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QUALITY MANAGEMENT GUIDE FOR THE OLIVE OIL INDUSTRY: PACKING PLANTS

1. Scope

This guide is for businesses that pack edible olive oils and edible olive-pomace oils for distribution for direct consumption, irrespective of their size or legal status. It provides pertinent advice on quality management from the entry of the products for packing until the distribution of the finished product.

2. Purpose

This guide specifies the rules that have to be followed as regards hygiene, occupational safety, environmental protection, hazard identification, evaluation of critical control points and quality assurance, which are aimed at achieving overall quality in order to assure buyers and consumers of the safety (wholesomeness) of packed oil and to provide quality assurance.

3. Definitions

Food hygiene – All the conditions and measures necessary to ensure the safety and suitability of food at all stages of processing.

Good hygiene practice – All the rules recommended to businesses concerning the conditions and measures necessary to ensure the safety, quality and suitability of food at all stages of processing.

Good manufacturing practice – All the rules recommended to businesses concerning the measures necessary to ensure the safety and suitability of food at all stages of processing.

Cleaning – The removal of soil, food residues, dirt, grease or other objectionable matter.

Contaminant – Any biological or chemical agent, foreign matter or other substances not intentionally added to food which may compromise food safety or suitability.

Contamination – The introduction or occurrence of a contaminant in food or a food environment.

Disinfection – The reduction, by means of chemical agents and/or physical methods, of the number of microorganisms in the environment, to a level that does not compromise food safety or suitability.

Hazard – A biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect.

Risk – A function of the probability of an adverse health effect and the severity of that effect, consequential to a hazard(s) in food.

HACCP – A system which identifies, evaluates and controls hazards which are significant for food safety.

Hazard analysis – The process of collecting and evaluating information on hazards and conditions leading to their presence to decide which are significant for food safety and therefore should be addressed in the HACCP plan.

HACCP plan – A document prepared in accordance with the principles of HACCP to ensure control of hazards which are significant for food safety in the segment of the food chain under consideration.

Critical control point (CCP) – A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

Quality point – A stage at which a control can be applied and is essential to prevent or eliminate a food quality hazard.

Critical limit – A criterion which separates acceptability from unacceptability.

Control (verb) – To take all necessary actions to ensure and maintain compliance with criteria established in the HACCP plan.

Control measure – Any action and activity that can be used to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

Control (noun) – The state wherein correct procedures are being followed and criteria are being met.

Corrective action – Any action to be taken when the results of monitoring at the CCP or quality point indicate a loss of control.

Quality – The totality of characteristics of an entity (which can be individually described and considered – product, process, business) that bear on its ability to satisfy stated and implied needs.

Quality system – The organisational structure, procedures, processes and resources needed to implement quality management.

Quality assurance – All the planned and systematic activities implemented within the quality system, and demonstrated as needed, to provide adequate confidence that an entity will fulfil requirements for quality.

Quality control – The operational techniques and activities that are used to fulfil requirements for quality.

Quality management – All the activities that determine the quality policy, objectives and responsibilities, and that implement them by every means to ensure quality planning, control, assurance and improvement within the quality system.

Quality plan – A document setting out the specific quality practices, resources and sequence of activities relevant to a particular product, project or contract.

Traceability – The ability to trace the history, application or location of an entity by means of recorded identifications.

Audit – A systematic and functionally independent examination to determine whether activities and related results comply with planned objectives.

Certification – The procedure whereby official certification bodies and officially recognised bodies provide written or equivalent assurance that foods or food control systems conform to requirements. Certification of food may be, as appropriate, based on a range of inspection activities which may include continuous on-line inspection, auditing of quality assurance systems, and examination of finished products.

4. Definition of the products handled and obtained by packing plants

4.1. Products handled by the plant

Packing plants handle the products obtained from the fruit of the olive tree (*Olea europaea* L.), namely:

4.1.1. Virgin olive oil obtained solely by mechanical or other physical means under conditions, particularly thermal conditions, that do not lead to deterioration of the oil, and which has not undergone any treatment other than washing, decantation, centrifugation and filtration. The designations of the virgin olive oils handled by packing plants, which comply with the physico-chemical and organoleptic characteristics defined in the IOC trade standard applying to olive oils and olive-pomace oils, are as follows:

4.1.1.1. Extra virgin olive oil: virgin olive oil which has a free acidity, expressed as oleic acid, of not more than 0.8 grams per 100 grams, and the other characteristics of which correspond to those laid down for this category in the standard.

4.1.1.2. Virgin olive oil: virgin olive oil which has a free acidity, expressed as oleic acid, of not more than 2 grams per 100 grams and the other characteristics of which correspond to those laid down for this category in the standard.

4.1.1.3. Ordinary virgin olive oil: virgin olive oil which has a free acidity, expressed as oleic acid, of not more than 3.3 grams per 100 grams and the other characteristics of which correspond to those laid down for this category in the standard.

4.1.2. Refined olive oil: olive oil obtained from virgin olive oils by refining methods which do not lead to alterations in the initial glyceridic structure and the physico-chemical characteristics of which correspond to those laid down for this category in the standard. It has a free acidity, expressed as oleic acid, of not more than 0.3 grams per 100 grams and its other characteristics correspond to those laid down for this category in the standard.

4.1.3. Olive oil: oil consisting of a blend of refined olive oil and virgin olive oils fit for consumption as they are. It has a free acidity, expressed as oleic acid, of not more than 1 gram per 100 grams and its other characteristics correspond to those fixed for this category in the standard.

4.1.4. Crude olive-pomace oil: olive-pomace oil whose characteristics correspond to those fixed for this category in the standard. It is intended for refining for use for human consumption, or it is intended for technical use.

4.1.5. Refined olive-pomace oil: oil obtained from crude olive-pomace oil by refining methods which do not lead to alterations in the initial glyceridic structure and the physico-chemical characteristics of which correspond to those laid down for this category in the standard. It has a free acidity, expressed as oleic acid, of not more than 0.3 grams per 100 grams and its other characteristics correspond to those laid down in the standard.

4.1.6. Olive-pomace oil: oil comprising the blend of refined olive-pomace oil and virgin olive oils fit for consumption as they are. It has a free acidity of not more than 1 gram per 100 grams and its other characteristics correspond to those fixed for this category in the standard.

4.2. Products obtained by packing plants

The products obtained by packing plants, and intended for marketing for direct consumption after labelling and packaging, are as follows:

4.2.1. Extra virgin olive oil, the physico-chemical and organoleptic characteristics of which correspond to those laid down for this category in the standard.

4.2.2. Virgin olive oil, the physico-chemical and organoleptic characteristics of which correspond to those laid down for this category in the standard.

4.2.3. Refined olive oil obtained from virgin olive oils by refining methods which do not lead to alterations in the initial glyceridic structure and the analytical characteristics of which correspond to those laid down for this category in the standard. This product may only be sold direct to the consumer if permitted in the country of retail sale.

4.2.4. Olive oil consisting of the blend of refined olive oil and virgin olive oil belonging to one of the grades of virgin olive oils fit for consumption as they are. Its physico-chemical characteristics shall comply with those laid down for this category in the standard.

4.2.5. Refined olive-pomace oil obtained from crude olive-pomace oil by refining methods which do not lead to alterations in the initial glyceridic structure and the analytical characteristics of which correspond to those laid down for this category in the standard. This product may only be sold direct to the consumer if permitted in the country of retail sale. If not permitted, the designation of this product shall comply with the legal provisions of the country concerned.

4.2.6. Olive-pomace oil consisting of the blend of refined olive-pomace oil and virgin olive oil belonging to one of the grades of virgin olive oils fit for consumption as they are. Its physico-chemical characteristics shall comply with those laid down for this category in the standard.

5. Description of the process of packing olive oils and olive-pomace oils

Delivery of raw materials

- Delivery of the oils in tanks of varying capacities, or in drums or other containers permitted in the standard.

- Delivery of aids for:

  . oil filtering: cottonwool filters, paper filters, filters made of other cellulose fibres, diatomaceous earth, perlites;

  . packing: air for blowing into packs, liquid nitrogen.

- Delivery of packing material:

  . containers made of colourless or coloured glass, metal, normal or bio-oriented polyvinyl chloride (PVC), polyethylene terephthalate (PET), normal or bio-oriented low-density polyethylene (LDPE), polypropylene (PP), polystyrene (PS), tetrabrick, vitrified ceramics;

  . caps and stoppers made of plastic, cork or aluminium;

  . labels, self-adhesive or not, glue for labelling or for sealing packaging, cardboard boxes, staples, inks for marking the lot and date of minimum durability, retractile plastic film, pallets.

  All the materials used must be food-grade quality.

Storage of raw materials

- Storage of oils: in storage vats, or in their delivery container in the case of drums or tanks, until they are to be used.

- Storage of aids: in original packaging until they are to be used.

Blending

- Blending of different edible virgin olive oils.

- Blending of refined olive oil or refined olive-pomace oil with edible virgin olive oil.

Filtering

- Filtering to retain extraneous matter or particles and moisture in order to lend the finished product the desired transparency and polish.

Packing

- Blowing of purified, compressed air into the containers in which the oil is to be packed for direct sale to consumers.

- Blowing of purified, compressed air to mould plastic bottles.

- Filling, addition of nitrogen if necessary, sealing or stoppering of containers; labelling and marking of the pack lot.

- Placement of the containers in the packages for transportation and distribution.

Storage of packages

- Storage on pallets suitable for transportation and distribution, stacked in such a way as to facilitate stock rotation.

6. General principles of food hygiene: practical application and control

6.1. Plant location

- Plants should be located away from environmentally polluted areas or areas where industrial activities are carried out that pose a serious threat of contaminating the oils.

- Plants should be located away from areas subject to flooding unless sufficient safeguards are provided.

- Plants should be located away from areas prone to infestations of pests.

- Plants should be established in an area that is sufficiently large to facilitate access by suppliers and distributors.

6.2. Buildings and facilities

- Buildings should be made of durable material and should be of sound construction such as to prevent any deterioration caused by weather, soil or other conditions.

- Buildings should be designed to ensure adequate natural light for daytime work inside the plant and adequate ventilation in each handling area in such a way as to allow proper cleaning and maintenance.

- The internal distribution of the premises should be such as to differentiate clearly between each handling area of the plant:

  . Entry storage area for oils: this area should be adapted to the oil delivery methods.

  . Container and packaging storage area: this area should have easy access to the packing line.

. Area for storing filter aids: this area should be completely separate; it should be dry and should be kept properly closed.

. Laboratory for physico-chemical and organoleptic testing of the oils when they enter the plant, prior to blending, and of the finished product: this area should be completely separate and should be well lit and well ventilated.

. Line for container filling, sealing or stoppering, labelling and placement in distribution packaging: this area should be spacious and adapted to the type of line. The filling lines must have an adequate lighting system to facilitate cleaning operations. They must be segregated from storage areas and must not be in direct contact with outside.

. Storage area for detergents and lubricants: this area should be completely separate; it should be dry and be kept properly closed, and it should be easy to keep and to clean.

. Area for storing packages pending distribution: this area should be kept at a stable temperature and should have adequate lighting and ventilation.

- The equipment should be tailored to each operation; it should work properly and be in good condition.

- The moving parts of machinery should be protected by safety devices.

- Buildings should be fitted with a fire system.

- Plants should have an adequate supply of potable water.

- Sanitary facilities should be located separate from handling areas and should ensure adequate personal hygiene: facilities for hygienic washing and drying of hands (pedal-activated washbasins with a supply of hot and cold water), lavatories of appropriate hygienic design, adequate changing facilities for personnel. Separate toilets are recommended for workers.

6.3. Premises

- Walls and partitions should have a smooth surface made of impervious materials that are easy to clean and disinfect.

- Floors should be made of heavy-duty, impervious, non-slip material. They should be easy to clean and disinfect and should ensure good drainage.

- Windows should be fitted with screens to prevent the entry of insects and rodents, and they should be easy to clean.

- Doors should have smooth, non-absorbent surfaces and should be easy to clean and to disinfect. Outer doors should open outwards and be easy to open from the inside. They should be adequately close fitting to prevent the entry of pests or any other small animals.

- Floor openings for lines or pipes should be adequately protected to prevent any contamination.

- Adequate space should be left between equipment to enable staff to move without risk.

- Ceilings should be high enough to ensure adequate ventilation.

- Each worker should have a minimum space of two square metres, which is the recommended minimum to ensure worker safety.

- Artificial lighting should be adapted to handling areas. Light bulbs should be protected to prevent contamination in the event of breakage.

6.4. Staff hygiene

- Any person known or suspected to be suffering from, or to be a carrier of, a disease likely to be transmitted through food should not be permitted to enter the packing plant if there is any likelihood of such a person contaminating the products.

- No person known or suspected to be suffering from, or to be a carrier of, a disease likely to be transmitted through food may be authorised to work in any of the handling areas if there is any direct or indirect likelihood of product contamination.

- Persons working in the packing plant should maintain a high standard of personal cleanliness. They should always wash their hands before handling the products and immediately after using the toilet.

- Persons working in the packing plant may not behave in any way that could result in contamination of the oil, such as smoking, spitting, chewing or eating, sneezing or coughing nearby.

- Persons working in the packing plant should wear clothes that are suited to their tasks and that do not represent a risk.

- Persons working in areas where there is a high, continuous level of noise should wear suitable ear protection.

- Staff should be equipped with individual protective devices.

6.5. Responsibilities – recording of inspections

- The management of the business shall be responsible for implementing and monitoring the application of the hygiene rules.

7. Hazard identification

7.1. Delivery of raw materials:

Hazards:

- Physical: presence of foreign matter in the oil, particularly glass, dust, pieces of metal, small animals, insects.

- Microbiological: particularly the contaminants cited in the standard.

- Chemical: residues of phytosanitary products in virgin olive oils, presence of halogenated solvents and residues of extraction solvents in refined olive-pomace oils (traces of allergenic contaminants), oils inconsistent with their grades, aromatic solvents, polycyclic aromatic hydrocarbons.

Preventative measures:

- Control of suppliers, requirement of certificates attesting that the primary packing material is suitable for food, requirement of certificates attesting the conformity of filtering or packing aids.

- Control of transportation, certificate of transportation of food in the vehicle.

- Control of detergents and lubricants to check they are food-grade quality.

Critical control points (CCP):

- Sampling and physico-chemical and organoleptic testing of oils for the purpose of product acceptance and separate storage.

- Sampling of containers and visual inspection to check they are in good order.

Critical limits:

- Maximum content of phytosanitary residues, halogenated solvents or extraction solvents; other contaminants described in the chemical hazard section.

- Acceptable limits for physico-chemical and organoleptic characteristics according to oil grade.

Control system for each CCP:

- Relevant tests.

Corrective action:

- Separation of lots.

- Return to suppliers.

- Withdrawal and reprocessing.

7.2. Storage of raw materials:

- Provided that good hygiene practices are observed, no hazard should be identified at this stage.

7.3. Blending:

- Provided that good hygiene practices are observed, no hazard should be identified at this stage.

7.4. Filtering of the finished product:

- Provided that good hygiene practices are observed, no hazard should be identified at this stage.

7.5. Packing:

Hazards:

- Physical: glass fragments, insects, dust;
- Chemical: dirty air used for air blowing.

7.6. Package storage:

- Provided that good hygiene practices are observed, no hazard should be identified at this stage.

8. Quality control points of olive oil and olive-pomace oil packing plants

8.1. Delivery of raw materials

- Oils:

Control point:	. *Good practice measure, preventative or corrective.*
Oil delivery vehicle:	. Inspection and recording of cleanness and of the certificate specifying the previous load carried. . Possibility of rejecting the load.
Oil consistency with grade:	. Inspection and recording of certificates of physical and organoleptic analysis. . Check test for consistency. . Check for compliance with order. . Possibility of rejecting the load. . Testing for contaminants

- Other raw materials:

- Filter materials:	. Certification of suppliers.
- Packing material:	. Certification of suppliers. . Visual inspection of hermetic packaging of bottles, drums and stoppers, and of cleanness of pallets.
Nitrogen:	. Certification of suppliers.
Cleaning and maintenance products:	. Certification of suppliers.
Packaging, glues, inks:	. Certification of suppliers.

8.2. Storage of raw materials

Control point:	.	*Good practice measure, preventative or corrective.*
Cleanness of tanks:	.	Compliance with hygiene rules.
Cleanness of storage premises:	.	Compliance with hygiene rules.
	.	Ensurance that tank and storage area surfaces and pipes are made of resistant materials preventing the transfer of substances to the contents (stainless steel, epoxy resins, vitrified materials, etc.)

8.3. Blending

Control point:	.	*Good practice measure, preventative or corrective.*
Oil characteristics:	.	Chemical and organoleptic analysis.

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8.4. Filtering

Control point:	.	*Good practice measure, preventative or corrective.*

Control of limpidity

8.5. Packing

Control point:	.	*Good practice measure, preventative or corrective.*

8.6. Storage of packaging

Control point:	.	*Good practice measure, preventative or corrective.*

9. Control of quality records, quality audits

9.1. Scope and field of application

This procedure defines the responsibilities and arrangements for the identification, collection, indexing, filing, storage and distribution of quality records.

The purpose is to ensure that all quality records are retrievable and correctly stored.

Any forms, registers or other documents, code-numbered or not, that contain quality details (of the product, service or Organisation) shall be considered quality records.

Quality records enable the Management to monitor the effectiveness and efficiency of the business quality system on the basis of the objectives set in the improvement plan and in the quality policy.

9.2. Identification of quality records

Quality records shall be listed in a form stating all the quality records in use, the name of the storage officer, storage period, storage location and the functions with authorised access thereto.

Quality records shall be identified according to the arrangements described in the document and data control procedure.

9.3. Collection and registration

Each area that collects or receives external quality records shall file the original along with all the previous documents, including obsolete documents.

Any forms issued shall be stored in suitable places where there is no risk of deterioration. It shall be ensured that they can be readily retrieved and that they are available for the specified period of time.

9.4. Files

9.4.1. Work area files

Each area shall have its own files holding a copy of the documents necessary to perform the area tasks. The area manager shall also be responsible for filing copies and for ensuring they are properly stored. Files shall be kept in binders kept in specially allocated areas.

Whenever a filed document becomes obsolete it shall be destroyed or it shall be stamped with the words “OBSOLETE” and shall be replaced by the new document.

9.4.2. General file

A general file of the originals of forms, in which all the documentation shall be collected, shall be kept by the QAM.

Only authorised persons shall have access to the files, including customers, provided they request so in writing.

When external quality records are received, they shall be visad and inserted in the appropriate folders.

9.4.3. Electronic files

Within the system, operators may, according to requirements, use the programs relating to their work area and may share them partially or fully by using protective passwords (read only or read-write). There shall be a management program which shall be consulted through personalised access for which each operator shall have his or her own login or password linked to the type of menu (e.g. sales, purchases). The management instructions shall be explained in detail in the procedure for the management of computerised files (PRSAVE).

9.5. Procedures

- Procedure for the management of computerised files (PRSAVE)

9.6. Documentation

- List of quality system documents (LISDOC)
- Record summary (RESUMM)

9.7. Quality system certification

The Organisation should carry out internal audits to ensure that all the quality procedures are being properly applied.

An improvement plan should be drawn up when corrective measures are necessary.

Suppliers should also be audited by outside bodies which ensure quality assurance.

10. Training in hygiene and occupational safety

Staff engaged in activities that have a bearing on product quality should be adequately instructed, trained and experienced to a competent level.

The Organisation should define skills, provide training and ensure that staff are aware of the importance of the activities they carry out, and it should keep records of the degree of staff instruction and training.

11. Customer satisfaction

The Organisation should implement internal procedures to ensure and measure customer satisfaction by:

- checking that the product and services comply with customer requirements;

- managing and assessing complaints;

- implementing a system to monitor the degree of customer satisfaction in terms of the supply of specific products or of the general relations between the customer and the business.

12. References

CAC/RCP 1-1969, Rev. 4 (2003) Recommended international code of practice – general principles of food hygiene.

Appendix CAC/RCP 1-1969, Rev. 4 (2003) Guidelines for the application of the hazard analysis critical control point (HACCP) system.

Discussion paper on the implementation of HACCP in small and/or less developed businesses.

Preliminary draft guidelines on the use and promotion of quality assurance systems, CX/FICS 00/5, December 1999.

ISO 8402 – Quality management and quality assurance – Vocabulary.

ISO 9001 – Quality systems – Model for quality assurance in design, development, production, installation and servicing.

ISO 9002 – Quality systems – Model for quality assurance in production, installation and servicing.

ISO 9003 – Quality systems – Model for quality assurance in final inspection and tests.

ISO 9000-2000 – Quality management systems (in replacement of ISO 8402, 9001, 9002 and 9003, upon adoption by ISO).

ISO 22000:2005 – Food safety management systems

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Regulation (EC) No 178/2002 – general principles and requirements of food law.

Regulation (EC) No 327/2001 – private storage contracts for olive oil.

Trade standard applying to olive oils and olive-pomace oils (COI/T.15/NC no. 3/Rev. 1 – December 2003).

Regulation (EC) No 852/2004 – hygiene of foodstuffs.

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