PHARMA DEVILS

QUALITY ASSURANCE DEPARTMENT

QUALITY RISK ASSESSEMENT AND MITIGATION PLAN

QRA No.:

Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

S.No.	Item/ Function	Potential Failure Mode (Failure Mode)	Potential Effect of Failure (Effect)	Potential Cause/ Mechanism of Failure	Current Control	Reference	S	O	D	Risk Priority Number (S*O*D)	Recommend-ended Actions (if any)	Post Risk			
												S	O	D	RPN S*O
Facility Processes:															
1	RM Dispensing	➢ Inaccuracy of weighing balance during dispensing	➢ It can be cause of variation in weight of RM during weighing and also cause variation in assay of product.	➢ Due to out of calibration of weighing balance	➢ Calibration of weighing balance is done on monthly basis and daily verification of weighing balance is also done to check its accuracy.	As Per SOP	4	2	1	8 Low category & Risk Accepted	Adequate procedure no recommendation required.				
2	RM Dispensing	➢ RM is not of appropeate quality	➢ It can be cause of low assay and low stability of finish product.	➢ RM testing not done during receiving of RM. ➢ Receiving of Raw material from an unapproved vender.	➢ There is a provision for sampling & testing of raw materials and all raw materials have been sampled and tested as per the written procedures and only after that QC approved RM is used for further processes. ➢ Before procurement of materials all venders has been qualified & approved as per our written procedure for vendor management.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
3	RM Dispensing	➢ Unapproved material used for dispensing process	➢ It can be very harmful for whole batch and could be cause of low assay of finish product.	➢ Due to not proper testing by quality control department.	➢ There is a proper provision for sampling, testing and labeling (approved or rejected) of raw material and before dispensing raw material verified by quality assurance department for its approved status.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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4	RM Dispensing	➢ Gowning procedure not followed for dispensing	➢ There might be a chance of contamination of Raw Material.	➢ If untrained person will enter in the dispensing area.	➢ Only trained persons are authorized to enter in dispensing area followed by the authorized person list.	As Per SOP	3	2	1	6 Low category & Risk Accepted	Adequate procedure no recommendation required.				
5	RM Dispensing	➢ Temperature and RH out of limit during dispensing	➢ It can be effects the property of Raw material and due to more RH, it can create moisture in Raw material.	➢ Failures of HVAC system or unqualified AHU'S are in use.	➢ Qualified HVAC System is used in our facility and we also have a provision of BMS system for controlling and monitoring of Temp. & RH.	As Per SOP	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
6	RM Dispensing	➢ No proper cleaning during dispensing process	➢ There might be a chance of contamination of Raw Material.	➢ SOP for cleaning not followed. ➢ No training provided to person.	➢ Written procedures are available for cleaning processes and trained quality assurance person daily verify the cleaning of dispensing room.	As Per SOP	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
7	RM Dispensing	➢ Malfunctioning of Dispensing Booth	➢ Due to that cross contamination of raw material will occurred.	➢ No proper maintenance is there for dispensing booth and Unqualified dispensing booth used for dispensing.	➢ Qualified Dispensing booth is using for dispensing purposes and there is a provision for daily monitoring of differential pressure of dispensing booth through its magnehelic gauges. ➢ There is also a written procedure for preventive maintenance of all equipment including with dispensing booth.	As Per SOP	4	2	1	8 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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8	Transfer the dispensed material from store to Manufacturing.	➢ Material spillage ➢ Material misplace during transfer.	➢ Directly impacted to the product manufacturing & product quality.	➢ Not Proper handling during transferring of materials.	➢ After dispensing all materials are kept in dispensing bags and close with cable tie with a specific numbering on each material. ➢ We have a provision to transfer all the dispensed materials in a closed SS Container.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
9	Manufacturing Process	➢ Cleaning not done of manufacturing tank before manufacturing process.	➢ There might be a chance of contamination of product.	➢ SOP for cleaning (CIP) not followed. ➢ No training provided to person.	➢ Written procedures are available for cleaning processes and trained quality assurance person daily verify the cleaning of manufacturing tank. ➢ Online CIP (Clean in Place) system is available for cleaning. ➢ Online conductivity meter is available.	As Per SOP	3	2	1	6 Low category & Risk Accepted	Adequate procedure no recommendation required.				
10	Manufacturing Process	➢ Sterilization not done of manufacturing tank.	➢ Chemical & Microbial contamination increases in manufacturing vessel.	➢ SOP for Cleaning & sanitization not followed. ➢ Working personnel lack of adequate knowledge.	➢ Written procedures are available for cleaning & sanitization processes and quality assurance person verify the sterilization process of manufacturing tank. ➢ Online SIP (Sterilization in Place) system is available for sterilization.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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11	Manufacturing Process	➢ WFI failed during testing.	➢ Batch Directly Impacted, Chance to increases microbial level in final product.	➢ WFI not meet its predetermined specification. ➢ Sampling & testing of WFI not done on correct manner.	➢ Before manufacturing WFI sample shall be send for pH, Conductivity & BET test & Procedure Incorporated in BMR.	As Per SOP	4	3	1	12 Low category & Risk Accepted	Adequate procedure no recommendation required.				
12	Manufacturing Process	➢ Weight verification not done after dispensing process.	➢ Could not verify if there is a loss of dispensed raw material during transfer from dispensing room to manufacturing room.	➢ Due to no provision of verification in manufacturing room.	➢ All dispensed materials are kept in separate dispensing poly bags and closed with cable tie and after dispensing all dispensed materials are kept in a SS container with lock n key.	As Per SOP	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
13	Manufacturing Process	➢ Initial WFI/oil/liquid excipient weighing in the manufacturing tank.	➢ It can be lead the low assay results from product's specification. ➢ It can cause batch failure.	➢ Wrong calibration of dip scales. ➢ Human error during weighing. ➢ Working personnel lack of adequate knowledge. ➢ Load cell not calibrated and verified.	➢ Scales are calibrated on daily basis. ➢ All weights are verified by both production and quality assurance persons. ➢ Before startup of manufacturing the load cell verified on daily basis and calibrated on monthly basis.	As Per SOP	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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14	Manufacturing Process	➢ Dissolution of API ➢ Insufficient mixing time and or speed or over mixing.	➢ It can cause incomplete dissolution of API	➢ Did not follow the written procedure in batch manufacturing record. ➢ Working personnel lack of adequate knowledge.	➢ Mixing time is evaluated during process validation batches in order to validate a specific range ➢ Samples are taken from bottom for checking API dissolution. ➢ Trained persons are involved in manufacturing processes.	As Per SOP & BMR	3	2	1	6 Low category & Risk Accepted	Adequate procedure no recommendation required.				
15	Manufacturing Process	➢ Failure in temperature indicator controller & Temperature sensor of manufacturing tank during batch mixing.	➢ Due to that the actual process of manufacturing with respect to actual temperature of WFI will not be accurately matched and it can be affected the batch manufacturing process.	➢ Sensitivity of temperature indicator controller & Temperature sensors may failed	➢ Calibration and performance of temperature indicator controller & temp. Sensors shall be check during operational qualification of mfg. tank.	As Per SOP & BMR	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
16	Manufacturing Process	➢ Mixing time & Volume Variation during manufacturing of bulk.	➢ Variation in desired assay result.	➢ Due to invisible marking on dipstick and/or untrained operator perform batch manufacturing.	➢ Batch manufacturing process is done in presence of QA and Production supervision to ensure correctness of all parameters according to BMR. ➢ Periodic calibration of dipstick is done to ensure exact marking.	As Per SOP & BMR	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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17	Manufacturing Process	➢ Heating or cooling the solution	➢ Increase of impurities and can be a chance dissolution difficulties.	➢ There can be a mechanical problem (in heater or chiller)	➢ Temperature limits for applicable steps are written in the batch manufacturing records and are double check by production and quality assurance person. ➢ Preventive maintenance is done as per schedule.	As Per SOP & BMR	3	2	1	6 Low category & Risk Accepted	Adequate procedure no recommendation required.				
18	Manufacturing Process **(pH adjustment)**	➢ pH not in the required range	➢ It can reduced buffer capacity & stability of product.	➢ pH meter not correctly calibrated. ➢ Working personnel lack of adequate knowledge.	➢ pH meter is Calibrated on daily basis ➢ pH is specified in batch record. ➢ pH readings are double verified and after all the pH adjustments QC Confirm the final Ph.	As Per SOP & BMR	4	3	1	12 Low category & Risk Accepted	Adequate procedure no recommendation required.				
19	Manufacturing Process **(Bulk solution sampling)**	➢ Incorrect sampling procedures ➢ Incompatibility of sampling containers ➢ Use of non dedicated or disposable materials	➢ It can lead of low assay results. ➢ High bio-burden rate/growth. ➢ Products cross contamination. ➢ Batch failure.	➢ Using incorrect sampling procedures. ➢ Sampling done by untrained person. ➢ Wrong sampling containers used. ➢ High head space of container due to that oxygen can go inside the sampling container that can react with the product.	➢ Product sampling done as per the respective SOP. ➢ Trained persons are done sampling of bulk solution under presence of QA person. ➢ Cleaned & Sterilized containers (glass bottles) are used for sampling process. ➢ For oxygen sensitivity products the sampling container has to be totally filled to avoid headspace.	As Per SOP & BMR	4	2	1	8 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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20	Mixing tank to Holding tank Transfer line	➢ Cleaning not done of mixing tank to holding tank transfer line.	➢ Microbial contamination increases in transfer line. ➢ There might be a chance of contamination of product.	➢ Online monitoring for cleaning of product line not available ➢ Cleaning process of transfer line interrupted. ➢ Cleaning of transfer line not followed as per SOP. ➢ No proper procedure for cleaning of transfer line.	➢ Product line cleaned with manufacturing tank and online conductivity sensor has been installed at the end of Drain line and recipe has been set when conductivity not achieve then cleaning continue still get conductivity 1.3 µ Siemen. ➢ Print facility available for reviewing of cleaning Process	As Per SOP & BMR	3	1	1	3 Low category & Risk Accepted	Adequate procedure no recommendation required.				
21	Mixing tank to Holding tank Transfer line	➢ Sterilization not done of mixing tank to holding tank transfer line.	➢ Directly impacted to Product Sterility & Quality. ➢ Product gets contaminated after filtration.	➢ Due to assembling of Product line after sterilization, intact line and online sterilization facility not available.	➢ Product line Sterilized with manufacturing tank and online temperature sensor has been installed at the end of product line and recipe has been set sterilization hold cycle not started when temperature not achieve at that end point of product line. ➢ Print facility available for reviewing of sterilization Process.	As Per SOP & BMR	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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22	Product Filter	➢ Integrity test failure	➢ Product contaminated	➢ Filter use more than recommended cycle ➢ Filter Use without Integrity testing	➢ Dedicate filter use for all products for filtration. ➢ Filter use as per recommended cycle & maintained in log book for their cycle. ➢ Final Filter integrity done before & After Filtration process.	As Per SOP	4	2	1	8 Low category & Risk Accepted	Adequate procedure no recommendation required.				
23	Product Filter	➢ Aseptically not handling After Sterilization of product filter	➢ Directly impacted to Product Sterility & Quality	➢ On line product sterilization facility not available.	➢ Product filter sterilized with tank & Product line and after that no any manual interference.	As Per SOP	4	2	1	8 Low category & Risk Accepted	Adequate procedure no recommendation required.				
24	Filtration Process	➢ Cleaning not done of Filtration tank before filtration process.	➢ There might be a chance of contamination of product.	➢ SOP for cleaning (CIP) not followed. ➢ Working personnel lack of adequate knowledge.	➢ Written procedures are available for cleaning processes of holding tank and trained quality assurance person daily verify the cleaning of manufacturing tank. ➢ Online CIP (Clean in Place) system is available for cleaning. ➢ Online conductivity meter is available.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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25	Filtration Process	➢ Sterilization not done of filtration tank before filtration process.	➢ Chemical & Microbial contamination increases in holding vessel.	➢ SOP for Cleaning & sanitization not followed. ➢ Working personnel lack of adequate knowledge.	➢ Written procedures are available for cleaning & sanitization processes and quality assurance person verify the sterilization process of manufacturing tank. ➢ Online SIP (Sterilization in Place) system is available for sterilization.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
26	Filtration Process	➢ Availability of non-sterile solution for aseptic filling.	➢ There might be a chance of Product Contamination.	➢ Integrity failure of 0.22µ sterile filter and/or use of unsterilized articles during filtration process.	➢ Pre and post filter integrity has been done before and after filtration process to ensure integrity of 0.22µ sterile filter. ➢ On line CIP & SIP System is in place for providing a better process result so that all equipment's should be sterile for filtration process.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
27	Filtration Process	Filtered Solution not aseptically transfers from Filtration room to filling room.	➢ Product gets contaminated. ➢ Chemical & Microbial contamination increases in solution.	➢ Aseptically not handling during transfer of solution. ➢ Working personnel lack of adequate knowledge.	➢ Filtered solution transfer through integrated transfer line from holding tank to buffer tank in filling room and integrated line available for prevent to cross contamination.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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28	Filtration process	➢ Non-Integral filters used for filtration process	➢ Filled product remains non-sterile. ➢ High bio-burden results after pre filter. ➢ Chemical & Microbial contamination increases in solution.	➢ Damaged/faulty filters used for filtration process. ➢ Human error. ➢ Working personnel lack of adequate knowledge.	➢ Each filter has a "certificate of test" from supplier. ➢ Pre and post integrity test are conducted before and after filtration process respectively and print out attached with Batch manufacturing record. ➢ Training provided to persons.	As Per SOP & BMR	4	2	1	8 Low category & Risk Accepted	Adequate procedure no recommendation required.				
29	Filtration process	➢ Filter is not compatible with the product.	➢ Low assay found in final product. ➢ High chances of impurities.	➢ The material and type of filter (hydrophilic or hydrophobic) is not compatible with product. ➢ Product conditions different from its validated status.	➢ The same filter is used for validation batches and product stability is conforming.	As Per SOP & BMR	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
30	Machine parts & Filling Assembly	➢ Cleaning not properly done	➢ Directly impacted to product	➢ Written procedure for machine parts cleaning not available ➢ After cleaning verification process not available	➢ Cleaning of machine parts is done as per the respective SOP. ➢ After cleaning all details recorded in batch manufacturing record.	As Per SOP & BMR	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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31	Machine parts & Filling Assembly	➢ Materials/ machine parts are not sterilized by utilizing the validated parameters.	➢ Machine parts not sterilized properly.	➢ Unqualified autoclave used for sterilization process ➢ Un-qualified load patterns used. ➢ Mechanical problem in autoclave. ➢ Working personnel lack of adequate knowledge. ➢ Impure steam provided by PSG.	➢ Autoclave qualification has been done and a validated load pattern is provided to production. ➢ Preventive maintenance is done as per schedule. ➢ Trained Person handles the all autoclave processes. ➢ PSG is qualified and produces a quality & pure steam for autoclaving process.	As Per SOP & Validation record	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
32	Machine parts & Filling Assembly	➢ Aseptically not handling after sterilization.	Product contamination	➢ Carry and kept without laminar air ➢ Use over the recommendation periods	➢ Machine parts carry in Mobile LAF and assembled under LAF, Which is operated through battery backup.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
33	Garment sterilization	➢ Garments are not sterilized by utilizing the validated parameters.	➢ Garments for aseptic area not sterilized properly.	➢ Unqualified autoclave used for sterilization process ➢ Un-qualified load patterns used. ➢ Mechanical problem in autoclave. ➢ Working personnel lack of adequate knowledge.	➢ Autoclave qualification has been done and a validated load pattern is provided to production. ➢ Preventive maintenance is done as per schedule. ➢ Trained Person handles the all autoclave processes.	As Per SOP & Validation record	3	1	1	3 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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34	Sterile Garment storage	➢ Garments stored in unclassified & unqualified place. ➢ Garments hold up in same place for more than specified time duration.	➢ Sterilized garments can get contaminated by exposing and stored for more than specified time duration in outer area. ➢ Contaminated garment can also contaminate the aseptic area. ➢ Product can get easily contaminated by garments.	➢ No specific place provided for storing the sterile garments. ➢ Garments hold time duration not specified. ➢ Working personnel lack of adequate knowledge.	➢ Sterile garment storage cabinet is used for storing the sterile garments. ➢ Garment hold time study is established and a specified hold time period is recommended in respective SOP. ➢ Training provided to persons.	As Per SOP & Validation record	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
35	Sterile Garment storage	➢ Sterile garments cabinet not working properly.	➢ Microbial contamination increase in sterile garments stored in sterile garments cabinet.	➢ Mechanical error in sterile garments cabinet. ➢ Unqualified equipment is in use. ➢ Handle by untrained person.	➢ Preventive maintenance is done as per schedule. ➢ Qualification of Sterile garments cabinet is done and used after qualification. ➢ Trained person handle the sterile garments cabinet.	As Per SOP & Validation record	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
36	Area monitoring by settle plate & active air sampling	➢ Irregular monitoring intervals. ➢ Inadequate detailing of test locations (sample points)	➢ Area monitoring effected and can not record as per the time schedule. ➢ Critical locations can be left without monitoring.	➢ No schedule of area monitoring ➢ No justified and approved locations for area sampling. ➢ Working personnel lack of adequate knowledge.	➢ The area monitoring has been done as per the schedule for the different area. ➢ There are proper approved sampling locations for area monitoring. ➢ Trained personnel done the area monitoring.	As Per SOP	3	2	1	6 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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37	Area Cleaning	Area cleaning not done after batch completion.	There is a high degree of chances to increase the chemical & microbial growth in the area that can lead product contamination also.	Unawareness of operator and staff members. Working personnel lack of adequate knowledge.	Only trained and authorized per can enter & work in the aseptic area and they all are trained in their work. After completion of every batch the cleaning has been done in the presence of production and quality assurance personnel.	As Per SOP	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
38	Area Cleaning	Area cleaning not done as per the schedule.	High chances to increase the microbial growth in the area that can lead product contamination also.	No schedule is there for area cleaning. SOP of area cleaning not followed. Working personnel lack of adequate knowledge.	There is a proper schedule for cleaning of aseptic area and cleaning has been done as per the schedule by the trained personnel. SOP of area cleaning has been followed and log in the all details in respective log book.	As Per SOP	4	2	1	8 Low category & Risk Accepted	Adequate procedure no recommendation required.				
39	Area Cleaning	Microbial growth increases in aseptic area.	Product get contaminated Product failure.	Disinfectant using area cleaning not validated. Effectiveness of disinfectant not up to the mark.	Disinfectant validation has been done and only validated disinfectant has been used for cleaning of aseptic area.	As Per SOP & Validation record	4	2	1	8 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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40	Man & material entry in aseptic area	Man & material entry not specified	There are high chances of cross contamination. It can cause product failure.	Man & material entry not properly segregated for entering in aseptic area. Entry & exit procedure for aseptic area not specified.	There are separate entry procedures for man & material. All materials for aseptic area has been transferred through Dynamic pass box, and all personnel have been enter in the aseptic area through 03 change room system as per the entry & exit procedure for aseptic area.	As Per SOP & Validation record	3	1	1	3 Low category & Risk Accepted	Adequate procedure no recommendation required.				
41	Container washing	➢ Dirty ampoules are coming at the outlet of washing machine	➢ There might be a chance of product contamination.	➢ Water (WFI-I & II, and Fresh WFI) & Compressed air quality may not comply with its specification ➢ Pressure of WFI-I, WFI-II and Fresh WFI & compressed air may not comply with set parameters.	➢ The performance of all wash station verified at the time of washing operation. ➢ Performance washing machine is qualified and run as per its set parameters. ➢ Preventive maintenance of washing machine is done as per schedule. ➢ Filter integrity of filter installed on compressed air & WFI has been done as per SOP.	As Per SOP & Validation record	3	2	1	6 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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42	Sterilization & dehydrogenation of containers	➢ Leakage/bursting in HAPA filters of tunnel.	➢ It can cause contamination for ampoule/vials by generating particulate matters, which are ready for filling process.	➢ Inefficiency of HEPA filters due to excess air pressure from blower, might damage any pre patched filter surface of HEPA.	➢ Integrity of HEPA had been done at the time of performance qualification of tunnel. ➢ Pressure differential across the HEPA filter monitor on regular time interval during operation of tunnel.	As Per SOP & Validation record	3	1	1	3 Low category & Risk Accepted	Adequate procedure no recommendation required.				
43	Sterilization & dehydrogenation of containers	➢ Tunnel not depyrogenating the ampoules/ vials.	➢ It can cause a serious contamination on product. ➢ Product filling shall be done in pyrogenated containers imposing risk to final product.	➢ Insufficient exposure of temperature & time provided for containers. ➢ Heating zone didn't have a sufficient temperature to depyrogenate the containers. ➢ Speed of conveyor is more than it need.	➢ Depyrogenation test with at least 03 log reduction challenge test has been confirmed at the time of performance qualification of tunnel. ➢ Speed of conveyor has been defined for all containers at the time of PQ.	As Per SOP & Validation record	4	1	1	3 Low category & Risk Accepted	Adequate procedure no recommendation required.				
44	Filling & sealing process	➢ During filling operation there is volume variation of solution from set limit.	➢ There might be a problem of fill volume variation followed by impact on pharmacological action of drug.	➢ Non-qualified filling machine used for filling operation. ➢ It might be due to piston setting/ dosing timing setting problem. ➢ Working personnel lack of adequate knowledge.	➢ Performance qualification of filling machine has been done as per its testing parameters. ➢ 02% Volume variations from the set value is acceptable from machine and product volume has been set accordingly. ➢ Only Trained persons authorized to access filling & sealing operations.	As Per SOP & Validation record	3	2	1	6 Low category & Risk Accepted	Adequate procedure no recommendation required.				

QUALITY RISK ASSESSEMENT AND MITIGATION PLAN

QRA No.:

Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

S.No.	Item/ Function	Potential Failure Mode (Failure Mode)	Potential Effect of Failure (Effect)	Potential Cause/ Mechanism of Failure	Current Control	Reference	S	O	D	Risk Priority Number (S*O*D)	Recommend-ended Actions (if any)	Post Risk			
												S	O	D	RPN S*O
45	Filling & sealing process	➢ Machine is not running on variable speed i.e. 350, 400 & 450 ampoules/min.	➢ The results at variable speed after filling will not be exactly assessed during filling. ➢ There might be a problem of rejection & product output.	➢ There might be problem with input-Output command by PLC. ➢ Non-qualified filling machine used for filling operation. ➢ Working personnel lack of adequate knowledge	➢ Performance of the machine at different speed has been verified at the time of PQ. ➢ Performance qualification of filling machine has been done as per its testing parameters. ➢ Only Trained persons authorized to access filling & sealing operations.	As Per SOP & Validation record	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
46	Filling & sealing process	➢ No Pre and Post nitrogen flushing during filling operation.	➢ In case of absence of nitrogen, filling will be automatically stopped followed by delay in operation.	➢ Disconnection of nitrogen line from filling machine.	➢ Nitrogen pressure is interlocked with operation of machine, whenever low pressure or no nitrogen available the filling machine will stop automatically.	As Per SOP & Validation record	4	1	1	3 Low category & Risk Accepted	Adequate procedure no recommendation required.				
47	Filling & sealing process **(Nitrogen filter)**	➢ Non-Sterile nitrogen is coming in core area.	➢ There might be a chance of area contamination followed by product contamination.	➢ Integrity failure of 0.2 µ sterile filter.	➢ At the time of periodic validation all critical tests has been done to ensure the quality of nitrogen air in core area as per the pre specified acceptance criteria. ➢ Before filling two dedicated 0.2 µ filters are in place.	As Per SOP & Validation record	4	1	1	3 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

S.No.	Item/ Function	Potential Failure Mode (Failure Mode)	Potential Effect of Failure (Effect)	Potential Cause/ Mechanism of Failure	Current Control	Reference	S	O	D	Risk Priority Number (S*O*D)	Recommend-ended Actions (if any)	Post Risk			
												S	O	D	RPN S*O
48	Filling & sealing process	➢ Failure of LAF during the filling operation.	➢ Filling during switch off condition of LAF will directly impact the sterility of the sterility of the product.	➢ There might be failure of sensor & Problem in input-output command by PLC. ➢ Non-qualified Laminar air flow unit used for filling operation. ➢ No preventive maintenance of LAF.	➢ During operational qualification all sensors has been verified. ➢ Performance qualification of LAF has been completed. ➢ Preventive maintenance of LAF done as per schedule.	As Per SOP & Validation record	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
49	Filling & sealing process	➢ During filling power failure of LAF.	➢ Filling during power failure condition of LAF will directly impact the sterility of the sterility of the product and there might be a chance of contamination of product.	➢ Failure of power supply in aseptic area. ➢ Failure of UPS Backup of filling LAF.	➢ During power failure of LAF all filling operation will stop. ➢ A proper training has been provided to concerned personnel that filling operations shall be done only under LAF and also background of LAF shall be maintained as per specific grade requirement.	As Per SOP & Validation record	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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QRA No.:

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S.No.	Item/ Function	Potential Failure Mode (Failure Mode)	Potential Effect of Failure (Effect)	Potential Cause/ Mechanism of Failure	Current Control	Reference	S	O	D	Risk Priority Number (S*O*D)	Recommend-ended Actions (if any)	Post Risk			
												S	O	D	RPN S*O
50	Filling & sealing process	➢ Filling line speed and volume variations.	➢ It can lead the unevenness of extractable volume for its specifications. ➢ It can be cause of batch failure.	➢ Filling line speed not verified. ➢ Wrong parameters set in the batch manufacturing record.	➢ Filling line speed of filling machine has been studied and verified during performance qualification of filling & sealing machine. ➢ Details of filling machine speed in Batch manufacturing record has been set as per PQ OF m/c and checked & verified by production & QA personnel.	As Per SOP & Validation record	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
51	Filling & sealing process	➢ Filling room differential pressure is out of range during product filling.	➢ Due to low DP there might be a risk of area contamination with respect to adjacent room followed by contamination in product.	➢ Due to insufficiency of AHU Performance. ➢ Non-qualified AHU used for operation.	➢ Audio visual alarm system is provided in BMS System when pressure differential will go out of limit. ➢ At the time of PQ pressure differential has been verified.	As Per SOP & Validation record	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				
52	Filling & sealing process	➢ Filling room temperature & RH is out of range during product filling.	➢ There might be an impact on in-process product.	➢ Due to inefficiency of chiller & heater of that particular AHU.	➢ Audio visual alarm system is provided in BMS System when temperature & RH will go out of limit. ➢ At the time of PQ temperature & RH has been verified.	As Per SOP & Validation record	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				

QUALITY RISK ASSESSEMENT AND MITIGATION PLAN

QRA No.:

Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

S.No.	Item/ Function	Potential Failure Mode (Failure Mode)	Potential Effect of Failure (Effect)	Potential Cause/ Mechanism of Failure	Current Control	Reference	S	O	D	Risk Priority Number (S*O*D)	Recommend-ended Actions (if any)	Post Risk			
												S	O	D	RPN S*O
53	Filling & sealing process	➢ Routine filling interventions occurs due to any mechanical problem.	➢ It can be a cause of producing a non sterile product. ➢ Product safety and quality problem occurs.	➢ Operators not qualified in each interventions and it can lead the chance of human error.	➢ Filling process is covered by media fill study and all operators has been involved & qualified in each intervention. ➢ Media fill report covers the container size and filling interventions.	As Per SOP & Validation record	3	4	1	12 Low category & Risk Accepted	Adequate procedure no recommendation required.				
54	Sealing of vials	➢ Not properly seated rubber stoppers ➢ Poor sealing.	➢ It can cause leakage of vials and produce non integral vials.	➢ Machine setting not done properly. ➢ Working condition of machine not good. ➢ Working personnel lack of adequate knowledge.	➢ Performance of the machine at different speed has been verified at the time of PQ. ➢ Performance qualification of sealing machine has been done as per its testing parameters. ➢ Preventive maintenance of sealing machine is done as per the schedule. ➢ Only Trained persons authorized to access sealing operations.	As Per SOP & Validation record	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

S.No.	Item/ Function	Potential Failure Mode (Failure Mode)	Potential Effect of Failure (Effect)	Potential Cause/ Mechanism of Failure	Current Control	Reference	S	O	D	Risk Priority Number (S*O*D)	Recommend-ended Actions (if any)	Post Risk			
												S	O	D	RPN S*O
55	Visual inspection	➢ Particle observed in containers before packing	➢ Rejection of ampoules followed by less yield.	➢ Casual approach of visual inspectors during visual inspection. ➢ Visual inspection done by untrained inspectors. ➢ Efficiency error occurred in Automatic visual inspection machine.	➢ Visual inspection has been done on 100% basis, 10% of the inspected tray is again cross verified by the quality assurance person. ➢ Before running any batch on automatic visual inspection machine challenge test called as Knapp test is done to check the machine efficiency.	As Per SOP & Validation record	3	2	1	6 Low category & Risk Accepted	Adequate procedure no recommendation required.				
56	Completion of BMR till filling process	➢ Packing process has been stopped.	➢ No production activities have been continued further following more time consumption.	➢ Batch manufacturing record not filled and no details are in there to continue the further process.	➢ Batch manufacturing record has been filled at the time of performed activities and before packing started all reconciliation processes in BMR also has been completed, checked and verified by production & quality assurance personnel respectively.	As Per SOP & BMR	2	3	1	6 Low category & Risk Accepted	Adequate procedure no recommendation required.				

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QRA No.:

Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

S.No.	Item/ Function	Potential Failure Mode (Failure Mode)	Potential Effect of Failure (Effect)	Potential Cause/ Mechanism of Failure	Current Control	Reference	S	O	D	Risk Priority Number (S*O*D)	Recommend-ended Actions (if any)	Post Risk			
												S	O	D	RPN S*O
57	Labeling of container for individual identification	➢ Wrong label pasted on ampoules/vials.	➢ There are high chances of mixing of the product information followed by the market complaint. ➢ This is a very serious condition can cause a hazardness effect on patient due to wrong information.	➢ Wrong products label issue from the store department.	➢ All details of label has been mentioned in batch packing record and checked and verified by production and quality assurance personnel respectively. ➢ Details and printing quality of label has been verified by QA personnel as per the time interval mentioned in BPR.	As Per SOP & BPR	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
58	Labeling of container for individual identification	➢ Wrong product details on packed carton.	➢ There are high chances of miss the information about product followed by the market complaint.	➢ Due to impression of wrong product detail stereo on carton.	➢ All stereo is checked by production & verified by QA in stereo impression log form its correction against BMR & price list. ➢ After use to avoid mixing with other batches all stereos has been destroyed by production department and the same shall be verified by QA Personnel and recorded in stereo destruction logbook.	As Per SOP & BPR	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				

QUALITY RISK ASSESSEMENT AND MITIGATION PLAN

QRA No.:

Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

S.No.	Item/ Function	Potential Failure Mode (Failure Mode)	Potential Effect of Failure (Effect)	Potential Cause/ Mechanism of Failure	Current Control	Reference	S	O	D	Risk Priority Number (S*O*D)	Recommend-ended Actions (if any)	Post Risk			
												S	O	D	RPN S*O
59	Packing through blister machine	➢ Missing of Batch coding on Blister Foil.	➢ There are high chances of Miss Information about the product followed by market complaint.	➢ It might because of ink dried on the roller of blister machine.	➢ Proper coding is checked on each set of blister by production & Verified by QA personnel at the starting of coding. ➢ After every hour of activity QA and production personnel again check the quality of coding.	As Per SOP & BPR	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
60	Packing through hi-cart	➢ Missing of Batch coding on inner carton of product.	➢ Miss information about the product followed by market complaint.	➢ Due to impression of wrong product detail stereo on carton.	➢ All stereo is checked by production & verified by QA in stereo impression log form its correction against BMR & price list. ➢ After use to avoid mixing with other batches all stereos has been destroyed by production department and the same shall be verified by QA Personnel and recorded in stereo destruction logbook.	As Per SOP & BPR	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				
61	Packing process	➢ Packed products get mixed.	➢ There are high chances to distribution of wrong product in market, followed by market complaint.	➢ Due to no proper segregation between two different packed products.	➢ Product has been segregated properly and every batch has been properly tagged for it identification due to that there is no chances of mixing between two products.	As Per SOP & BPR	4	1	1	4 Low category & Risk Accepted	Adequate procedure no recommendation required.				

QUALITY RISK ASSESSEMENT AND MITIGATION PLAN

QRA No.:

Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

S.No.	Item/ Function	Potential Failure Mode (Failure Mode)	Potential Effect of Failure (Effect)	Potential Cause/ Mechanism of Failure	Current Control	Reference	S	O	D	Risk Priority Number (S*O*D)	Recommend-ended Actions (if any)	Post Risk			
												S	O	D	RPN S*O
62	Product storage from packing to dispatch	➢ Excessive exposure to light and temperature (above or below) from the recommended range.	➢ It can directly impact on the product and can reduce the stability of the product.	➢ Failure to comply the storage condition of FG Store.	➢ Temperature mapping has been done of finish goods store and storage condition has been maintained as per specified range and monitored regularly.	As Per SOP, BPR & BMR	3	1	1	3 Low category & Risk Accepted	Adequate procedure no recommendation required.				
63	Batch Release	➢ Batch release process has been stopped.	➢ Transfer ticket cannot be proceed and signed. ➢ No further activities have been continued following more time consumption.	➢ Batch packing record not filled and not details are in there about packing processes. ➢ No QC Released COA of finished product available in BPR. ➢ Product packing not qualified in terminal inspection.	➢ Batch packing record has been filled at the time of performed activities and before batch release BPR has been verified by quality assurance personnel for its completeness and attachment of QC released COA of finished product. ➢ Batch release is only done on behalf of completed BPR and QC released COA of finished product which is generated through ERP System. ➢ QA personnel also terminally check all the finished and packed quantity and after successfully completion of terminal inspection the transfer ticket has been signed.	As Per SOP, BPR & BMR	3	3	1	9 Low category & Risk Accepted	Adequate procedure no recommendation required.				

Where: S=Severity; O=Occurrence Probability; D=Detection; Risk category 1-25 RPN is Low risk, 26-50 RPN is Medium Risk, 51-125 RPN is High Risk.

QUALITY RISK ASSESSEMENT AND MITIGATION PLAN

QRA No.:

Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

Name of Facility/Equipment/Utility/System/Activity/Procedure/Unit Operation: Purified water generation & distribution system	Date:

S. No.	**Recommended Action**	**Responsible Person**	**Target Date of Completion**
1.	NA	NA	NA
2.	NA	NA	NA

CAPA: Not required

If required, mention CAPA No.: NA

Quality Risk Management Team			**Reviewed By Head Operations Sign & Date**	**Approved By Head QA Sign & Date**
Name	**Department**	**Sign & Date**		

QUALITY RISK ASSESSEMENT AND MITIGATION PLAN

QRA No.:

Name of Facility/Equipment/Utility/System/Activity/Procedure **Unit Operation**: Facility and Processes	**Date of Quality Risk Assessment:**

QUALITY RISK ASSESSEMENT AND MITIGATION SUMMARY REPORT

Name of Equipment: Facility and Processes

Verification of Action Plan: NA

Remarks (if any): The entire above failure mode and their Severity, Occurrence, Detection rating done and RPN No. is found between 3 to 12. Hence Risk is detected as low which is acceptable.

Verified By
QA
Sign & Date

Approved By
Head QA
Sign & Date