- Sample collection using calibrated sampling rod.
- Sample containers or sample polybag.

11.3 Test Program and Sampling Points

Test	Number of Tests / Samples per Day	Acceptance Criteria	Acceptable (Yes / No)
Equipment Volumetric Capacity and uniformity Verification by chemical method	Sample after each interval	Description: pH Assay: 0.882 % W/V – 0.912 % W/V	
Mixing Uniformity of Placebo or Drug Product	Two sample locations at Top & Bottom One composite sample	Description: As per Product specification pH: 5.5 – 7.5 Assay: 90 to 110 %	

12.0 CHECKLIST OF ALL TESTS & CHECKS

S.No.	Name of Test or Check	Execution (Yes / No)	Remark
1.	Equipment Volumetric Capacity (in liters) Test by chemical method		
2.	Verification of Uniformity of Mixing		

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:

- SOP for "Operation & Cleaning of Multi Mix Manufacturing Plant".
- Operational Qualification Report of Multi Mix Manufacturing Plant.

14.0 DOCUMENTS TO BE ATTACHED:

- Analytical Test Report from QC.
- Any other Relevant Documents.

15.0 NON COMPLIANCE:

In case of any Non-compliance observed during PQ, same shall be handled through SOP for Handling of Non-Compliance.

16.0 DEVIATION FROM PRE-DEFINED SPECIFICATION, IF ANY

In case of any deviation observed during PQ, same shall be handled through SOP for Handling of Deviation.

17.0 CHANGE CONTROL, IF ANY

If any change is required during PQ, same shall be handled through SOP for Change Management.

18.0 ABBREVIATIONS:

PQ	:	Performance Qualification
URS	:	User Requirement Specification
SS	:	Stainless Steel
RPM	:	Rotation Per Minute
Kg	:	Kilogram
TC	:	Tri Clamp
%	:	Percentage
cGMP	:	Current Good Manufacturing Practices
QA	:	Quality Assurance
Sign.	:	Signature
ml	:	Milliliter
W/V	:	Weight / Volume
BMR	:	Batch Manufacturing Record
g	:	Gram
ID. No.	:	Identification Number
LTD.	:	Limited
NaCl	:	Sodium chloride
No.	:	Number
OQ	:	Operational Qualification
PPQ	:	Performance Qualification Protocol
PVT	:	Private
QC	:	Quality Control
SOP	:	Standard Operating Procedure