This is a tutorial which contains information on how the manufacturing line works at Abbott Manufacturing Singapore (AMS). It is broken into 12 main parts. Each part consists of what is needed to be performed and the crucial step to be done before continuing down the production line.

12 main parts are:

|  |  |
| --- | --- |
| 1. | Warehouse |
| 2. | Weigh and dispense of wet process minor ingredients |
| 3. | Mix wet process ingredients |
| 4. | Wet process |
| 5. | Store in FPT and test |
| 6. | Spray dry |
| 7. | Store in FPS and test |
| 8. | W & D of dry blend minor ingredients |
| 9 | Dry blend |
| 10. | Packaging |
| 11. | Test and batch release |
| 12. | Batch release team |

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**Warehouse**

We receive, store and test materials for release.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Action | QA Testing | | | |
| Materials | Incoming bulk and minor materials. | Incoming oil material process. | Incoming liquid maltodexin material process. | Incoming packaging material process. |

Followed by

|  |  |  |
| --- | --- | --- |
| Action | Transference to liquid tank | |
| Materials | Oil material process. | Liquid maltodexin material process. |

**Weigh and dispense of wet process minor ingredients**

Create wet PO (Process Order), verify and release by FLL.

Normal weigh and dispense.

**Mix wet process ingredients**

Start dumping and mixing of ingredients done by W & D.

|  |  |  |
| --- | --- | --- |
| Type | Auto | Manual |
| Ingredients | Dump metered ingredients. | Staged minor ingredients &  Rework powder. |

**Wet process**

|  |  |
| --- | --- |
| Once the dumping of ingredients is completed | |
| What is needed to be collected | Collect P1 and P2 samples from the hydration tank. |
| When should it be collected | 1st sample - start of batch (P1)  2nd sample - end of batch (P2) |
| Reason | Part of preventive maintenance, every 3 months which will be tested by QA. |

|  |  |  |
| --- | --- | --- |
| Action(s) | Transfer from PIF, PIW, WSM and liquid maltodextrin to hydration tank | |
| Type | Auto | Auto / Continuous |
| Ingredients | Blend and hydrate the process in the hydration tank. | Heating and homogenization. |
| Final step | Transfer to FPT | |

**Store in FPT and test**

Once FPT (Finished Product Tank) is completely filled, add WSV (Water Soluble Vitamin) to FPT manually.

|  |  |  |
| --- | --- | --- |
| Sampling and hold process | | |
| Action | Manual sample collection of pre dry and P3. | |
| QA test | If met specification | Go for spray drying |
| If not met specification | Determine and perform batch correction |

**Spray dry**

Create dry PO order and to be released by FLL.

|  |  |
| --- | --- |
| Steps | Process steps |
| Step 1 | UHT process (auto/continuous) |
| Step 2 | Evaporation process (auto/continuous) |
| Step 3 | IPT collection and testing.  Micro collection and testing for P4, P5, P6 (manual) |
| Step 4 | Spray dry process (auto/continuous) |
| Step 5 | Transfer to FPS (Finished Product Silo) |

**Store in FPS and test**

|  |  |
| --- | --- |
| Met specifications? | |
| Yes | Proceed with dry blend |
| No | Bag off process  Transfer to warehouse  Decision process to reuse/scrap and if reuse, repeat part 3, mixing of wet process ingredients |

**W & D of dry blend minor ingredients**

Create PO order and submit to the warehouse by DBL (Dry Blending) IC (In-Charge). Verified and released by PKG (Packaging) IC (In-Charge) /FLL (Front Line Leader).

**Dry blend**

Create PO order.

|  |  |
| --- | --- |
| Steps | Transference steps |
| Step 1 | Transfer from FPS (Finished Product Silo) to vacuum hopper (auto) |
| Step 2 | Transfer from vacuum hopper to blender |
| Step 3 | dump minor ingredients to minor hopper |
| Step 4 | Wait for vacuum hopper to blender complete |
| Step 5 | Transfer from minor hopper to blender |
| Step 6 | Blender to surge hopper and ready for packing. Proceed to packaging |

**Packaging**

|  |  |  |  |
| --- | --- | --- | --- |
| Pack type | | | All to be tested by QA and IPT testing |
| Can | Pouch | Stickpack |

Once done, proceed to shrink wrapper, transfer to warehouse (FG Conveyor) and proceed handover to test and batch release.

**Test and batch release**

|  |  |
| --- | --- |
| Warehouse to TPL warehouse | |
| Step 1 | Transfer from the warehouse to container |
| Step 2 | Transfer from container to TPL warehouse then |

|  |  |
| --- | --- |
| Batch release process | |
| Step 1 | Batch audit |
| Step 2 | Review |
| Step 3 | Batch usage decision |
| Step 4 | Generate COA (Certificate Of Analysis) and handover to batch release team. |

**Batch release team process**

|  |  |
| --- | --- |
| Step 1 | Wait for batch release |
| Step 2 | Available to promise? (ATP) |
| Step 3 | If yes, receive order from A log |
| Step 4 | Ship to customer by order |

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