SRI LANKA STANDARD 561 : PART 3:1982
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METHODS OF SAMPLING
PETROLEUM AND PETROLEUM PRODUCTS
PART 3 – SAMPLING OF SEMI-SOLIDS AND SOLIDS

BUREAU OF CEYLON STANDARDS

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SLS 561:Part 3: 1982

Gr. 8

BUREAU OF CEYLON STANDARDS
53, Dharmapala Mawatha,
Colombo 3,
Sri Lanka.

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This standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARD
METHODS OF SAMPLING PETROLEUM AND PETROLEUM PRODUCTS
PART 3:SAMPLING OF SEMI-SOLIDS AND SOLIDS

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Bureau of Ceylon Standards on 1982-05-24, after the draft, finalized by the Drafting Committee on Petroleum Products, had been approved by the Chemicals Divisional Committee.

This standard forms Part 3 of Sri Lanka Standard methods of sampling petroleum and petroleum products. It is an adaptation of the standard sampling method published by the Indian Standards Institution.

All standard values are in SI units.

In the preparation of this standard, the assistance obtained from the publication of Indian Standards Institution is gratefully acknowledged.

1 SCOPE AND FIELD OF APPLICATION

This Standard specifies the procedures to be used for obtaining samples of materials in semi solid and solid state from bins, bunkers, freight cars, barrels, cases , bags, cakes, boxes and conveyors.

2 DEFINITIONS

2.1 boring sample : A sample obtained by collecting the chips made by boring holes with a ship auger from top to bottom of the material contained in a barrel, case, bag or keg of solid and semi-solid materials.

2.2 core sample : A sample taken from within the body of a quantity of semi-solid or solid material contained in a package or in cake form.

2.3 grab sample : A sample obtained by collecting loose solids in equal quantities from each part or package of a shipment and in sufficient amounts to be representative of all sizes and components.

2.4 tube or thief sample : A sample taken with a sample tube or special thief, either as a core sample or spot sample from a specified point in the container.

3 APPARATUS

3.1 *Ship auger,* of such diameter and length as to permit a core of convenient size to be taken throughout the depth of the package or cake in Figure 1.

FIGURE 1 - Ship auger

3.2 *Sampling scoop,* of such dimensions as to enable a core of convenient size to be taken throughout the depth of the package (Fig. 2).

3.3 *Knife or spatula,* provided with a strong, broad steel blade.

3.4 *Hammer and chisel,* of any convenient size.

3.5 *Shovel,* of any convenient size.

3.6 *Sample container,* can or tin as specified in 4.1.2 of SLS 561:Part 1.

4 PRECAUTIONS

General precautions -given in 6.1 of SLS 561:Part 1 shall apply.

5 PROCEDURE

5.1 Greases

The procedure described is necessarily quite general to cover the wide variety of conditions encountered and may require modifications to meet individual requirements.

5.1.1 Hard grease manufactured as blocks is usually packed in cases, each case containing a number of these blocks. Other grease are packed in drums kegs, tins or tubes. It is essential that grease should receive the minimum amount of working when sampled, since its properties may be altered thereby.

5.1.2 When final inspection is made at the manufacturing plant, do not take samples from grease kettles, cooling pans, or other processing equipment. Draw them only from finished (shipping) packages which have been filled at least 24 hours earlier and which have cooled to below 40 °C unless ambient temperature exceeds this. It is then permissible to take samples, when the temperature of the grease does not exceed that of the surrounding air by 8 °C.

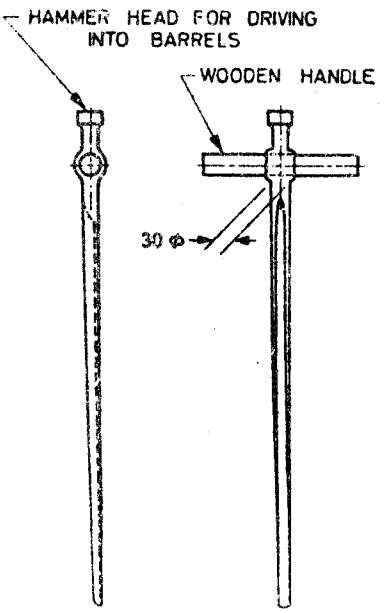

FIGURE 2 - Sampling scoop

5.1.3 Treat packages of different shipments, batches, or sizes as separate lots and sample individually. Draw a number of samples from each separate lot as prescribed in **6.3** of SLS 561:Part 1 and restrict the size of each sample to a minimum of 1 kg if the size of the consignment justifies this amount being taken. Do not take bulk samples from different packages.

5.1.4 Open a number of packages and examine them to ascertain homogeneity of the lot. If the appearance, consistency or texture of the grease between different packages vary, group the different kinds into separate lots before sampling.

5.1.5 When examining grease in package larger than 3 kg, compare the grease adjacent to the sides of the container with that in the centre several centimetres below the surface. If any marked difference in the grease from various locations in the package is observed, take two separate samples, one from the top surface close to the side of the container, and the other from the centre several centimetres below the surface. In cases of doubt take core samples throughout the depth of the package with a sampling scoop.

5.1.6 Sample semi-fluid greases by dipping, using any convenient cup or ladle, or weighted sampling can. Place the sample in a clean, clearly labelled, wide-necked sample can or tin. In case of greases which are too soft to hold their shape when handled, but which are not semi-fluid, remove the top layer of grease to a depth of several centimetres, unless a surface sample is required. Withdraw portions of the sample with a clean scoop or spatula and place in a clean, clearly labelled, wide-necked sample can or tin. In cases where an unworked penetration is required, the individual portions should be as large as possible in order to minimize structural change in the grease. Fill the sample can or tin as completely as possible without unduly disturbing the grease. In case of greases which are hard enough to hold their shape when handled, cut a block at least 65 mm x 65 mm x 65 mm in size. Place the blocks in a clean and clearly labelled suitable containers.

5.2 Petroleum jelly

Follow the same procedure as for soft grease in **5.1**. The top layer need not be removed.

5.3 Petroleum wax

Refined paraffin wax is normally packed in bags, each bag containing a number of rectangular slabs. Seale wax and low-melting point grades of wax (match wax) are usually packed in barrels. For sampling materials in barrels, use the ship auger and for slabbed wax a sharp knife.

5.3.1 *From bags*

When sampling from bags, take a slab, from the centre, avoiding the outer slabs. Remove a quarter of the slab, to serve as sample, by making two straight cuts from the mid-points of adjacent sides to the centre of the slab, and bore a hole at the centre to permit removal of the sample. Label the sample, by attaching a label to the slab, by means of drawing pins. Wrap in clean paper or place in a suitable envelope clearly marked for identification. When numerous bags are being sampled, and examination of the selected slabs reveals no appreciable differences in appearance, a complete

quarter shall be taken from one slab, to serve as an example of the general appearance and structure of the material. Take three samples from each of the other slabs by boring holes in the following positions:

a) One at the centre of each slab; and

b) Two on the medial line, parallel to the length of the slab, half-way between the centre and each end.

Combine the borings collected from all slabs, mix thoroughly, place 0.5 kg to 1 kg in a can, close the can, and label as a total consignment sample. In case non-uniformity of wax is suspected, divide the chosen slab of wax into four quadrants and place two diagonal quadrants on one another and again cut into four quadrants. Place two opposite quadrants of this on one another and take one boring sample as prescribed above.

5.3.2 *From barrels*

When sampling material in barrels, collect borings from holes bored parallel to the long axis through the body of the material in the following positions:

a) One at the centre;

b) One at quarter of the diameter from one side; and

c) One at quarter of the diameter from the opposite side.

Combine the borings in equal quantities and after mixing, place 0.5 kg to 1 kg in a can, which shall then be closed and labelled.

5.4 Petroleum coke or similar material

Petroleum coke or similar solid material in the form of pieces of uneven size contained in ships' holds, trucks, heaps or sacks is usually heterogeneous in composition and it is not possible to lay down precise instructions for sampling such materials. Consequently, the procedure to be used shall be selected in accordance with the specific conditions, but the following procedure will serve as a guide:

a) It is usually preferable to take samples during the unloading of trucks or during transit of the material in conveyers. In such cases, take a number of small samples at frequent and regular intervals from the material in transit and combine to form a representative sample. In general, samples taken from heaps or trucks are not satisfactory, but when it is necessary to take samples before unloading a truck, take small samples from near the corners and centre of the truck. Take one sample at each of these points from near the surface and another as far down as practicable. Combine the ten samples so obtained to form a representative sample. In all cases the combined sample should amount to at least 0.1 per cent of the total material sampled. Mix the combined sample and reduce in size to a convenient laboratory sample by the method of quartering. For this purpose,

use a hard, clean surface, free from cracks and protected from weather and undue heat. Protect the sample from loss or gain of moisture and dust. Place the sample on the selected surface and mix by shovelling. Heap into a cone by shovelling the material into a funnel having a short, cylindrical stem. Support the funnel vertically above the top of the cone, and raise it (without lateral displacement) as the cone grows higher to allow the material to flow out gently and not fall from a height. Alternatively, form the cone by depositing separate small quantities, one on top of the other. Form the cone symmetrically, with its apex always in the same vertical line.

b) Form a new cone from the first, working steadily round the previous one, until it is all transferred. Similarly form a third cone from the second.

c) Flatten the third cone by pressing on it with a metal sheet or other suitable appliance, the flattening being carried out symmetrically and thus resulting in a roughly circular mass of approximately uniform thickness. Divide the sample into quarters by pressing through it a metal cross constructed from four arms or blades held at right angles to each other by stays. Remove completely and discard two diagonally opposite quarters. Mix the two remaining quarters together thoroughly, reduce in bulk by further quartering, and repeat the procedure until a final sample of suitable size remains.

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