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Guidelines for recycling of used mineral oil

废矿物油回收与再生利用导则

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Guidelines for recycling of used mineral oil

1 Scope

This document specifies the general requirements, recycling management requirements, recycling process requirements, environmental protection requirements, and regenerated product management requirements for recycling of used mineral oil.

This document applies to recycling of used mineral oils such as waste engine oil, waste hydraulic oil, waste gear oil, waste turbine oil, waste transformer oil, waste anti-rust oil, waste solvent oil, waste cutting oil, and waste heat treatment oil generated in mechanical equipment, power equipment, electrical equipment, metal processing and transportation vehicles (automobiles, trains, ships, aircraft).

This document does not apply to mineral oil-containing wastes such as oily sludge and residues generated during the extraction and refining of oil and natural gas, nor does it apply to the energy utilization and disposal of used mineral oil and mineral oil-containing wastes.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB 8978 Integrated wastewater discharge standard

GB 15562.2 Graphical signs for environmental protection - Solid waste storage (disposal) site

GB 16297 Integrated emission standard of air pollutants

GB 18597 Standard for pollution control on hazardous waste storage

GB 34330 Identification standards for solid wastes - General rules

GB/T 34911 Terminology on comprehensive utilization of industrial solid wastes

GB 37822 The discharge standard and measurement methods of pollutants from paint manufacturing

GB/T 41961 Treatment and disposal methods for used mineral oil lubricant

4.2 The generating and collecting organizations of used mineral oil are encouraged to use auxiliary information systems to standardize the management of ledgers and transfer forms. The key environmental supervision organizations of hazardous wastes specified in HJ 1259 shall use electronic floor scales, electronic tags, electronic management ledgers and other technical means to carry out information management of the storage process of used mineral oil.

4.3 When engaging in the collection or utilization of used mineral oil, the occurrence of unexpected accidents such as leakage and fire of used mineral oil shall be prevented, and risks and hidden dangers shall be eliminated in time.

4.4 The utilizing organizations shall have production equipment and technical processes that meet the requirements of industry norms and conditions, and have the equipment and technical capabilities to test the quality of used mineral oil and its regenerated products.

4.5 The utilizing organizations shall have pollutant treatment facilities and safety fire-fighting facilities that meet environmental protection and safety requirements.

5 Recycling management requirements

5.1 Generation and temporary storage

5.1.1 The used mineral oil generated during the maintenance and repair of industrial and mining equipment and transportation vehicles shall be collected and managed by the owner or maintenance and repair enterprise.

5.1.2 Used mineral oil shall be collected and stored separately from waste antifreeze and waste brake fluid, and prevented from mixing with other debris such as mud, rainwater, etc.

5.1.3 The storage containers set up by organizations engaged in the first category of motor vehicle maintenance and operation business (including 4S shops) should be equipped with cumulative metering instruments, liquid level sensors, liquid level alarms, and remote data transmission systems. The waste oil storage containers set up by organizations engaged in the second category of motor vehicle maintenance and operation business should be equipped with cumulative metering instruments.

5.2 Collection and storage

5.2.1 Used mineral oil collecting and utilizing organizations shall be equipped with special cleaning utensils and clean the used mineral oil storage facilities in a timely manner to prevent used mineral oil from spilling and causing pollution.

5.2.2 Used mineral oil storage facilities shall be designed with liquid diversion and collection devices as a whole or in sections, and there shall be no liquid accumulation

on the ground. The volume of the collection device shall ensure that it can accommodate the leakage liquid, wastewater, etc. generated in the corresponding storage area under the most unfavorable conditions, and the minimum volume shall not be less than 1/5 of the liquid waste storage scale. The anti-seepage requirements of the collection device shall not be lower than the anti-seepage requirements of the corresponding storage depot.

5.2.3 Used mineral oil generating organizations (including the third category of automobile repair enterprises) and collecting organizations shall set up special storage facilities and containers corresponding to the collection volume allowed by the organization. The minimum capacity of the container shall not be less than 15 days of collection volume, and a space of more than 100 mm shall be reserved between the top of the container and the liquid surface, and it shall meet the corresponding fire prevention, explosion prevention, sun protection, rain protection, lightning protection, and anti-seepage requirements.

5.3 Transfer and transportation

5.3.1 Used mineral oil collecting and utilizing organizations shall determine the category, item, number, etc. of the corresponding hazardous goods in accordance with the relevant national hazardous goods standards, entrust organizations with corresponding hazardous goods transportation qualifications to undertake the transportation, and comply with relevant regulations on hazardous goods transportation management.

5.3.2 When an emergency environmental incident occurs, the used mineral oil generating organizations, collection organizations and transportation organizations shall immediately take effective measures to eliminate or reduce the pollution hazards to the environment, and report to the relevant departments at the place where the accident occurred in accordance with relevant regulations.

6 Recycling process requirements

6.1 Used mineral oil utilizing organizations shall adopt energy-saving, environmentally friendly, safe and mature processes and equipment that meet national and local requirements, and shall not use processes and equipment that have been explicitly eliminated by national or local orders.

6.2 Used mineral oil utilizing organizations shall adopt one of the two combined processes of pretreatment - distillation (evaporation) - solvent refining and pretreatment - distillation (evaporation) - hydrofining. For suitable used mineral oil raw materials, it is allowed to directly adopt the process of hydrogenation first and then distillation without distillation.

6.3 The distillation (evaporation) process shall adopt process technologies that can be operated stably, such as continuously operated atmospheric and vacuum tower

distillation, thin film evaporation, molecular distillation, high vacuum cyclone evaporation, cyclone flash evaporation and thin film reboiling.

6.4 It shall not adopt open flame high temperature heating to treat used mineral oil in intermittent kettle distillation (thermal cracking and catalytic cracking) equipment, which will produce regenerated oil products that do not meet national gasoline and diesel product standards.

6.5 The refining process shall adopt solvent refining or hydrofining technology, and it shall not adopt sulfuric acid + clay refining, aluminum chloride (solid acid) + clay refining and other acidic compounds + clay refining processes.

6.6 The regenerated base oil treated by solvent refining or hydrofining process can be appropriately treated with clay supplementary refining to improve the oxidation stability of the product. Except for the use of clay supplementary refining in solvent refining or hydrofining, other forms of clay adsorption refining process, mineral sand adsorption refining process or diatomaceous earth adsorption refining process shall not be used.

6.7 The main solvent of the solvent refining process should be environmentally friendly, cheap and safe, such as *N*,*N*-dimethylformamide (DMF), *N*,*N*-dimethylacetamide (DMAC), *N*-methylpyrrolidone (NMP), furfural, furfuryl alcohol.

6.8 The equipment, facilities and materials used by the used mineral oil utilizing organizations in the construction of the used mineral oil utilization project shall comply with national and petrochemical related industry standards. The design and construction of the used mineral oil utilization project shall be undertaken by engineering design and construction organizations with petrochemical qualifications.

7 Environmental protection requirements

7.1 Pollution control in the recycling and utilization links of used mineral oil generating organizations, collecting organizations and utilizing organizations shall comply with the provisions of HJ 607 to avoid secondary pollution to the ecological environment. Pollutant discharge permit management shall comply with the relevant provisions of HJ 1034 for used mineral oil processing industry.

7.2 The construction of storage sites shall comply with the relevant provisions of GB 18597; storage sites shall have special signs for solid waste storage (disposal) sites that comply with GB 15562.2 and its amendments; storage containers shall be affixed with hazardous waste labels in accordance with the requirements of GB 18597, and storage sites and storage facilities shall comply with the provisions of HJ 1276.

7.3 Waste gas generated from the collection, storage, transportation, utilization and disposal of used mineral oil shall comply with relevant environmental protection

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