

EQUIPMENT ID. No.	
LOCATION	Ampoule Washing and De-Pyrogenation Tunnel
DATE OF QUALIFICATION	
SUPERSEDES REPORT No.	NIL



PROTOCOL No.:

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PROTOCOL No.:

REPORT PRE – APPROVAL: 1.0

INITIATED BY:

DESIGNATION	NAME	SIGNATURE	DATE
OFFICER/EXECUTIVE (QUALITY ASSURANCE)			

REVIEWED BY:

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

APPROVED BY:

DESIGNATION	NAME	SIGNATURE	DATE
HEAD (QUALITY ASSURANCE)			



2.0 **OBJECTIVE:**

The objective of this Report is to establish that Sterilization & Depyrogenating tunnel meets the following criteria:

• The Sterilization and Depyrogenating tunnel performs as per the pre-defined parameters and/or quality attributes.

3.0 SCOPE:

- The Report covers all aspects of Performance Qualification for the Sterilizing and Depyrogenating Tunnel (Make – Truking Technologies Ltd.) installed in the Ampoule Washing & Depyrogenating of
- This report provides all the relevant information of the performance qualification activity, In-process observations and analytical data of testing of collected samples



4.0 **RESPONSIBILITY:**

The Validation Group, comprising of a representative from each of the following departments, shall be responsible for the verification and evaluation of performed tests results.

DEPARTMENTS	RESPONSIBILITIES
Quality Assurance	Initiation, Approval Compilation of the Performance Qualification.
	• Co-ordination with Quality Control, Production and Engineering to
	carryout Performance Qualification Activity.
	• Monitoring of Performance Qualification.
Production	Review of Report.
	• To co-ordinate and support Performance Qualification Activity.
Quality Control	Analytical Support (Microbiological Testing / Analysis)
External Qualification Agency (if Applicable)	• Provide Raw Data of qualification activity as per protocol
Engineering	Reviewing of qualification Report for correctness, completeness and
	technical excellence
	• Responsible for trouble shooting (if occurred during execution).
	• Maintenance & preventive maintenance as per schedule.

EQUIPMENT DETAILS: 5.0

Equipment Name	Sterilizing and De-pyrogenating Tunnel
Equipment ID.	
Manufacturer's Name	Truking Technologies Ltd.
Supplier's Name	Truking Technologies Ltd.
Model	KSZ620/60B
Location of Installation	Ampoule Washing and Depyrogenating Tunnel



6.0 PRE – QUALIFICATION REQUIREMENTS:

6.1 Training of Qualification Team:

• All the persons involved in the execution of qualification Protocol must be trained in all aspects of the qualification activity including the test methodology, acceptance criteria and safety precautions to be followed during working at service floor.

6.2 Calibration of all Components of System and Test Instruments:

• Calibration of all the instruments used for Qualification should be mentioned along with Calibration Certificates.

S.No.	Name of Test Instrument	Date of Last Calibration	Next Due on	Status	Availability of Calibration Certificate	Verified By (QA) Sign/Date
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						



PHARMA DEVILS 7.0

TESTS AND CHECKS:

7.1 Air velocity measurement:

Date of Test	
Name of Instrument Used for Testing	Digital Anemometer
Calibrated on	
Calibration due on	

HEDA		Velocity [FPM]					Average
HEPA Filter No.	Location	V1	V2	V3	V4	V5	Velocity [FPM]
1.	In feed Zone						
2.	Preheating Zone						
3.	Heating Zone						
4.	Cooling Zone						
Acceptance Criteria							
The Average measured clean air velocity at downstream of filter face. Infeed Zone: 90-110 feet/min., Preheating Zone: 90-110 feet/min.,							

PU-110 teet/min., Preheating Zone: 90-110 feet/min., Heating Zone: 120-150 feet/min.., Cooling Zone: 90-110 feet/min.

Checked By (Engineering) Sign/Date:

Verified By (Quality Assurance) Sign/Date:

Inference:

.....

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Reviewed By (Manager QA) Sign/Date:



FROTOCOL NO.

PHARMA DEVILS

7.2 Filter Integrity Test (PAO Test) Of HEPA Filter :

Date of Test	
Name of Instrument	Aerosol Photometer
Calibrated on	
Calibration due on	

S.No.	HEPA Filter Location	Filter ID	Observed Downstream Concentration
1.	In feed Zone		
2.	Preheating Zone		
3.	Heating Zone		
4.	Heating Zone		
5.	Heating Zone		
6.	Cooling Zone		
7.	Cooling Zone		

Acceptance Criteria:

The PAO Penetration Leak Through HEPA Filters Should not Be Greater Than 0.01% of The Upstream PAO Concentration

Checked By (Engineering) Sign/Date:	Verified By (Quality Assurance) Sign/Date:
Inference:	
	Reviewed By
	(Manager QA) Sign/Date:



7.3 Non – viable particle count test:

Date of Test	
Name of Instrument used for Testing	
Calibrated on	
Calibration due on	

Date	Area / Location	Observation		Acceptance Criteria
		≥0 . 5μ	≥5 . 0μ	
	In feed Zone L-01			
	Preheating Zone L-02			1. NMT $3520/m^3$ particles of 0.5μ .
	Heating Zone L-03			
	Heating Zone L-04			2. NMT $20/m^3$ Particles of 5.0μ
	Heating Zone L-05			
	Cooling Zone L-06			
	Cooling Zone L-07			

Checked By	Verified By
(Engineering)	(Quality Assurance)
Sign/Date:	Sign/Date:
Inference:	
	Reviewed By
	(Manager QA)
	Sign/Date:
	~



7.4 **Conveyor Belt speed Verification test:**

Belt Speed in mm = $(Ampoule Diameter)^2 X \cos 30 X Washing M/C Out put$ **Tunnel Conveyor Width**

For 1 ml

Ampoule Diameter-10.5 mm Washing M/C Output - 500 ampoule/minute Tunnel width- 600mm

For 2 ml

Ampoule Diameter-11.5 mm Washing M/C Output – 500 ampoule/minute Tunnel width- 600mm

For 3 ml

Ampoule Diameter-12.5 mm Washing M/C Output – 500 ampoule/minute Tunnel width- 600mm

For 5 ml

Ampoule Diameter-14.5 mm Washing M/C Output – 420 ampoule/minute Tunnel width- 600mm

Date of Test				
Ampoule Size	1 ml	2ml	3ml	5ml
Set Speed	76 mm/minute	92 mm/minute	110 mm/minute	120 mm/minute
Actual Speed				

Checked By						
(Engineering)						
Sign/Date:	•••	•••	•••	 •	•••	

Verified By (Quality Assurance) Sign/Date:



Heat Distribution Study For Empty Chamber: 7.5

Test Instrument Name	
Sensors type & Qty.	
Model No	
Make	
Calibration done Date	
Calibration due Date	

Empty Heat Distribution Cycle Parameter:

Parameters	Set Value	Observed Value		2
T arameters	Set value	1 st Cycle	2 nd Cycle	3 rd Cycle
Cycle Start Date / Time				
Relative Humidity of Area				
Temperature of Area				
No. of In - built Temp. Sensors	05			
No. of external placed Temp. Sensors	12			
Heater Bank 1 cut off	340 [°] C			
Heater Bank 2 cut off	338 ⁰ C			
Heater Bank 3 cut off	336°C			
Conveyor Start Temp.	320°C			
Conveyor Belt Speed	80 mm/minute			
Differential Pressure between Drying Zone and room	05-10 Pascal			
Differential Pressure between Heating Zone and room	06-12 Pascal			
Differential Pressure between Cooling Zone and room	05-10 Pascal			



PROTOCOL No.:

Parameters	Set Value	Observed Value			
		1 st Cycle	2 nd Cycle	3 rd Cycle	
Minimum Avg. Temperature (Sensor	No)				
Maximum Avg. Temperature (Sensor No.)					
Total Cycle Time					
Sterilization Zone Exposure Time					
Result					
Cold Spot (external placed Temp. Ser					
Cycle End Date / Time					

Checked By		
(Engineering)		
Sign/Date:	 ••	•

Verified By (Quality Assurance) Sign/Date:

Inference:

Reviewed By (Manager QA) Sign/Date:



7.6 Heat Distribution Study For Loaded Chamber:

Test Instrument Name	
Sensors type & Qty.	
Model No	
Make	
Calibration done Date	
Calibration due Date	
Ampoule Size	

Loaded heat distribution cycle parameter:

Parameters	Set Value	Observed Value			
i arameters	Set Value	1 st Cycle	2 nd Cycle	3 rd Cycle	
Cycle Start Date / Time	L				
Relative Humidity of Area					
Temperature of Area					
No. of external placed Temp.	12				
Sensors No. of In - built Temp. Sensors	05				
Heater Bank 1 cut off	340 ⁰ C				
Heater Bank 2 cut off	338 ⁰ C				
Heater Bank 3 cut off	336 ⁰ C				
Conveyor Start Temp.	320 ⁰ C				
Conveyor Belt Speed (mm/minute)					
Differential Pressure between Drying Zone and room	05-10 Pascal				
Differential Pressure between Heating Zone and room	06-12 Pascal				



PROTOCOL No.:

J TOTALEL

Parameters	Set Value	Observed Value			
T uTumeters		1 st Cycle	2 nd Cycle	3 rd Cycle	
Differential Pressure between Cooling05-10 PascalZone and room05-10 Pascal					
Minimum Avg. Temperature & Sensor	No.				
Maximum Avg. Temperature & Sensor No.					
Total Cycle Time					
Sterilization Zone Exposure Time					
Result					
Cold Spot (external placed Temp. Sens	sors)				
Cycle End Date / Time					

Checked By	
(Engineering)	
Sign/Date:	• •

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Verified By (Quality Assurance) Sign/Date:

Inference:

•••••	••••••	••••••	•••••	••••••

Reviewed By	
(Manager QA)	
Sign/Date:	



Heat penetration study for loaded chamber: 7.7

Test Instrument Name	
Sensors type & Qty.	
Model No	
Make	
Calibration done Date	
Calibration due Date	
Ampoule Size	

LOADED HEAT PANETRATION CYCLE PARAMETER:

Parameters	Set Value	Observed Value			
1 arameters	Set value	1 st Cycle	2 nd Cycle	3 rd Cycle	
Cycle Start Date / Time					
Relative Humidity of Area					
Temperature					
No. of external placed Temp. Sensors	12				
No. of In - built Temp. Sensors	05				
Heater Bank 1 cut off	340°C				
Heater Bank 2 cut off	338°C				
Heater Bank 3 cut off	336 ⁰ C				
Conveyor Start Temp.	320 [°] C				
Conveyor Belt Speed					
Differential Pressure between Drying	05-10				
Zone and room	Pascal				
Differential Pressure between Heating	06-12				
Zone and room	Pascal				
Differential Pressure between Cooling Zone and room	05-10				



PROTOCOL No.:

3rd

Cycle

ParametersSet ValueObserved Value1st Cycle2nd CyclePascalPascalMinimum Avg. Temperature (Sensor No.)Image: Competence of the sensor No.)Maximum Avg. Temperature (Sensor No.)Image: Competence of the sensor No.)

Maximum Avg. Temperature (Sensor No.)		
Total Cycle Time		
Sterilization Zone Exposure Time		
Result		
Cold Spot (external placed Temp. Sensors)		
Cycle End Date / Time		

Checked By (Engineering) Sign/Date:	Verified By (Quality Assurance) Sign/Date:	
Inference:		

Reviewed By (Manager QA) Sign/Date:



PROTOCOL No.:

F_H Calculation & Endotoxin Test Report:

Probe No.	No. (300°C & Above)		Temp. (300°C & Above)F _H ValueReduction of Endotoxin			Remarks		
	Min	Max	From	То				
	n ce Criteria n of Endotoxi							
(Engine	Checked ByVerified By(Engineering)(Quality Assurance)Sign/Date:Sign/Date:							
Inference:								
	Reviewed By (Manager QA) Sign/Date:							



7.8.1 Differential Pressure Record:

Pressure Differential Gauge	Preheating Zone and room	Heating Zone and room	Cooling Zone and room
Magnehelic Gauge Id. No.			
Date of Calibration			
Calibration due date			
Acceptance Criteria	05-10 Pascal	06-12 Pascal	05-10 Pascal

		Pressure Differential					
Date	Time	Preheating Zone and room	Heating Zone and room	Cooling Zone and room			

Checked By (Engineering) Sign/Date:

Verified By (Quality Assurance) Sign/Date:

Inference:

..... **Reviewed By**

(Manager QA) Sign/Date:



7.8.2 Differential Pressure Record:

Pressure Differential Gauge	up and down of HEPA filter in preheating zone	up and down of HEPA filter-1 in heating zone	up and down of HEPA filter-2 in heating zone
Magnehelic Gauge Id. No.			
Date of Calibration			
Calibration due date			
Acceptance Criteria	100-300 Pascal	150-350 Pascal	150-350 Pascal

Date Time up and down of HEPA up and down of HEPA		Pressure Differential	ferential	
			up and down of HEPA filter-1 in heating zone	up and down of HEPA filter-2 in

Checked By (Engineering) Sign/Date:	Verified By (Quality Assurance) Sign/Date:
Inference:	
	Reviewed By (Manager QA) Sign/Date:



PROTOCOL No.:

7.8.3 Differential Pressure Record:

Differential Pressure Gauge	up and down of HEPA filter-3 in heating zone	up and down of HEPA filter-1 in cooling zone	up and down of HEPA filter-2 in cooling zone	Washing room and filling room
Magnehelic Gauge Id. No.				
Date of Calibration				
Calibration due date				
Acceptance Criteria	150-350 Pascal	80-250 Pascal	80-250 Pascal	15-30 Pascal

		Pressure Differential			
Date	Time	up and down of HEPA filter-3 in heating zone	up and down of HEPA filter-1 in cooling zone	up and down of HEPA filter-2 in cooling zone	Washing room and filling room

Checked By (Engineering)	Verified By (Quality Assurance)
Sign/Date:	Sign/Date:
Inference:	
	Reviewed By (Manager QA) Sign/Date:



PROTOCOL No.:

7.9 AIR FLOW PATTERN

Date of Testing	Make/Model	
Instrument Name	Calibration Date	
Instrument ID.	Calibration Due Date	

Area	Air Flow Pattern Should Be Moving In Downward Direction	The Air Flow Pattern should not travelling Dying and Cooling Zone to Sterilization zone.	Verified By (Sign & Date)

8.0 CHECKLIST OF ALL TESTS & CHECKS

S. No.	Name of Test or Check	Execution	Remark	Verified By
		(Yes/No.)		(Sign & Date)
1.	Air Velocity Measurement			
2.	HEPA Filter Integrity Test (PAO			
	Test) Report			
3.	Differential Pressure Record			
4.	Speed verification set value			
5.	Non – Viable Particle Count			
6.	Air Flow Pattern			
7.	Heat Distribution Study			
	1. Empty			
	2. Loaded			
8.	Heat Penetration Study			
	Loaded Chamber			

Inference:

Reviewed By (Manager QA) (Sign & Date):.....



DOCUMENTS TO BE ATTACHED: 9.0

- Calibration Certificates of test instruments.
- Calibration Certificate of Data logger.
- Calibration Certificate of Sensors.
- Any other relevant document. •

10.0 NON COMPLIANCE:

11.0 DEVIATION FROM PRE-DEFINED SPECIFICATION, IF ANY:

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12.0 CHANGE CONTROL, IF ANY:

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PERFORMANCE QUALIFICATION REPORT FOR STERILIZING & DEPYROGENATING TUNNEL PHARMA DEVILS	PROTOCOL No.:
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13.0 REVIEW (INCLUSIVE OF FOLLOW UP ACTION, IF ANY)

14.0 CONCLUSION

15.0 RECOMMENDATION



16.0 ABBREVIATIONS:

No.	:	Number
WHO	:	World Health Organization
FDA	:	Food and Drug Administration
CFR	:	Code of Federal Regulations
cGMP	:	Current Good Manufacturing Practices
QA	:	Quality Assurance
SOP	:	Standard Operating Procedure
mm	:	Millimeter
Amp.	:	Ampere
PQ	:	Performance Qualification
DTM	:	Depyrogenating Tunnel Machine
SOP	:	Standard Operating Procedure



17.0 REPORT POST APPROVAL:

INITIATED BY:

DESIGNATION	NAME	SIGNATURE	DATE
OFFICER/EXECUTIVE (QUALITY ASSURANCE)			

REVIEWED BY:

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

APPROVED BY:

DESIGNATION	NAME	SIGNATURE	DATE
HEAD (QUALITY ASSURANCE)			