|  |  |  |
| --- | --- | --- |
| **PRODUCT CODE : Y1** | | **ISSUED BY : QUALITY ASSURANCE** |
| **DOCUMENT CODE : XX/BMR/YYYY/VN** | | **SIGNATURE :**  **DATE :** |
| **EFFECTIVE DATE :** | | PAGE : 1 OF 48 |
| LABORATORY SEED BATCH No. : | | |
| **SEED FERMENTATION BATCH No.** **:** | | |
| **MEDIA PREPARATION BATCH No. :** | | |
| **Note 1: Encircle the appropriate type of batch number.**  **MANUFACTURING SITE ADDRESS:**  **Site-2**  **PHARMA Limited,**  **PHARMA Special Economic Zone,** | | |
| **RECEIVED BY: PRODUCTION** | | |
| **SIGNATURE:** | **DATE:** | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **RAW MATERIAL CONSUMPTION SUMMARY** | | | | | | | | | | | | |
| **ITEM CODE** | ITEM NAME | | CON. | **UOM** | **STD.**  **QTY.** | | | | **ACTUAL**  **QTY.** | **BATCH No.** | | **CKD BY** |
| ITC1 | RM1 | | 01 | Kg | 10 | | | |  |  | |  |
| **ITEM CODE** | ITEM NAME | | CON. | **UOM** | **STD.**  **QTY.** | | | | **ACTUAL**  **QTY.** | **PREPARATION No.** | | **CKD BY** |
| ITC2 | RM2 | | 01 | Kg | 50 | | | |  |  | |  |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
| ITC3 | RM3 | | 01 | Kg | 70 | | | |  |  | |  |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
| ITC4 | RM4 | | 01 | Kg | 60 | | | |  |  | |  |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
| ITC5 | RM5 | | 01 | Kg | 60 | | | |  |  | |  |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
| **ITEM CODE** | ITEM NAME | | CON. | **UOM** | **STD.**  **QTY.** | | | | **ACTUAL**  **QTY.** | **PREPARATION No.** | | **CKD BY** |
| ITC6 | RM6 | | 01 | Kg | 700 | | | |  |  | |  |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
| ٭**Note 2.:** Based on the performance of the batch, the quantity of material marked with ٭ may vary from the standard quantity. | | | | | | | | | | | | |
| **RAW MATERIAL CONSUMPTION SUMMARY FOR CLEANING** | | | | | | | | | | | | |
| **ITEM CODE** | ITEM NAME | | CON. | **UOM** | **STD.**  **QTY.** | | | | **ACTUAL**  **QTY.** | **PREPARATION No.** | | **CKD BY** |
| ITC7 | RM7 | | 01 | Kg | 600 | | | |  |  | |  |
|  |  | |
| Batch started on: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Batch completed on: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Reviewed by:** | | | | | | | | | | | | |
| PRODUCTION :  DATE : | | | | | | QUALITY ASSURANCE :  DATE : | | | | | | |
| **Note 3: Refer below listed reference documents as and when required.** | | | | | | | | | | | | | |
| **LIST OF REFERENCES** | | | | | | | | | | | | | |
| **LIST OF SOPs** | | | | | | | | | | | | | |
| **DOCUMENT NAME** | | | | | | | | **DOCUMENT CODE** | | | | | |
| pH meter | | | | | | | | A2/PROD/SOP/006 | | | | | |
| Waste disposal | | | | | | | | A2/PROD/SOP/008 | | | | | |
| Sterility check procedure | | | | | | | | A2/PROD/SOP/009 | | | | | |
| Production planning | | | | | | | | A2/PROD/SOP/010 | | | | | |
| Emergency shutdown procedure | | | | | | | | A2/PROD/SOP/011 | | | | | |
| Batch failure | | | | | | | | A2/PROD/SOP/013 | | | | | |
| Usage of filters | | | | | | | | A2/PROD/SOP/014 | | | | | |
| Alarms and actions | | | | | | | | A2/PROD/SOP/015 | | | | | |
| Solution preparation | | | | | | | | A2/PROD/SOP/016 | | | | | |
| Material entry | | | | | | | | A2/PROD/SOP/018 | | | | | |
| DO2 probe failure identification | | | | | | | | A2/PROD/SOP/020 | | | | | |
| Re-cleaning frequency for equipment | | | | | | | | A2/PROD/SOP/021 | | | | | |
| Sampling procedure | | | | | | | | A2/PROD/SOP/022 | | | | | |
| Miscellaneous items cleaning | | | | | | | | A2/PROD/SOP/023 | | | | | |
| Decontamination procedure | | | | | | | | A2/PROD/SOP/025 | | | | | |
| Calibration of pH and DO2 Probes | | | | | | | | A2/PROD/SOP/030 | | | | | |
| Procedure for taking fermentation process trend printouts | | | | | | | | A2/PROD/SOP/031 | | | | | |
| **LIST OF EOPs** | | | | | | | | | | | | | |
| 1kL Fermenter | | | | | | | | A2/PROD/EOP/002 | | | | | |
| 10kL Fermenter | | | | | | | | A2/PROD/EOP/003 | | | | | |
| 100kL Fermenter | | | | | | | | A2/PROD/EOP/004 | | | | | |
| 5kL NDV | | | | | | | | A2/PROD/EOP/005 | | | | | |
| 10kL NDV | | | | | | | | A2/PROD/EOP/006 | | | | | |
| CIP System | | | | | | | | A2/PROD/EOP/007 | | | | | |
| **LIST OF ECCs** | | | | | | | | | | | | | |
| 1kL Fermenter | | | | | | | | A2/PROD/ECC/12 | | | | | |
| 10kL Fermenter | | | | | | | | A2/PROD/ECC/15 | | | | | |
| 100kL Fermenter | | | | | | | | A2/PROD/ECC/13 | | | | | |
| 5kL NDV / 10kL NDV | | | | | | | | A2/PROD/ECC/05 | | | | | |
|  | | | | | | | | | | | | | |
| **ABBREVIATION LIST** | | | | | | | | | | | | |
| < | | Less than | | | | | kL | | | | Kilo Liter | |
| % | | Percentage | | | | | L | | | | Liter | |
| & | | And | | | | | mg | | | | Milli gram | |
| > | | Greater than | | | | | mm | | | | Millimeter | |
| **±** | | Plus or minus | | | | | MSDS | | | | Material safety data sheet | |
| °C | | Degree Celsius | | | | | NA | | | | Not applicable | |
| A.R.No. | | Analytical reference number | | | | | NDV | | | | Nutrient Dosing Vessel | |
| A1 | | Media preparation block | | | | | NLT | | | | Not less than | |
| A2 | | Fermentation block | | | | | Nm3/hr | | | | Normal meter cube per hour | |
| BMR | | Batch manufacturing record | | | | | NMT | | | | Not more than | |
| CIP | | Clean in place | | | | | No. | | | | Number | |
| CKD By | | Checked by | | | | | OCP | | | | Operational Control Procedure | |
| CKL | | Checklist | | | | | PCV | | | | Packed cell volume | |
| CON. | | Configuration | | | | | PIS | | | | Pre inoculation sample | |
| D1 | | Extraction block ( Downstream 1) | | | | | POIS | | | | Post inoculation sample | |
| DO2 | | Dissolved oxygen | | | | | QC | | | | Quality control | |
| ECC | | Equipment cleaning checklist | | | | | QTY. / Qty. | | | | Quantity | |
| EOF | | End of fermentation | | | | | RPM | | | | Revolutions per minute | |
| EOP | | Equipment operating procedure | | | | | SOP | | | | Standard operating procedure | |
| g | | Gram | | | | | SP | | | | Set point | |
| HDPE | | High-density polyethylene | | | | | STD. / Std. | | | | Standard | |
| Hr / hr / hrs. | | Hours | | | | | UOM | | | | Unit of measurement | |
| Kg | | Kilo gram | | | | | W/W | | | | Weight /Weight | |
| **SAFETY PRECAUTION** | | | | | | | | | | | | |
| Wear gloves, goggle, masks and apron while handling alkali, fine powders or acids. Refer respective MSDS before handling the  respective material. | | | | | | | | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| \_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_ | **1. PRODUCTION FERMENTATION**  1.1. Equipment code  1.2. Previously used for  1.3. Refer equipment log for cleanliness  1.4. Cleanliness visually checked by  1.5. Area certified  **2. CALIBRATION OF pH AND DO2 PROBES :** 2.1. CALIBRATION OF 1st pH PROBE ANDDO2 PROBE2.1.1. Calibrate the pH probe using buffer 7.00 2.1.2. Calibrate the pH probe using buffer 4.01    2.1.3. Confirm calibration by checking the pH using    2.1.4. Calibrate the DO2 probe 2.2. CALIBRATION OF 2nd pH PROBE ANDDO2 PROBE2.2.1. Calibrate the pH probe using buffer 7.00 2.2.2. Calibrate the pH probe using buffer 4.01    2.2.3. Confirm calibration by checking the pH using    2.2.4. Calibrate the DO2 probe  2.3. Fix the 1st and 2nd pH probes in the designated port  2.4. Fix the 1st and 2nd DO2 probes in the designated port | F104 - A / B / C / D  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Clean / Not clean  Clean / Not clean  pH\_\_\_\_\_\_\_\_  pH\_\_\_\_\_\_\_\_  pH\_\_\_\_\_\_\_\_  pH\_\_\_\_\_\_\_\_  pH\_\_\_\_\_\_\_\_  pH\_\_\_\_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **3. LEAKAGE TEST** | | | | | | | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ |
| 3.1. Replace the rubber septa of the inoculation ports with new ones.  3.2. Replace the vessel isolation actuated valve on the related RM solution feed  lines with manual valve. | | | | Yes NA | | |
| 3.3. Charge XX Kg of Potable water into the fermenter: \_\_\_\_\_\_\_\_\_\_\_ Kg A.R.No.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | |
| 3.4. Set the Air flow to YY Nm3/hr  3.5. Pressurize the fermenter to ZZ bar.  3.6. Start the leakage check. | | | Process value \_\_\_\_\_\_\_\_\_\_\_ Nm3/hr  process value \_\_\_\_\_\_\_\_\_\_\_ bar | | | |
| **Note 4:** All unions connected to the vessel and all vessel isolation valves should be checked for leakage. Soap solution should be sprayed on the unions using spray bottle. If there is a leakage, bubble formation will occur, if not, it is confirmed that there is no leakage. Valve leakage (valve passing) is confirmed by holding water in a beaker beneath the open drain valve, which is next to vessel isolation valve (tip of the drain line is immersed in the water). If there is a leakage bubble formation will occur, if not, it is confirmed that there is no leakage in the vessel isolation valve.  **3.7. LEAKAGE CHECK RESULT**  **Note 5: ‘**P’ represents PASS, ‘F’ represents FAIL.  **Note 6:** For any leakage, inform the maintenance personnel about leakage. After rectification, restart the test. If there is a leakage in harvesting valve, level transmitter or Bottom flange, drain the water and inform the maintenance personnel about leakage. After rectification, charge potable water then restart the test and enter the result in the below column. | | | | | | | | |
| **Details** | **Test -1** | **Test-2/NA** | | | **Test-3/NA** | **Test -4/NA** | | |
| 3.7.1. Charge XX Kg of potable  water. | NA | \_\_\_\_\_\_\_\_\_ Kg/NA  A.R.No.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_Kg/NA  A.R.No.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_Kg/NA  A.R.No.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.2. Test start time and Date | \_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.3. Diaphragm of Harvesting  valve. | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Done by : | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Checked by : | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Details** | | **Test -1** | | | **Test-2/NA** | | **Test-3/NA** | | | **Test -4/NA** | | |
| 3.7.4. Bottom flange | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.5. Level transmitter | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.6. 25 mm port 1 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.7. 25 mm port 2 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.8. 25 mm port 3 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.9. 25 mm port 4 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.10. 25 mm port 5 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.11. 25 mm port 6 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.12. Sampling valve | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.13. Man hole lid | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.14. Sight glass | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Done by : | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Checked by : | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| **Details** | | **Test -1** | | | **Test-2/NA** | | **Test-3/NA** | | | **Test -4/NA** | | |
| 3.7.15. Steam supply union to  sight glass | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.16. Spare nozzle 1 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.17. Spare nozzle 2 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.18. Header E | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.19. Header F | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.20. Header A | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.21. Header B | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.22. Partial Harvest line | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.23. Header C | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.24. Header D | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.25. Transfer line from seed fermenter | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Done by : | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Checked by : | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| **Details** | | **Test -1** | | | **Test-2/NA** | | **Test-3/NA** | | | **Test -4/NA** | | |
| 3.7.26. Transfer line from 10kL  fermenters. | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.27. Transfer line from 100L  fermenters. | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.28. Light glass | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.29. Steam supply union to  light glass | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.30. Dip rod sample valve | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.31. Foam sensor | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.32. Header G | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.33. Spare nozzle 4 / NA | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.34. Spare nozzle 5 / NA | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.35. Spare nozzle 6 / NA | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.36. Additional Sparger  line /NA | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Done by : | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Checked by : | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| **Details** | | **Test -1** | | | **Test-2/NA** | | **Test-3/NA** | | | **Test -4/NA** | | |
| 3.7.37. Pressure transmitter | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.38. Bursting disc | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.39. CIP Port 1 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.40. CIP Port 2 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.41. 19 mm port 1 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.42. 19 mm port 2 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.43. 19 mm port 3 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.44. 19 mm port 4 | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.45. 19 mm dummy port | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.46. Air line  ( After Air fine filter ) | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.47. Exhaust view glass | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Done by : | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Checked by : | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| **Details** | | **Test -1** | | | **Test-2/NA** | | **Test-3/NA** | | | **Test -4/NA** | | |
| 3.7.48. Exhaust valve before filter | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.49. Exhaust filter housing  Joints | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.50. Exhaust Filter top clamp | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.51. Exhaust Filter bottom  clamp | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.52. Valve before exhaust  control valve | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.53. Exhaust bypass valve | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.54. Exhaust control valve joint  flanges | | P / F  Rectified by  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | P / F / NA  Rectified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| 3.7.55. Test end time and Date | | \_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_ | | |
| 3.8. Test result | | P / F | | | P / F / NA | | P / F / NA | | | P / F / NA | | |
| Done by : | | \_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Checked by : | | \_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_ | | | \_\_\_\_\_\_\_\_\_\_\_\_ | | |
| **Note 7:** If there is any leakage observed after the 4th leak test, enter those details in the section 3.9. | | | | | | | | | | | | |
| **3.9. Details of failure and rectification / NA**  Done by : \_\_\_\_\_\_\_\_\_\_\_\_\_ Checked by : \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | |
| **4. VESSEL PRESSURE TEST -1 (PRESSURE HOLD TEST)** | | | | | | | | | | | | |
| **4.1. CRITERIA:** Pressure drop should not be > 0.2 bar in 10 minutes to pass the test. | | | | | | | | | | | | |
| **Parameter** | **Std.set point** | | | **Actual set point** | | **Process value for Test** | | | **Process value for Test repeat / NA** | | **Done**  **by** | **Checked by** |
| 4.2. Test SP 1 | 000 bar | | |  | |  | | |  | | \_\_\_\_\_ | \_\_\_\_\_ |
| 4.3. Test Time | 10 minutes | | |  | | NA | | | | |
| 4.4. Air flow set Point | YY Nm3/hr | | |  | |  | | |  | |
| 4.5. De-pressurise set point | 0.1 bar | | |  | |  | | |  | |
| 4.6. Test Hysteresis | 0.2 bar | | |  | | NA | | | | |
| 4.7. Confirm the parameters and start the test. | | | | | | | | | | |
| **Details** | | | **Pressure test** | | | | | **Repeat pressure test / NA** | | | | |
| 4.8. Test start Time and Date | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
| 4.9. Test End Time and Date | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
| 4.10. Pressure at the end | | | \_\_\_\_\_\_\_\_\_\_\_\_ bar | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ bar | | | | |
| 4.11. Test result | | | P / F | | | | | P / F / NA | | | | |
| 4.12. Accept the prompt | | | Yes | | | | | Yes / NA | | | | |
| Done by : | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
| Checked by : | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
| **Note 8:** If there is any leakage observed after the repeat test, enter those details in the section 4.13. | | | | | | | | | | | | |
| **4.13. Details of failure and rectification / NA**  Done by : \_\_\_\_\_\_\_\_\_\_\_\_\_ Checked by : \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| \_\_\_\_\_ | \_\_\_\_\_ | 5. ADDITIONAL SPARGER FINE FILTERSTERILISATION / NA (Applicable only for F104-D) **Note 9:** Place the sterilisable grade Air fine filters on the  filter housing.  **Note 10:** Pre-sterilisation of the Air fine- filter should be  done without pressurising the filter by just passing  steam through the filter for 15 to 17 minutes.  5.1. Fix the Air fine filters  5.2. Give YY Nm3/hr set point to Air flow control valve of  additional sparger.  5.3. Start the filter sterilisation  5.4. Pre-sterilisation of the additional sparger fine filter  should be done for 15 to 17 minutes without pressure   |  | | --- | | **5.5. Sterilise the additional sparger fine filter by passing steam and maintain the steam pressure at 1.1 to 1.3 bar for 30 to 35 minutes.** |   **Note 11:** Sterilise the additional sparger fine filter for 30 to 35 minutes. Record the details in the chart provided below. | | | Yes NA  \_\_\_\_\_\_\_ Nm3/hr / NA  Yes NA  \_\_\_\_\_\_\_\_\_\_\_\_bar  \_\_\_\_\_\_\_\_\_\_\_\_ bar | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ |
| **5.6. ADDITIONAL SPARGER FINE FILTER STERILISATION CHART / NA** | | | | | |
| Interval | Time | **Pressure (bar)** | | **Done**  **by** | **Checked by** |
| 5.6.1. Initial |  |  | |  |  |
| 5.6.2. After 10 minutes |  |  | |  |  |
| 5.6.3. After 20 minutes |  |  | |  |  |
| 5.6.4.30th to 35th minute |  |  | |  |  |
| 5.6.5. Cool the filter to ambient temperature. | | | |  |  |
|  | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| \_\_\_\_\_ | \_\_\_\_\_ | | 6. MEDIA PREPARATION **Note 12:** Media solution should be prepared in A1 block and the same is transferred to respective equipment in A2 block. The media preparation details are recorded in the respective BMR of A1 Block.   |  | | --- | | **6.1. Batch size** |   6.2. Receive media solution from A1 Block to the fermenter in A2 Block. Simultaneously switchʻONʼ agitator of the fermenter and set the RPM to YY ± Y  6.3.Total Qty. (XX Kg) of Product media solution  transferred from A1 Block.  6.3.1. A1 Block Media Preparation Batch No.  **7. Vessel pressure test – 2**  **7.1. CRITERIA:** Pressure drop should not be > 0.2 bar in  10 minutes to pass the test. | | | | | | | | | | | | |  | | --- | | **XX Kg** |   RPM \_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_Kg  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | |
| **Parameters** | | | | | **Std. set point** | | | | | **Actual set point** | **Process value for Test** | | | | | | | **Process value for Test repeat / NA** |
| 7.2. Test Pressure | | | | | 1.8 bar | | | | |  |  | | | | | | |  |
| 7.3. Test Time | | | | | 10 minutes | | | | |  | NA | | | | | | | |
| 7.4. Air flow set point | | | | | YY Nm3/ hr | | | | |  |  | | | | | | |  |
| 7.5. De-pressurise set point | | | | | 0.1 bar | | | | |  |  | | | | | | |  |
| 7.6. Test Hysteresis | | | | | 0.2 bar | | | | |  | NA | | | | | | | |
| 7.7. Confirm the parameters and start the test | | | | | | | | | | | | | | | | | | |
| **Details** | | | | | | | | **Pressure test** | | | | | | | | | **Repeat pressure test / NA** | | | | | |
| 7.8. Test start time and Date | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | |
| 7.9. Test End Time and Date | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs  Date\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | |
| 7.10. Pressure at the end | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ bar | | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ bar | | | | | |
| 7.11. Test result | | | | | | | | P / F | | | | | | | | | P / F / NA | | | | | |
| 7.12. Accept the prompt | | | | | | | | Yes | | | | | | | | | Yes / NA | | | | | |
| Done by : | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | |
| Checked by : | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | |
| **Note 13:** If pressure test fails inform the maintenance personnel about the leakage. After rectification repeat the test.  **Note 14:** If there is any leakage observed after the repeat test, enter those details in the section 7.13. | | | | | | | | | | | | | | | | | | | | | | |
| **7.13. Details of failure and rectification / NA**  Done by : \_\_\_\_\_\_\_\_\_\_\_\_\_ Checked by : \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | |
| **8. MEDIA STERILISATION AND COOLING** | | | | | | | | | | | | | | | | | | | | | | |
| 8.1. Set the recipe parameters. | | | | | | | | | | | | | | | | | | | | | | |
| **Parameters** | | | | | | | **Std. set point** | | | | | | **Actual set point** | | | | | | | \_\_\_\_\_  \_\_\_\_\_ | | \_\_\_\_\_  \_\_\_\_\_ |
| 8.2. Heating 1 SP | | | | | | | H1 °C | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_°C | | | | | | |
| 8.3. Heating 2 SP | | | | | | | H2 °C | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_°C | | | | | | |
| 8.4. Sterilisation time | | | | | | | 10 minutes | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ minutes | | | | | | |
| |  | | --- | | **8.5. Sterilisation holding temperature and pressure** | | | | | | | | |  | | --- | | **Temperature 120-135 °C**  **Pressure 1.1 – 1.3 bar** | | | | | | | Temperature \_\_\_\_\_\_\_\_\_\_\_\_°C  Pressure \_\_\_\_\_\_\_\_\_\_\_\_bar | | | | | | |
| 8.6. Heating hysteresis | | | | | | | H1 ° C | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_°C | | | | | | |
| 8.7. Exhaust close temperature | | | | | | | T1 ° C | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ °C | | | | | | |
| 8.8. Back pressure SP | | | | | | | ZZ – ZZ bar | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ bar | | | | | | |
| 8.9. Air flow SP | | | | | | | YY ± YY Nm3/ hr | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ Nm3/ hr | | | | | | |
| 8.10. Air pressure set point | | | | | | | ZZ – ZZ | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ bar | | | | | | |
| 8.11. Cooling 1 SP | | | | | | | C1 – C1 °C | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ °C | | | | | | |
| 8.12. Cooling 2 SP | | | | | | | C2 °C | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_°C | | | | | | |
| 8.13. Filter checked | | | | | | | Yes | | | | | | Yes | | | | | | |
| 8.14. Confirm the parameters and start sterilisation.    8.15. Media sterilisation start time \_\_\_\_\_\_\_\_\_\_\_\_ hours 8.15.1. Date : \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | |
| \_\_\_\_\_  \_\_\_\_\_ | | \_\_\_\_\_  \_\_\_\_\_ | | **8.16. AIR FINE FILTER STERILISATION**  **Note 15:** Pre-sterilisation of the Air fine filter should be done  without pressurising the filter by just passing  steam through the filter for 15 to 17 minutes.  8.16.1.Start the filter sterilisation  8.16.2.Pre-sterilisation of the Air fine filter should be done for  15 to 17 minutes without pressure.   |  | | --- | | **8.16.3. Sterilise the Air fine filter by passing steam and maintaining the steam pressure at 1.1 to 1.3 bar for 30 to 35 minutes** |   **Note 16:** Sterilisation of the Air fine filter done for 30 to 35 minutes. Record the details in the chart provided below. | | | | | | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ bar  \_\_\_\_\_\_\_\_\_\_\_\_ bar | | | | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | | \_\_\_\_\_  \_\_\_\_\_ |
| **8.16.4. AIR FINE FILTER STERILISATION CHART** | | | | | | | | | | | | | | | | | | |
| Interval | | | | | Time | | | | | Pressure (bar) | | | | | **Done**  **by** | | **Checked by** | |
| 8.16.4.1. Initial | | | | |  | | | | |  | | | | |  | |  | |
| 8.16.4.2. After 10 minutes | | | | |  | | | | |  | | | | |  | |  | |
| 8.16.4.3. After 20 minutes | | | | |  | | | | |  | | | | |  | |  | |
| 8.16.4.4. 30th to 35th minute | | | | |  | | | | |  | | | | |  | |  | |
| 8.16.5. Accept the prompt for completion of sterilisation  8.16.6. Cool the filter to ambient temperature  8.16.7. Accept the prompt for completion of cooling | | | | | | | | | | |  | | | | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | |
| **Note 17:** Ensure that the exhaust valve is closed when the media sterilisation temperature reaches H1° C.  **Note 18:** Once temperature reaches H1 °C send steam through additional sparger continuously (for F104-D).  8.17. Open the vessel isolation valves on G Header line, Edenor feed line and L-Leucine feed line once the  temperature reaches H1°C. | | | | | | | | | | | | | | | | | | | \_\_\_\_\_ | | \_\_\_\_\_ | |
| **Parameters** | | | | | | **Process value** | | | | | | **Attaining time** | | | | | | |
| 8.18. Heating 1 SP (H1 – H1 °C) | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ °C | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs | | | | | | |
| 8.19. Heating 2 SP (H2±1 °C) | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_°C | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_ hrs | | | | | | |
| 8.20. Sterilisation time  (ST – ST minutes) | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_minutes | | | | | | From\_\_\_\_\_\_\_ hrs To\_\_\_\_\_\_\_ hrs | | | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8.21.Sterilisation  Holding  temperature  and pressure | **Interval** | **Time** | | | **Temperature (°C)** | **Pressure (bar)** | | **Done**  **by** | | **Checked by** | |
| Initial |  | | |  |  | |  | |  | |
| After10 minutes |  | | |  |  | |  | |  | |
| After 20 minutes |  | | |  |  | |  | |  | |
| After 30 minutes |  | | |  |  | |  | |  | |
| After 40 minutes |  | | |  |  | |  | |  | |
| After 50 minutes |  | | |  |  | |  | |  | |
| End |  | | |  |  | |  | |  | |
| **8.22. CHECK POINTS DURING STERILISATION (Tick in the appropriate box)**  **Note 19:** During sterilisation holding, following points to be checked for the temperature using thermo melt pen of range 121°C.  **Note 20:** When media cooling sequence is started, close steam and send Air through the additional sparger (only for F104-D). | | | | | | | | | | | |
| 8.22.1. Air sparger lines | | |  | 8.22.16. Header A | | |  | | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ |
| 8.22.2. Air bypass lines | | |  | 8.22.17. Header B | | |  | |
| 8.22.3. Steam supply line to light glass | | |  | 8.22.18. Header C | | |  | |
| 8.22.4. Steam supply line to sight glass | | |  | 8.22.19. Header D | | |  | |
| 8.22.5. Partial harvest line | | |  | 8.22.20. Header E | | |  | |
| 8.22.6. Transfer line from 10kL fermenter | | |  | 8.22.21. Header F | | |  | |
| 8.22.7. Transfer line from 1kL fermenter | | |  | 8.22.22. Header G | | |  | |
| 8.22.8. Exhaust Filter housing | | |  | 8.22.23. Spare nozzle 1 | | |  | |
| 8.22.9. Exhaust Filter drain line | | |  | 8.22.24. Spare nozzle 2 | | |  | |
| 8.22.10. Exhaust line | | |  | 8.22.25. Transfer line from 100L Fermenter. | | |  | |
| 8.22.11. Exhaust bypass line | | |  | 8.22.26. Spare nozzle 4 / NA  (Applicable for F104-A,B,C only) | | |  | |
| 8.22.12. Sampling valve | | |  | 8.22.27. Spare nozzle 5 / NA  (Applicable for F104-A,B,C only) | | |  | |
| 8.22.13. Harvest valve steam cross outlet line | | |  | 8.22.28. Spare nozzle 6 / NA  (Applicable for F104-D only) | | |  | |
| 8.22.14. Man hole lid | | |  | 8.22.29. Additional sparger line/ NA  (Applicable for F104-D only) | | |  | |
| 8.22.15. Sampling dip rod line | | | | | | |  | |
| 8.23. Close the vessel isolation valves on G Header line, RM and RM feed line. | | | | | | | | |
| 8.24. Start cooling. | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameters** | | | **Process value** | **Attaining time** | | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ |
| 8.25. Air flow through additional  Sparger (YY±Y Nm3/hr) | | | \_\_\_\_\_\_\_\_\_\_\_\_ Nm3/hr / NA | NA | |
| 8.26. Back pressure SP (ZZ-ZZ bar) | | | \_\_\_\_\_\_\_\_\_\_\_\_ bar | NA | |
| 8.27. Air flow SP (YY±YY Nm3/ hr) | | | \_\_\_\_\_\_\_\_\_\_\_\_ Nm3/hr | NA | |
| 8.28. Air pressure set point  (ZZ – ZZ bar) | | | \_\_\_\_\_\_\_\_\_\_\_\_bar | NA | |
| 8.29. Cooling 1 SP (C1 – C1 °C) | | | \_\_\_\_\_\_\_\_\_\_\_\_ °C | \_\_\_\_\_\_\_\_\_\_\_\_ hrs | |
| 8.30. Cooling 2 SP (C2±C2 °C) | | | \_\_\_\_\_\_\_\_\_\_\_\_°C | \_\_\_\_\_\_\_\_\_\_\_\_ hrs | |
| \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | 8.31. Start nutrient dosing and accept the prompt.  8.32. Set back pressure to 1.1 ± 0.2 bar..  8.33. Line up sterilised Antifoam SAG 471 solution.  8.34. Close the Air bypass line.  8.35. Sparge Air through the media for 10 ± 2 minutes  (If foaming occurs, dose Antifoam SAG 471 solution)  8.36. Check the pH of the media.  8.37. pH of the media has to be adjusted to pH1 ± pH1  using sterilised 10% Base solution (w/w) or  10% acid solution (w/w).  8.38. pH of the media after adjustment.  8.39. Qty of 10% Base solution (w/w) /  10% Nitric acid solution used (w/w).  8.39.1. Solution preparation No.  8.40. Take pre-inoculation sample (PIS). 9. INITIAL PARAMETERS SETTING  |  | | --- | | **9.1. Set Back pressure to ZZ bar** | | **9.2. Set Air flow to YY Nm3/ hr** | | **9.3. Set Temperature to T1 °C** | | **9.4. Set Agitator speed to A1 RPM** | | | | \_\_\_\_\_\_\_\_\_\_\_\_ bar  Yes NA  \_\_\_\_\_\_\_\_\_\_\_ minutes  pH \_\_\_\_\_\_\_\_\_\_\_\_  pH \_\_\_\_\_\_\_\_\_ / NA  \_\_\_\_\_\_\_\_\_\_\_\_ Kg  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_bar  \_\_\_\_\_\_\_\_\_\_\_ Nm3/ hr  \_\_\_\_\_\_\_\_\_\_\_\_°C  \_\_\_\_\_\_\_\_\_\_\_\_RPM |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| \_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_    \_\_\_\_\_ | 9.5. Calibrate the 1st DO2 to 100%.  9.6. Calibrate the 2nd DO2 to 100%.  **10. ALARMS SETTING**  10.1. Temperature Low: T1 ° C / High: T1 ° C  10.2. Air flow Low: YY Nm3/hr / High: YY Nm3/hr  10.3. Back pressure Low: ZZ bar  10.4. Agitation : Trip off  10.5. Enable the Foam Switch/Sensor  **11. INOCULATION**  11.1. Set and confirm the recipe parameters.  11.2. Seed fermenter code.  11.3. pH of the inoculum.  11.4. PCV of the inoculum.  11.5. Age of the inoculum.   |  | | --- | | **11.6. Inoculate the fermenter.** |     11.7. Start production.  11.8. Take post inoculation sample (POIS).  11.9. Check the pH of the post inoculation sample. | \_\_\_\_\_\_\_\_\_\_\_\_%  \_\_\_\_\_\_\_\_\_\_\_\_%  Low:\_\_\_\_ /High \_\_\_\_  Low:\_\_\_\_ /High \_\_\_\_    Low: \_\_\_\_\_\_\_\_\_\_\_\_  F102 – A / B / C / D  pH\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_ %  \_\_\_\_\_\_\_\_\_\_\_\_ hrs  pH\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ |
| 12. MONITORING THE FERMENTER | | | | | |

|  |
| --- |
|  |
| **13.4. Preparation of RM Solution**  Use 5kL / 10kL nutrient dosing vessel for preparation, sterilisation and dosing of both the solutions. For Preparation of RM solution refer solution preparation checklist. The solution should be sterilised at 121-123° C and 1.1 to 1.3 bar for 45 minutes followed by cooling the same to <30°C and all the details should be recorded in the respective solution preparation checklist.  **16. HARVESTING CRITERIA**  **16.3. INSTRUCTION BY THE MANAGER / PRODUCTION INCHARGE**  16.3.1. Stop feeding at: \_\_\_\_\_\_\_\_\_\_\_ Log hr 16.3.2. Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 17.3.3. Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  17. SAMPLES FOR MICROBIOLOGICAL ANALYSIS:  17.1. In addition to the PIS and POIS samples, take sterile sample from 100kL fermenter every day starting from the 1st day  onwards, until End of fermentation to check the contamination.  **Note 30:** For checking contamination samples should be collected in the pre labeled sterile culture tubes/flasks containing the sample identification, reference Batch No., sample status, equipment code and date marked with permanent marker pen. |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **18. SAMPLES TO CHECK PRODUCT CONTENT (Pr.Cont.):**  From the first hourof feeding, collect sample from 100kL fermenter every 1 - 2 hrs, till End of fermentation. Send the samples to QC for product content analysis. Record the details of the samples in the product content analysis details chart (Page 25 to 30).  **Note 31:** One Technical Information Sheet should be raised for the samples generated every 24 hours.  **19. CHECKING pH AND PCV OF THE BROTH**  Check pH and PCV of the broth from the 1st day till EOF. PCV of the broth should be checked using the Centrifuge  at XXX rpm for 30 minutes and pH of the broth should be checked using pH meter.  **Note 32:** For checking pH, PCV and product content, sample should be collected in the fresh HDPE container with ‘sample for analysis’ label having relevant information. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **IN PROCESS SAMPLE DETAILS CHART** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Date** | | | | | **Time** | | | | Sample **Stage** | | | | **Log Hr** | | | | | Sample | | | | | | | **pH** | | | | **PCV (%)** | | | | | | | Checked by | | |
| **Done by** | | | | **Checked by** | | |
|  | | | | |  | | | | PIS | | | | NA | | | | |  | | | |  | | |  | | | | NA | | | | | | | NA | | |
|  | | | | |  | | | | POIS | | | |  | | | | |  | | | |  | | |  | | | | NA | | | | | | | NA | | |
|  | | | | |  | | | | 1st day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 2nd day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 3rd day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 4th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 5th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 6th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 7th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 8th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 9th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 10th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 11th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 12th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | 13th day | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
|  | | | | |  | | | | EOF | | | |  | | | | |  | | | |  | | |  | | | |  | | | | | | |  | | |
| PRODUCT CONTENT ANALYSIS DETAILS CHART | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Log hr | | | | **Y1**  **mg/g** | | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | **Sign** | | |  | Log hr | | | **Y1**  **mg/g** | | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | | | | **Sign** |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
|  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | |  | | | | | | |  |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PRODUCT CONTENT ANALYSIS DETAILS CHART | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Log hr | | **Y1**  **mg/g** | | | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | **Sign** | | | |  | Log hr | | | **Y1**  **mg/g** | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | | | | **Sign** | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PRODUCT CONTENT ANALYSIS DETAILS CHART | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Log hr | | **Y1**  **mg/g** | | | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | **Sign** | | | |  | Log hr | | | **Y1**  **mg/g** | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | | | | **Sign** | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PRODUCT CONTENT ANALYSIS DETAILS CHART | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Log hr | | **Y1**  **mg/g** | | | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | **Sign** | | | |  | Log hr | | | **Y1**  **mg/g** | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | | | | **Sign** | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PRODUCT CONTENT ANALYSIS DETAILS CHART | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Log hr | | **Y1**  **mg/g** | | | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | **Sign** | | | |  | Log hr | | | **Y1**  **mg/g** | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | | | | **Sign** | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | |  | | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PRODUCT CONTENT ANALYSIS DETAILS CHART | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Log hr | | | **Y1**  **mg/g** | | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | **Sign** | | | |  | Log hr | | | **Y1**  **mg/g** | | | **Y2**  **mg/g** | | | | **Y3**  **mg/g** | | | | | | | **Sign** | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
|  | | |  | | | |  | | | |  | | | |  | | | |  | | |  | | |  | | | |  | | | | | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | **Sign** | | | **Remarks** | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | **Sign** | | **Remarks** | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | |  | |  | | | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | **Sign** | | | **Remarks** | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | **Sign** | | | **Remarks** | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | |  | | |  | | | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | | **Sign** | | | **Remarks** | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | | **Sign** | | | **Remarks** | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | | **Sign** | | | **Remarks** | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | | **Sign** | | | **Remarks** | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | | **Sign** | | | **Remarks** | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | | **Sign** | | | **Remarks** | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | | **Sign** | | | **Remarks** | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | | **Sign** | | | **Remarks** | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date: FERMENTATION LOG SHEET F104 - \_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Time** | **Log**  **hr** | | | | | **Temp**  **°C** | | | | **RPM** | | | | **pH** | | | **Air**  **Nm3/hr** | | | | **Air Flow through Add.spa.( )** | | | Back pressure | | | | DO2 **%** | | | | | | **Sign** | | | **Remarks** | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
|  |  | | | | |  | | | |  | | | |  | | |  | | | |  | | |  | | | |  | | | | | |  | | |  | |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CHART FOR CHANGE OF PARAMETERS** | | | | | | |
| **Date** | **Time** | **Log hr** | **Parameter** | **Change** | **Reason for the change** | **Sign** |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | |
| **CHART FOR CHANGE OF PARAMETERS** | | | | | | |
| **Date** | **Time** | **Log hr** | **Parameter** | **Change** | **Reason for the change** | **Sign** |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  |  |  |  | From\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ |  |  |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CHART FOR ALARMS AND ACTIONS** | | | | | | | |
| **Date** | **Time** | **Log hr** | **Parameter** | **Type of**  **Alarm**  **(High/low/Trip)** | **Action**  **Details** | **Sign** | **Remarks** |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Checked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ | **20. HARVESTING DETAILS**  20.1. Total fermentation log hours  20.2. pH of the broth at EOF  20.3. Before transfer, steam the broth transfer line to D1 Block  **Note 33:** The broth can be collected in one or two different  broth collection tanks  20.4. Transfer the broth to D1 Block  20.5. Equipment code at D1 Block  20.6. Total quantity of Broth harvested.  20.7. Flush the fermenter thoroughly to remove residual  broth using potable water.  20.8. Transfer the flushing to D1 Block  20.9. Total quantity of Potable water used for  flushing the fermenter.  **Note 34:** Clean the fermenter after the process as per relevant  ECC. | \_\_\_\_\_\_\_\_\_\_\_\_ hrs  pH\_\_\_\_\_\_\_\_\_\_\_\_  1. T403 -\_\_\_\_\_\_\_/NA  2. T403 -\_\_\_\_\_\_\_/NA  \_\_\_\_\_\_\_\_\_\_\_\_ Kg  \_\_\_\_\_\_\_\_\_\_\_\_ Kg  A.R.No.\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_  \_\_\_\_\_\_  \_\_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_\_  \_\_\_\_\_ | \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_ |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **21. DEVIATION DETAILS:**  **Note 35:** Document the details of Deviation observed / occurred during the manufacturing. | | | | | | |
| **Sl**  **No.** | **Date** | **Summary of deviation** | **Deviation type**  **(Planned / Unplanned)** | **Deviation No.** | **Reference**  **Page No.** | **Sign** |
|  |  |  |  |  |  |  |