STANDARD OPERATIONAL PROCEDURE (SOP) : FOSFA SAMPLING - OILSEEDS

AGRICULTURE, FOOD & LIFE : Trade and Logistics	DRY PRODUCTS	Author : Techical Governance Approver : Johny Boerjan

1. PURPOSE AND SCOPE

This SOP defines the manual (=discontinuous) sampling method as predescribed by the technical manual developed by FOSFA, published on the website www.fosfa.org
Handscoops, manual and/or automatic samplers, shovels, buckets etc.. are means which can be used for discontinuous sampling in this SOP.
This SOP relates only to oilseeds for the assessement of their quality and condition in bulk, bags or containers.
The sampling methods and associated activities are based on the following standards :

- Sampling of oilseeds and preparation/packaging and labelling of laboratory samples : ISO 21294:2017 : Oilseeds - Manual or automatic discontinuous sampling
- Packaging and storage of oilseed samples : FOSFA international official method

2. RESPONSIBILITIES

This procedure is written and controlled by Technical Governance SGS Group Management S.A. It is up to the local affiliates to adopt this procedure into their own quality system. The requirements written in this SOP are the minimum requirements to be applied.
It is the inspector's responsibility to perform the FOSFA sampling according to this SOP.
It is the inspector's responsibility to report his findings completely and accurately. Where necessary, the appropriate field staff shall communicate with the management team and / or the client on all matters related to operational safety, job delays or special conditions that can affect the work order.
It is the back office's/manager's responsibility to verify that the operations department complies with the requirements of this SOP.

3. INTRODUCTION

PRINCIPAL's INSTRUCTIONS:

Unless requested to sample by another standard, it is by default that all SGS affiliates shall sample oilseeds as per FOSFA requirements.
Samples shall be taken as required by the contract, so you should obtain information from your client which contract is applicable.
Principals' instructions to superintendents make it quite clear whether the samples are being drawn for analysis and arbitration purposes.
Be also informed there is a specific SOP for Stockpile Sampling AFL/SOP/D/9, published on the TG portal.

4. DEFINITIONS

"SOP": Standard Operational Procedure which describes the minimum requirements to fulfil.

"CONSIGNMENT": The quantity of oilseeds dispatched or received at one time and covered by a particular contract or shipping document. It can be composed if one or more lots or parts of a lot.

"LOT": A stated quantity of the consignment, which in itself is presumed to be of uniform characteristics, and which will allow the quality and condition to be assessed. 1 lot is maximum 5000 MT

"INCREMENT SAMPLES": An amount of oilseeds taken at one time at each individual sampling point (at each individual sampling time for moving lot) throughout a lot.

"BULK SAMPLE": Quantity of oilseeds obtained by combining and blending the increments taken from any one particular lot.

"LABORATORY SAMPLE": Representative quantity of oilseeds obtained by homogenization (blending by mechanical or manual means) and division of the bulk sample and intended for analysis or other examination.

"SEALED": shall mean jointly sealed samples by the Buyers and Sellers or their superintendents and shall be sealed in such a manner as to prevent any access to the sample without breaking or removing the seal. The seal's mark should be clearly identifiable and clearly visible. (cf. X BIZ sealing policy)

"OILSEEDS"

Copra

Small Oilseeds : Gold-of-pleasure (seeds), Hemp (seeds), Linseed, Rapeseed Turnip rape (seeds), Poppy (seeds), White mustard (seeds), Black mustard (seeds), Sesame (seeds)

Medium and Large seeds : Castor (seeds), Oil palm kernels, Groundnut, Shea nut, Pumpkin (seeds), Sunflower (seeds), Soya bean, Safflower (seeds), Cotton (seeds),

5. PROCEDURE

5.1 EQUIPMENT

Manual sampling equipment and mechanical samplers shall be clean, dry, and free from foreign odours and made from material which will not contaminate or alter the quality/condition of the oilseeds.
Manual sampling shall be carried out and mechanical samplers shall operate in such manner as to protect samples.
Sample containers shall be protected to prevent contamination of the samples.
Apertures shall be verified if no deformation occurred. The size of the apertures in function of the product to be sampled and as described in ISO 21294.

- **Devices for sampling from bags:**
  Sack-type probes, cylindrical samplers, conical samplers and hand-scoops.
- **Devices for sampling bulk products:**
  Large shovels, hand-scoops, cylindrical samplers, conical samplers, automatic samplers and other devices for taking small periodical increments discontinuously from a flow of oilseeds.
- **Devices for mixing and reduction:**
  Shovels and quartering irons, dividing instruments

Digital camera
Seals
Devices for mixing and homogenization

5.2 SAFETY FIRST

The sampling method documented in this procedure raises several potential safety and health hazards. As part of the work order review and before any physical sampling activities are performed, a sampling plan incorporating a location specific risk assessment, must be included in the field work instructions for all field staff attending site. These documents must consider all relevant local laws, client / site safety rules and programs. They must comply with SGS OIMS Standards and the SGS Rules for Life. The following hazards are referenced in the Global Risk Assessment and must be reviewed by operational managers before job / work order commences. All attending Field Staff and Supervisors must assess the risks before commencing any sampling operations and inform their line managers of any deviations or new hazards are identified.

- The **minimum PPE's** to be worn are as follows: Helmet, safety shoes (anti slippery), protective clothes (reflecting), high visibility jacket, respiratory protection if needed (disposable dust masks), gloves, ear protection (noisy environment), measurement apparatus (oxygen, toxic gasses in relation to fumigated goods) in accordance with "OIMS Standard "L2- 313 PPE"

Major Risks include

- **Risk of moving vehicles and heavy mobile equipment**

It includes cargo trucks when offloading cargo at site and heavy mobile equipment moving the cargo on/off the loading/discharging point. It presents particular risk to the sampler due to constantly changing nature of hazard, multiple participants (drivers) changing in rapid sequence, relatively large size of vehicles, the elevated position of drivers / operators station, moving in forward and reverse directions, high level of dust in area. The sampler is relatively small, poorly visible and totally unprotected against the risk of vehicle or equipment run over him.

Such risks can be minimized by :

- *Not allowing sampler approaching and working in the same areas where the load trucks and heavy mobile equipment are normally operating. This is achieved by segregation the work of sampler and vehicles/equipment either by time and/or by distance.*
- *Agreeing a safer sampling method with a Loader takes scoops (if eg sampling from pile on the quay and delivers near to the sampling station outside the work area of vehicles/equipment.*
- *Ensuring that the field staff monitors changing situation and adjust the sampling station position to keep the safe distance at all times.*
- *Always making eye contact with equipment operators*

- **Transportation**

Moving Personnel and Samples to / from site including condition of vehicles, maximum allowed working load, drivers' authorization, driving behavior

- **Sampling moving stream (eg. Conveyor belt)**

Preferably and in accordance with the FOSFA Sampling Rules we need to take samples from the moving stream. This can be done by sampling during the operations on the quay, intake warehouses, but in most cased from a moving conveyor belt. A major hazard is where the conveyor belt is moving on rolling cylinders in high speed. The risk of getting grabbed or touched by these cylinder is not unlikely and utmost care must be taken in order to avoid getting grabbed and keep a safe distance between the inspector and the rolling cylinders, moving conveyor belt. Some pictures of bad and good practices below.

Bad practice : foot and leg to close to the rolling cylinders

Good practice : much safer to stay within the cage.

Such risks can be minimized by :

- *Verification if no other sampling point can be agreed (quay, at intake warehouse, installation of automatic sampling device…)*
- *Asking the stevedore/silo owners to install a safety cage which is protecting the inspector getting to close towards the rolling cylinders*
- *Make sure there is a safety "rope" and line management to ask to the terminal management about the yearly test of this safety rope*
- *No loose endings at the level of the inspectors clothing.*

Secondary Risks include actions as

- In the event that the facility is unsafe, or operations preclude access to the hold or a mutually agreed acceptable sampling point, **the superintendents may STOP the operation in order to draw increment samples as required by this procedure and the GAFTA Rules**. **The inspector shall be aware of STOP WORKING AUTHORITY as a Rule of Life.**
- **Sampling points have to be carefully selected**, and agreed by the superintendents, at a point where the increment samples drawn are representative of the goods loaded and/or discharged and/or transhipped.
- If samples are to be drawn outside of natural daylight they must be drawn under full and properly adequate ships lighting and/or installation lighting.
- **Confined space entry procedures** are to be applied. Ships hold and silos are considered to be confined spaces.
- Many agricultural products have active respiration which can lead to **oxygen depletion**. Oxygen to be measured with oxygen meter. The safe oxygen content is between 19,5 % and 21 %.
- **Toxic gasses**: be aware if fumigation has been done at loading. Respect the safety rules (ventilation time). Respect and allow sufficient time after the hatch covers are opened prior to using any restricted manhole accesses.
- All areas are **No Smoking Areas** unless otherwise indicated
- For the unaware and inexperienced **a vessel can be a place of multiple dangers**. Eg. loads overhead, open hatches, tank tops, pipelines, lugs and brackets etc… Inherent dangers lie all around and are multiplied many times in wet and icy conditions.
- **Spontaneous combustion:** certain agricultural commodities can start to release heat due to oxidation and bacterial fermentation. The heat is unable to escape due to these agri commodities are good thermal insulators initializing spontaneous combustion.
- Oilseed elevators, crushing mills of any type are subject to dust explosion hazards.
- Fatigue Management - Ensure personnel do not exceed maximum working times (including driving hours)
- Risk of Injury from Manual Handling from Sampling Activities
- Environmental Hazards – including weather conditions, working at night
- Material Hazards – Exposure to Dust
- Emergency situations pertinent to the specific site – to be able/unaware how to escape

5.3 SAMPLING

- **Consignments and lots**

Table 1 — Lot size, number of increment samples and laboratory samples according to the mass of the consignment

Total consignment mass tonnes t	Lot size t	Minimum number of increment samples per lot min. number	Number of laboratory samples per consignment total mass/lot size
< 500	0 to 500	20	1
500 to 5 000	500	20	1 to 10
> 5 000 to 10 000	1 000	30	5 to 10
> 10 000 to 25 000	2 500	40	4 to 10
> 25 000	5 000	50	5 to 15

- There shall be a laboratory sample for each lot
- Each laboratory sample to be identified with the bulk tonnage of the sampled product and should represent a lot up to 5000 MT + a remainder of less then 500 MT
- Sampling operations shall be carried out during and at the place of loading/discharge or at the time of entry/exit from the silo or warehouse.

Table 2 — Bulk sample size and laboratory sample size according to the lot size and nature of the product

Lot size	≤ 500 t	1 000 t	2 500 t and above	All lots size
Nature of product	bulk sample minimum mass per lot kg			Laboratory sample minimum mass kg
Copra	40	60	80	5
Medium-size and large seeds (as defined in ISO 664)	30	40	60	2 to 5
Small seeds (as defined in ISO 664)	8	12	16	1 to 2

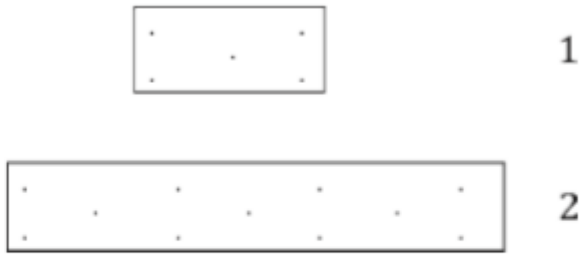
- **Time and place of sampling (bulk transfer)**

  - **Transfer to lorries and wagons**

    The increments to be taken:

    - from the flow of product (preferred method) during entire loading or discharge (particularly for tanker-wagons where internal sampling is not possible), or

- in the lorry or wagon, as soon as possible after loading, by sampling at least five different positions according to the size of the lorry or wagon (see figure) and at three levels (layering), for the purpose of providing one bulk sample representing each lot with a cylindric of conical sampler (each compartment is considered an increment sample). Probe to be pushed to the bottom.



Key
1 wagons up to 30 t
2 wagons more than 30 t

- **Transfer to barges**

The increments should be taken from the flow of the product during entire loading/discharge, by sampling from each hold, for the purpose of providing one bulk sample representing each lot.

- **Transfer to silos or warehouses**

Increments to be taken from conveyor belts taking into account the rate of movement of the belt for the purpose of providing one bulk sample.

- **Sampling methodology**

  - **Bags**

    Increments shall be taken randomly from 2 % of the bags forming the lot, with a minimum of five bags.
    Open bags: cylindrical samplers, conical samplers
    Closed bags: sack-type tapered sampling probes

  - **Bulk**

    Falling stream (in motion): across whole section of the flow in perpendicular direction
    In holds during discharge: As many places as possible, at intervals determined by the rate of discharge and throughout the entire unloading process.
    Weigh hoppers : by means of cylindrical samplers/shovels in accordance with sampling opportunities at location of loading/discharging

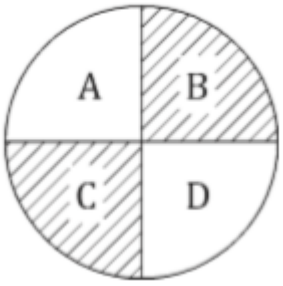
Parts of lots which are damaged by sea water or otherwise damaged in transit or out of condition, as well as loose material and sweepings which have been recovered shall be sampled separately from the sound material. Each type of damaged material shall be assessed by mass, sampled and separated from the sound material.

- **The bulk sample : aggregation and division**
  - All increments to be combined to form the bulk sample (for each lot)
  - Blending before reduction

- **Laboratory samples for analysis and arbitration**

The bulk sample for each lot shall be mixed and divided using the apparatus as described to obtain the laboratory sample. It is usual that several equivalent laboratory samples are required from each lot for the purposes of analysis, retention or arbitration. This number of sets of laboratory samples is generally specified in the relevant **sales contract** or otherwise agreed between buyer and seller.

- Coning and quartering :



  - Work on clean, non absorbent surface
  - Discard always opposing quarters (A,B)
  - Rotary mechanical divider

- Sample dividers
- Cone-shaped dividers
- Riffle divider
  - Only to be used for small samples (< 2 kg)

5.4 PACKING OF SAMPLES:

5.4.1 Oilseeds (other than palm kernels and other lauric seeds like pumpkin seeds, watermelon seeds…)

- Rigid Samples sent to laboratories for analysis should be packed in water-tight plastic jars with screw caps of the same materials or in glass jars with plastic screw caps, of not less than 500 ml
- Completely filled to the top
- Closures shall be sealed as per SGS/FOSFA requirements. Where possible, caps should be security sealed to the sample jar by means of matching tags and conventional security seals, preferably incorporating the tie-on label when used. Where this is not possible, the sample bottle would normally be placed within a plastic bag which itself may be security sealed by an appropriate method.

5.4.2 Palm kernels and other lauric seeds like pumpkin seeds, watermelon seeds, illipe nuts, …

- Woven polypropylene bags closed and/or sealed
- THEN packed in a strong cotton or linen bag which is then sealed
- ***Bags of plastic sheet SHALL NOT be used***

- **Retention of samples**

  - Oilseed samples shall be stored at no more then 20 °C
  - Palmkernel samples, copra, other lauric seeds should be cold stored at minus 15 ° C (freezer)
  - When the above recommendation cannot be kept, the laboratory to be informed and in case of retesting the oil content to be adjusted in relation to the variation in moisture between the original test an retest.
  - For aflatoxin testing only, the sample shall be protected from light.

Samples must be retained for a period of 3 months after the issuance of the certificate/report. Samples may be retained for a longer period upon written request by the principal or when an arbitration or appeal is involved and this is notified, the sample must be kept until further notice. Also if samples are subject of a claim or complaint from the client, the samples must be kept until TG GVA allows them to be destroyed.

5.5 SAMPLE LABELS:

Every sample shall be sealed and shall bear at least:

- ship or road vehicle
- from;
- to;
- consignment quantity;
- bulk/bags;
- goods;
- identification mark or lot number;
- number and date of bill of lading or contract;
- date of sampling;
- place and point of sampling;
- sampled by (person or organization)
- Nature of damage (if applicable)

The label will be permanent

5.6 SAMPLE DISPATCH:

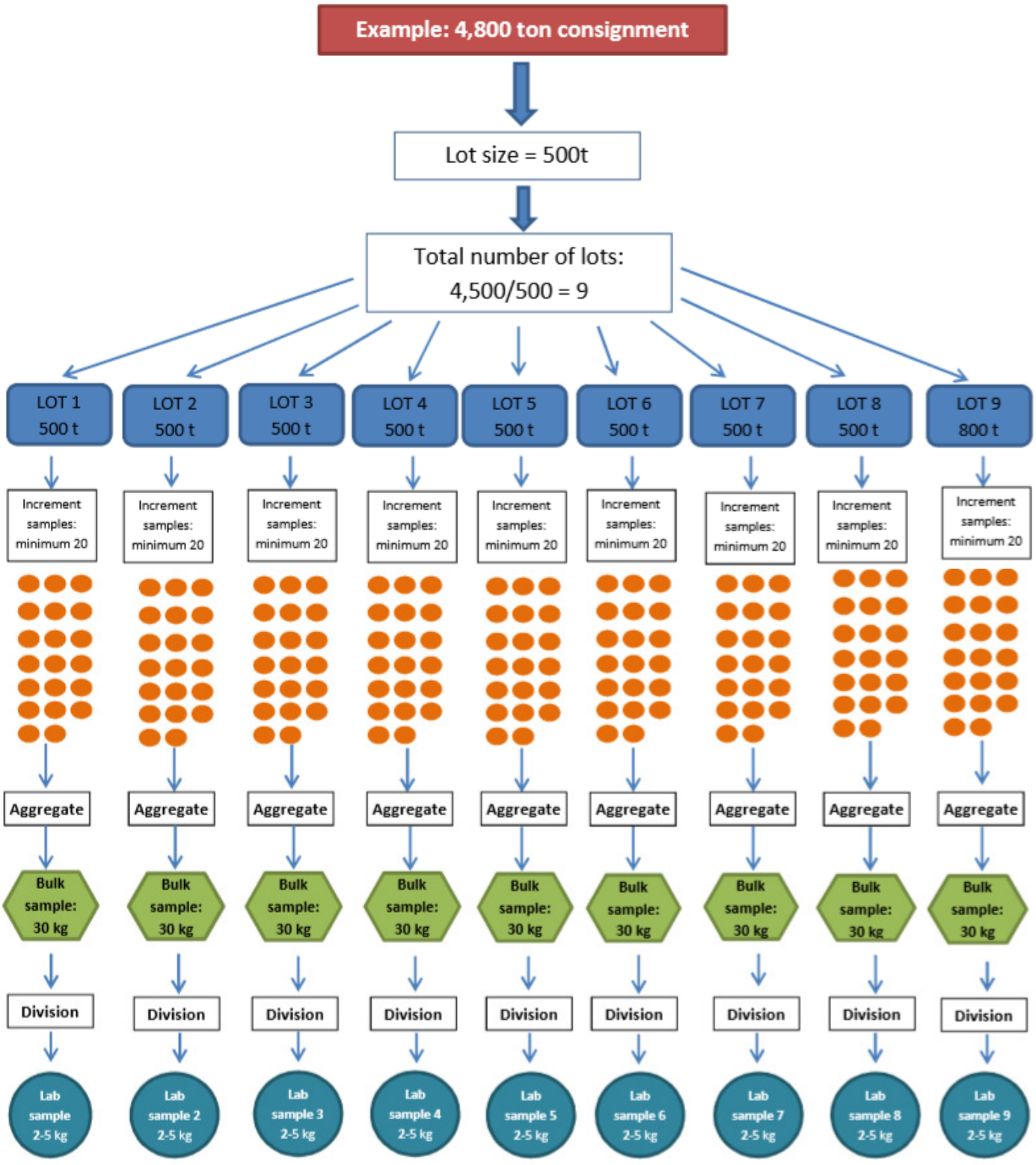
Laboratory samples shall be dispatched as soon as possible, but within 48 hours after sampling has been completed in accordance with the relevant FOSFA contract requirements.

5.7 SAMPLING REPORT:

- Make reference to FOSFA/ISO official method
- Identification of sample and lot (size)
- Condition of the oilseeds
- Signs of insects, mite or rodent infestation
- Circumstances that may have influenced this procedure !
- Every report to be supported by pictures
- SGS procedures on reporting (SIR)

5.8 CALCULATION EXAMPLES:

A consignment of 4.800 MT of Medium sized/large oilseeds*	
Lot size	500 MT
Number of lots	8 lots of 500 MT and 1 lot of 800 MT
Increment per lots	Min. 20
Total number of increments	Min. 180
Weight of the bulk sample	30 kg for each lot
Laboratory samples	9 x minimum 2 kg



*Visualisation with FOSFA – Gretel Gescoby

A consignment of 20.490 MT of sunflowerseeds	
Lot size	2.500 MT
Number of lots	7 lots of 2500 MT + 1 lot representing 2990 MT
Increment per lots	Min. 40
Total number of increments	Min. 320
Weight of the bulk sample	Min. 60 kg for each lot
Laboratory samples	8 x minimum 2 kg

COMMODITY DETAILS:

Further details on commodities can be found on the FOSFA documents available on share point technical governance and *www.fosfa.org*

ALWAYS VERIFY FOSFA international official sampling method for full details.
Reduction of laboratory sample to test sample : ISO 664:2008

6. REGISTRATIONS AND REFERENCES

Technical Governance Portal (Commodity Inspection) : https://sgs.sharepoint.com/sites/global-afl-teamsite/TechnicalGovernance/default.aspx

Risk Assessment Sampling : https://sgs.sharepoint.com/sites/global-oi-teamsite/OI_documentlibrary/Lists/Risk%20Assessment%20Test/DispForm.aspx?ID=4987&ContentTypeId=0x0100D29BA793F32AC94AA6E112E1EE9E6A13

OI Management System Procedures: https://sgs.sharepoint.com/sites/global-oi-teamsite/OI_documentlibrary/OI%20Procedures/Forms/AllItems.aspx

SGS Rules for Life - https://sgs.sharepoint.com/intranet/functions/oi/Pages/20180330-RulesforLife.aspx

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NOTES

Under no circumstance can any office or lab not FOSFA approved perform any dividing of lot samples for composite preparation and analysis / testing.

Example FOSFA 11 CIF terms & FOSFA 4, 4A FOB terms:

As per FOSFA 11, 4, 4A contract, a full set of sealed samples must be sent to the FOSFA lab. performing the mixing of the samples to form an aggregate sample on which the analysis shall be carried out.

ALWAYS CHECK THE CONTRACT TERMS ABOUT SAMPLING AND ANALYSIS, ETC.