**MALAYSIAN PALM OIL BOARD**

**CODES OF PRACTICE**

**AUDIT CHECKLIST**

**Client :**

**Site Audited :**

**Auditor :**

**Audit Date :**

**Code of Good Milling Practice for Palm Oil Mills (CoPM) Second Edition**

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| **Clause** | **Requirements** | **Evidence** | **C** |
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| **4** | **Requirements** |  |  |
| **4.1** | **Plant Construction and Design** |  |  |
| **4.1.1** | **Building and structure:** |  |  |
|  | (a) Proper facilities and equipment shall be provided for FFB processing.  (b) Plant, building and construction structure shall be suitable in size and design to facilitate maintenance and provide a conducive environment for good quality with contaminant-free CPO and PK production.  (c) Appropriate fence, drainage and waste disposal facilities should be provided. Process drains shall be separated from monsoon drains. Devices such as fat traps, should be in place to prevent untreated effluent or contaminated water from being discharged out of the mill boundary.  (d) Safety factors shall be considered in all operation aspects in compliance with the Factories and Machinery Act 1967. All electrical fittings and apparatus such as circuit board, switch gear and motor should be protected with Ingress Protection (IP) rated enclosure to provide necessary protection against physical contact, ingress of dust and water with live or moving part. However, ventilation should not be neglected to prevent over heating hazard.  (e) Proper fire-fighting equipment shall be installed and maintained.  (f) Adequate and proper lighting shall be provided for safe operation.  (g) Process layout or workflow shall be designed in such a way so that product contamination or cross contamination risks could be minimised or avoided.  (h) Machinery placement and interspaces shall be accessible for maintenance and sufficient for the work area.  (i) Cleaning agents, chemicals and tools should be stored in designated places. |  |  |
| **4.1.2** | **Plant equipment and related facilities** |  |  |
|  | (a) Operating guidelines for all plant equipment and related facilities shall be established, implemented and accessible at all time.  (b) A housekeeping program shall be established and implemented to maintain the hygiene of the plant area, equipment or machineries and other facilities. The routine activities shall be recorded.  (c) Equipment used for measuring, regulating or recording that may impact food safety, quality, environmental, health and safety shall be periodically calibrated, recorded and maintained. Calibration status should be displayed.  (d) Maintenance activities shall be planned and recorded for equipment and devices, including portable units.  (e) Suitable safety devices, facilities and equipment shall be adequately provided and shall be  properly maintained.  (f) Copper (Cu), lead (Pb) and any trace elements are prohibited to be used as fabricating material for all components that may have direct contact with the intermediate or finished product.  (g) Mineral oil, grease or lubricants should be used with caution to avoid hydrocarbons contamination to the palm products, mainly Mineral Oil Saturated Hydrocarbons (MOSH) and Mineral Oil Aromatic Hydrocarbons (MOAH). Usage of non-petroleum based food grade lubricants and grease category H1 are highly recommended especially for the machineries that have direct contact with CPO.  (h) Steam pipes and hot surface shall be insulated with warning signage to minimise heat loss and/or prevent scorch injuries. All piping should be marked with a distinctive colour code or tagging for tracing and identification. |  |  |
| **4.1.3** | **Water supply** |  |  |
|  | (a) Water treatment plant (WTP) should be designed based on raw water condition from local source in order to provide sufficient water supply for general processing purposes and as boiler feed water (BFW). A periodic jar test should be performed to determine adequate chemical dosing for water treatment. Where applicable, dechlorination should be done and residual chlorine level should be measured periodically.  (b) A sufficient supply of potable water shall be provided for human consumption. Periodic testing for compliance to Food Act and Regulation Schedule 25 A Sub Regulation 394(1) shall be done. |  |  |
| **4.1.4** | **Hygiene, cleanliness and sanitation** |  |  |
|  | A hygiene, sanitation and cleanliness program shall be established such that:  (a) Processing plants, equipment, storage facilities and the immediate surroundings shall be kept clean.  (b) A feasible and effective pest control program shall be established and implemented.  (c) All drains within the facility boundary shall be well maintained and free from any blockage.  (d) No animals are allowed within the process boundary.  (e) Adequate washing points complete with necessary cleaning agents, emergency showers (where applicable), proper changing rooms and toilets should be provided  for good sanitary practices.  (f) All spillages and leakages should be attended immediately. |  |  |
| **4.2** | **Process Management and Control** |  |  |
| **4.2.1** | **FFB supply** |  |  |
|  | Palm oil millers shall procure FFB from licensed suppliers. Suppliers list shall be made available and evaluate their performances according to FFB quality. |  |  |
| **4.2.2** | **FFB reception** |  |  |
| **4.2.2.1** | **Weighing** |  |  |
|  | (a) The weighbridge and surroundings should always be clean and free from mud, debris, lubricant, stagnant water and loose fruits.  (b) All documentation regarding receipt and dispatch consignments should be securely and systematically kept to ease retrieval for a duration that meets the minimum regulatory requirements set by the relevant authorities.  (c) The weighbridge shall be calibrated annually by an accredited competent authority. Calibration shall be done immediately if an excessive error is detected based on the CPO purchaser’s weight as per contract. No dispatch until the fault is rectified.  (d) All weight accuracies should be monitored and where applicable, corrective actions should be taken immediately. Weighing meter reading (weight indicator) shall be displayed at the outside of the weighbridge and be functional at all time.  (e) Security procedures including the use of tamperproof security seals should be in place at the weighbridge so that all consignments are weighed correctly and recorded. |  |  |
| **4.2.2.2** | **FFB ramp** |  |  |
|  | (a) The FFB ramp and apron shall always be maintained in satisfactory condition and free from pot holes, lubricant and hydraulic oil that contaminate the FFB.  (b) FFB handling should be in FIFO basis.  (c) Care should be taken to minimise the FFB bruising. |  |  |
| **4.2.2.3** | **FFB grading** |  |  |
|  | FFB shall be graded according to the current MPOB Oil Palm Fruit Grading Manual or any document as may be determined by MPOB or any system of grading as may be determined by the MPOB Board. |  |  |
| **4.2.2.4** | **FFB filling** |  |  |
|  | (a) For multi-point cages filling, FFB should be fed slowly direct into the cages from the hopper bays to minimise fruit spillage. Spilled fruits shall be collected and transferred into the cages immediately.  (b) For single point cages filling, FFB should be discharged from individual hoppers into a conveyor system with one or two cage filling discharge points.  (c) FFB level in cages should be leveled before entering into sterilisers to prevent the bunches from spilling out thus, damaging the FFB due to condensate discharge obstruction.  (d) All in service cages shall be cleaned, free from rust and in good working condition.  (e) For continuous, tilting, spherical and vertical sterilisers, FFB shall be loaded directly onto conveyors from the hopper bay then convey to the sterilisers without using cages.  (f) The conveyors shall be clean and in good working condition at all time. |  |  |
| **4.2.3** | **Sterilisation** |  |  |
|  | (a) Sterilisation should achieve the following:  i) Halt enzymatic activity in palm fruit  ii) Loosen the fruit from bunch  iii) Soften the mesocarp for maximum oil extraction  iv) Achieve nuts conditioning to facilitate kernel recovery  (b) The sterilisation pressure must be established in such a way that the USB are less than 5%.  (c) Temperature gauge is recommended for pressurised sterilisers to ensure adequate de-aeration when steriliser temperature achieves 140oC.  (d) Condensate should be treated before adding to the processing line. |  |  |
| **4.2.4** | **Threshing** |  |  |
|  | All parts in contact with SFB and fruits should be free from any mineral oil, grease and lubrication to avoid contamination. |  |  |
| **4.2.5** | **Digestion and pressing** |  |  |
|  | (a) The digester level should always be kept at three quarter capacity (¾) full and the digested mash temperature should be within 85oC to 95oC.  (b) The digester drainage shall be fully functional.  (c) Any mineral oil hydrocarbon leakages at the digester, press gear drives and screw press cone section shall be rectified immediately. |  |  |
| **4.2.6** | **Clarification** |  |  |
| **4.2.6.1** | **Oil clarification** |  |  |
|  | The crude oil temperature should be maintained within 85°C to 95°C during the process. Removal of sediment should be conducted on daily basis. |  |  |
| **4.2.6.2** | **Oil recovery from clarifier underflow** |  |  |
|  | The sludge tank temperature should be maintained within 80°C to 90°C during the process. |  |  |
| **4.2.6.3** | **Oil purification and drying** |  |  |
|  | (a) Moisture and impurities (M&I) content in pure oil shall comply with PORAM specification.  (b) The pure oil tank temperature should not exceed 90oC during the process.  (c) Magnetic trap should be fitted before CPO storage tank to prevent iron contamination. |  |  |
| **4.2.7** | **Kernel recovery plant** |  |  |
| **4.2.7.1** | **Nut-fibre separation** |  |  |
|  | All the spilled nut should be returned to the nut conveyor for processing or disposal. |  |  |
| **4.2.7.2** | **Nut drying** |  |  |
|  | (a) The drying medium temperature and retention time should be controlled to ensure proper  nuts drying.  (b) The nut silos should be thoroughly cleaned at regular intervals. |  |  |
| **4.2.7.3** | **Nut cracking** |  |  |
|  | (a) Magnetic trap should be fitted before nut cracker.  (b) Nut cracking should be carried out with minimum breakage target set by the management. |  |  |
| **4.2.7.4** | **Kernel shell separation** |  |  |
|  | (a) The kernel/shell separator should be operated to achieve dirt content of no higher than 6% with minimal kernel losses.  (b) The dirt contents shall be closely monitored and recorded.  (c) The clay bath medium specific gravity should be monitored at regular intervals.  (d) The clay used should be non-coral base, free from heavy metals and dioxin contamination. |  |  |
| **4.2.7.5** | **Kernel drying** |  |  |
|  | a) The drying medium temperature and retention time in kernel silos should not exceed 70oC to achieve palm kernel with a moisture content of not higher than 7%.  (b) The oil from kernel silos shall be collected in clean receptacles and to be handled according to the guideline set by management. Oil from kernel silo shall not be mixed with CPO. |  |  |
| **4.3** | **Palm Products Storage** |  |  |
|  | Storage tanks, silos and warehouse for palm products shall be regularly cleaned and recalibrated when necessary. It is recommended that recalibration shall be done after 15 years from initial calibration. Tanks and silos shall be tagged for identification. |  |  |
| **4.3.1** | **Crude palm oil storage** |  |  |
|  | (a) The CPO basic quality parameters in the storage tanks should be monitored and recorded on a daily basis.  (b) The CPO temperature should be maintained within 40oC to 55oC for short-term storage.  (c) The CPO should be kept at ambient temperature and turn off any heating element for long-term storage. In case heating is necessary prior to delivery, then  i. The heating rate shall not exceed 5oC for every 24 hr to prevent localised overheating  that will affect the CPO quality.  ii. Heating rate can be increased for a tank with an agitator but should not exceed 25oC  for every 24 hr.  (d) To prevent foots or sediments build-up, daily storage tanks draining or use of an agitator during CPO dispatch is recommended.  (e) All CPO storage tanks should be equipped with high level alarm to prevent overflow spillage. |  |  |
| **4.3.2** | **Palm kernel storage** |  |  |
|  | a) Kernel samples shall be collected for testing and verification of dirt, moisture and oil contents.  (b) Any stored off-quality PK should be segregated and recycled or handled according to the Control of Nonconforming Products procedures. |  |  |
| **4.4** | **Transportation** |  |  |
| **4.4.1** | **Product** |  |  |
|  | (a) Dispatch should always follow FIFO.  (b) The cargo hauling vehicle shall be registered and licensed with the Board under MPOB(Licensing) Regulations 2005.  (c) Dedicated CPO tankers and PK lorries must be inspected prior to loading to ensure the hygiene, free from contaminants and residual thus, fit to carry the intended cargo. Inspection records shall be kept for future reference.  (d) The product quality shall be examined in accordance with contractual specifications before dispatch.  (e) In the event that vehicle’s fuel or lubricant spilling occur during loading or unloading, the spillage shall be prevented from contaminating any palm products or flowing into monsoon drains.  (f) All the cargo container access points shall be sealed with numbered tamperproof security seals after the consignment has been loaded. The transport vehicle registers numbers and seals numbers shall be documented.  (g) The dispatch consignment records namely Form MPOB L3 shall be submitted via online submission (SPS system) to MPOB as required under MPOB Act and relevant regulations. |  |  |
| **4.5** | **Waste Handling and Management** |  |  |
|  | (a) All waste product should be identified and disposed accordingly. A waste minimisation plan shall be developed based on identified waste generation sources.  (b) Scheduled waste inventory shall be labelled, stored and managed in accordance with the appropriate Act and Regulations.  (c) Effluent discharge from the facility to the environment shall comply with Environmental Quality Act 1974 and other statutory whichever is enforced.  (d) General waste disposal must adhere with relevant regulations and local legislation.  (e) Competent personnel shall be authorised for scheduled waste handling and effluent (POME) treatment plant. |  |  |
| **4.6** | **Control of Non-conforming Products** |  |  |
|  | Non-conforming product control procedures that includes in-coming raw materials, in-process intermediates and finished products shall be established for proper handling. |  |  |
| **4.7** | **Laboratory** |  |  |
| **4.7.1** | Mill laboratories should be comprehensively equipped for the purpose and should be staffed with competent personnel. Approved analytical method such as MPOB Test Methods, Malaysian Standard, ISO Test Method or other internationally recognised test method shall be adopted. |  |  |
| **4.7.2** | The laboratory analytical performance shall be evaluated periodically via suitable measures such as cross check programs, repeatability or reproducibility measurements. |  |  |
| **4.7.3** | Sampling shall be executed according to the methodology as stipulated in the MPOB Test Methods, Malaysian Standard, ISO Test Method or any other internationally recognised sampling method. |  |  |
| **4.7.4** | The CPO and PK produced shall comply with the trade specification as PORAM, MEOMA, or relevant Malaysian Standard or international standard. |  |  |
| **4.7.5** | Laboratory staff shall be properly attired complete with necessary PPE while on duty in the laboratory. |  |  |
| **4.8** | **Food Safety** |  |  |
| **4.8.1** | Food safety hazards should be considered all the times and manage the risks appropriately during the operation. Possibility of physical, chemical and biological contaminants shall be identified. Mitigation measures such as correction, corrective and preventive measures shall be put in place where contamination is likely to occur. |  |  |
| **4.8.2** | CPO for edible purposes should be monitored regularly for pesticide residues and heavy metal contaminations. |  |  |
| **4.8.3** | Chloride content in CPO is recommended not exceeding 2 ppm to avoid excessive formation of 3-monochloropropane-1, 2-diol esters (3-MCPDE) during high-temperature refining. |  |  |
| **4.8.4** | Sludge oil and solvent extracted oil shall not be recycled into normal CPO in accordance with MPOB latest circular. |  |  |
| **4.9** | **Environment** |  |  |
| **4.9.1** | Mill management shall establish policies and procedures that minimise the environmental impact due to milling operations. |  |  |
| **4.9.2** | Significant pollutants and emissions shall be identified. Mitigation plan shall be established, implemented and documented. |  |  |
| **4.10** | **Safety, Health and Welfare** |  |  |
| **4.10.1** | Mill management shall comply with the Occupational, Safety and Health Act 1994 and relevant regulations in order to identify and minimise or eliminate occupational risks. |  |  |
| **4.10.2** | Employment Act 1955 or Sabah Labour Ordinance 1949 or Sarawak Labour Ordinance 1952 shall be complied when employees’ welfare provision is allocated. |  |  |
| **4.11** | **Training and Competency** |  |  |
| **4.11.1** | The management shall identify the employee training needs and establish a suitable training plan. |  |  |
| **4.11.2** | All employees shall have adequate relevant skills and competency to perform specified jobs effectively as mentioned in the respective job description. Such skill and knowledge shall be obtained either from previous experience or on the job training. |  |  |
| **4.11.3** | All training attendances shall be properly recorded and certificates should be issued be issued to all respective participants. |  |  |
| **4.12** | **Internal Audit** |  |  |
| **4.12.1** | Internal audit shall be carried out at planned interval and the management shall ensure that actions are taken without undue delay to avoid non-conformities. |  |  |
| **4.12.2** | Audit activities records and follow-up action shall be made available and maintained. |  |  |
| **4.13** | **Traceability** |  |  |
|  | The management shall establish, implement and maintain the standard operating procedure to comply with the requirements for the traceability of relevant products. |  |  |
| **5** | **Legal Requirement** |  |  |
| **5.1** | All operations are in compliance with the applicable local, state, national and ratified international laws and regulations. |  |  |
| **5.2** | All current acts, regulations, legislations and ordinances that are relevant to the operations should be listed in the legal requirements register (LRR). |  |  |