| INTER PLANT STANDARD IN STEEL INDUSTRY | | |
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| IPSS | **CODE OF PRACTICE FOR STORING, HANDLING AND RECLAMATION OF LUBRICANTS** | **IPSS:3-02-004-18** |
| | Corresponding IS does not exist | Formerly: IPSS:3-02-004-07 |

## 0. FOREWORD

0.1 Interplant standardization in steel industry was initiated under the aegis of the Indian Standards Institution (ISI) and the Steel Authority of India Limited (SAIL). This IPSS was prepared by the standard committee on Operation and Maintenance, IPSS 3:2 and firstly published in 1995. Lastly, this has been revised by the standard committee in July 2018 with the active participation of the representatives from major Indian steel plants and leading consultants.

0.2 In the present revision, some changes have been incorporated based on the actual experience gained during the usage of this Standard.

0.3 For ensuring optimum performance from lubricants, the important elements are selection of proper grade and quality, proper handling, storing and dispensing. This can be achieved by maintaining the purity and identification of the product. Degradation, contamination and misapplication due to wrong labeling may result in hazardous conditions. Further, for overall economy also, good practices of proper handling, storage and reclamation of the lubricants are important.

## 1. SCOPE

1.1. This Inter Plant Standard covers the recommended practices for storing, handling of lubricants received in barrels and reclamation of lubricants.

**Note** : For the purpose of this standard “Reclamation” shall mean removal of debris from used oil by physical methods to render the used oil to its original grade or some other usable grade. This standard does not cover “Re-refining” where introduction of additives are also involved.

## 2. STORAGE

### 2.1 General

2.1.1 Lubricants and associated products shall be protected from sources of contamination, degradation due to excessive heat or cold and mix up of identification. The ease of handling the products shall also be ensured and the system of “first in and first out” (FIFO) shall be followed.

2.1.2 Packed lubricants shall be stored outdoors, in a warehouse or in a godown, as per 2.2 and 2.3 below.

2.1.3 The barrels for different grades of lubricants shall be coded with colour (as per the plant's practice). The lettering shall be at least 50 mm size, on the side of the barrel.

2.1.4 Adequate fire detection & fire-fighting arrangements shall be made for any emergency.

2.2 **Outdoor Storage**

2.2.1 Only lubricating oils can be stored outdoor.

2.2.2 To minimize the harmful affects of unavoidable outdoor storage, the following precautions shall be ensured:

a) When drums are stored outdoors, a temporary shelter or a water proof tarpaulin shall be provided to protect them from rain, extreme heat and cold, thus preventing the deterioration and fading of the identification details.

b) Drums shall be laid on their sides with the bungs approximately horizontal (having bungs below the level of contents) to reduce the breathing of water or moisture and collection of water inside the chime.

c) The drums shall always be placed on blocks or racks, minimum 10 cm above the ground to avoid moisture damage.

d) When drums are stored outdoor with the bungs end up, they shall be cleaned carefully to eliminate the hazard of collected rust, scale or dirt. Care should be taken that the bungs are kept covered with pre-fabricated lids and the oil is drawn out by semi rotary oil transfer pump.

e) The containers shall be physically examined periodically for any deterioration of the structure of the container and corrective measures shall be taken on observance of any deterioration.

2.3 **Storage in Godown / Warehouse**

2.3.1 Drums containing grease, engine oil, hydraulic brake fluid and cutting oil shall never be stored outdoor. These shall be kept in a covered godown only and stood on ends with the top lids facing up.

2.3.2 Storage of lubricants at shops shall be in a separate enclosure with locking facility and the floor on which the drums are stored shall have sloped cemented flooring, leading to a channel and connected to a covered pit, from where the spilled oil can be collected from time to time.

2.3.3 In no case, the oil should get discharged into water drain.

3. **HANDLING**

3.1. Packed barrels or drums of lubricants received in godown mostly by trucks / lorries shall be unloaded by sliding them down on wood or metal skids to land

on a soft pad to avoid damage. The skid shall be securely attached to the truck bay. Under no condition the barrel shall be dropped to the ground.

3.2. drums of different grades of lubricants shall be stacked separately. A suitable wooden / steel signboard bearing names of the brands shall be fastened near each grade for easy identification and check up.

3.3. Metallic trays shall be provided underneath faucet to collect the oil leakage, if any. Oil thus collected may be filtered and re-used. The wooden boards bearing the names of the lubricants shall be hung behind the array of each type of lubricant drums for each identification.

3.4. The loading, unloading of barrels in the trucks for transportation of lubricants from godown to respective user department shall be done manually, in case proper mechanical facilities do not exist. Ramps shall be made wherever possible, with inclination of $45^{o}$.

3.5. In Central Lubrication Systems (as in Rolling Mills), separate tanks shall be earmarked for each system. Each tank shall be provided with separate pumps for pumping the oil to various system. During usage, the condition of oils in central system shall be monitored regularly by periodic sample testing. Corrective actions shall be taken accordingly.

3.6. Grease drum shall always be covered and while removing grease with hand, the hand shall be cleaned.

3.7. For taking out smaller quantity of oil from drum, a semi rotary pump as per IPSS:1-02-012-81 `Oil Transfer Pumps', shall be used. In case of non-availability of semi rotary pump, a standard appliance consisting of one end threaded pipe matching with a small hole in the drum with a regulating valve shall be used. Cleanliness of transfer pump and accessories shall be ensured.

## 4. RECLAMATION (BY PHYSICAL METHODS AND NOT CHEMICAL METHODS)

4.1 In order to conserve industrial lubricating oil, oil which has leaked out due to some reason, shall be regularly collected by the departments. Similarly, the used and degraded oil shall also be collected by departments. While collection of used / leaked oil following care shall be taken:

a) The oil of mineral oil source only shall be collected.

b) Mix-up with metal shaving, turning, etc shall not be allowed.

c) Mix-up with synthetic lubricant, grease, paints, etc, shall not be acceptable.

d) As far as possible, the oil shall be collected grade-wise separately. However, mixed oils of mineral base may also be accepted for reclamation and re-refining.

4.2 Used IC Crank case engine oil as well as gear box oil shall be collected separately.

4.3 Used oils shall be reused by the following ways:

a) By using the oils for some crude lubrication (Railway track), points, etc)

b) By getting industrial used oil (grade-wise) reclaimed by in-house / external facility and re-use for another suitable purpose as advised by the Lubrication Cell.

4.4 Centrifuge machines shall be used for separating water from the oil.

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