



**RWANDA
STANDARD**

**DRS
234-1**

Second edition

Approved by RSB yyyy-mm-dd

**Non-food compounds used in food
processing establishments —
requirements —**

Part 1:

Food-grade lubricants

ICS 67.020

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Reference number

DRS 234-1: 2020

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In order to match with technological development and to keep continuous progress in industries, standards are subject to periodic review. Users shall ascertain that they are in possession of the latest edition

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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the World Trade Organisation/Technical Barrier to Trade (WTO/TBT) agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 234-1 was prepared by Technical Committee RSB/TC 024, *Chemicals and Consumer Products*.

In the preparation of this standard, reference was made to the following standards:

- 1) ISO 21469: Safety of machinery — Lubricants with incidental product contact — Hygiene requirements
- 2) ISO 6743/0: Lubricants, industrial oil and related products (class L) — Classification — Part 0: General

The assistance derived from the above source is hereby acknowledged with thanks.

This second edition cancels and replaces the first/second/... edition (RS 234-1: 2014), which has been technically revised.

DRS 234 consists of the following parts, under the general title *Non-food compounds used in food processing establishment — Requirements*:

— *Part 1: Food-grade lubricants*

— *Part 2: Detergents*

Committee membership

The following organizations were represented on the Technical Committee on Chemicals and Consumer Products (RSB/TC 024) in the preparation of this standard.

Star Construction and Consultancy (SCC) Ltd

Rwanda Forensic Laboratory (RFL)

National Industrial Research and Development Agency (NIRDA)

University of Rwanda/College of sciences and Technology (UR/CST)

University of Kibungo (UNIK)

Ministry of Health (MoH)

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PHARMALAB

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Introduction

Lubricating food processing machinery such as pumps, mixers, tanks, hoses and pipes, chains and chain drives, conveyor belts, etc. poses unique challenges. Most of these machines face similar tribological and lubrication challenges found in other non-food processing plants.

Lubricants used in food processing establishments must not only provide protection to internal surfaces by controlling friction, wear, corrosion, heat and deposits, etc. but must also offer good pumpability, oxidation, chemical, hydrolytic and thermal stability whilst ensuring that they are safe vis-à-vis the food being processed; yet, they are constantly subjected to severe environmental conditions including wide acidic or alkaline ranges.

Unfortunately, many of the raw materials used to formulate lubricants that simultaneously and effectively address the above challenges and provide the needed performance in conventional industrial applications are not permissible in food applications. Food-grade lubricants are therefore required for obvious safety reasons because regular lubricants pose potential health risks, if cross-contamination to food products occurs, for example from leaks or drips off from chains, conveyor belts, gearboxes.

Conventional food safety practices provide some level of risk reduction if cross contamination is likely to occur or has occurred. The same measures are effective even when food grade lubricants are used, but in both instances, they need to be complemented with additional requirements to efficiently mitigate serious hazards associated with potential lubricant contamination in food processing establishments.

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Non-food compounds used in food processing establishment — Requirements — Part 1: Food-grade lubricants

1 Scope

This Draft Rwanda Standard covers such lubricants which are used I food processing machinery acting as release agents on gaskets or tank closures seals, as a lubricating, heat transfer, load transmission products onto surfaces, in equipment and machine parts where there is a possibility of incidental contact with food.

It also covers food-grade lubricants, typically edible oils, used to prevent rust on hooks, trolleys, and similar equipment.

This standard does not specify performance requirements for such lubricants.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 6743, *Lubricants, industrial oils and related products (class L) — Classification*

RS ISO 6743-99, *Lubricants, industrial oils and related products (class L) — Classification — Part 99: General*

ISO 11014, *Safety data sheet for chemical products — Content and order of section*

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply.

3.1

lubricant

substance capable of reducing corrosion of metal surfaces, friction, adhesion, heat and wear when introduced as a film or a topical application between two solid surfaces

3.2

food-grade lubricant

substance used for lubrication, thermal transfer, load transmission, or corrosion protection, release agent in food processing and packaging machines and equipment, that contact with human food or animal feed is likely to occur

3.3

non food-grade lubricant

lubricant used on equipment and machine parts in food processing locations where there is no likelihood of contact with food and whose contact with the food may results into a hazard

3.4

processing

unit process and the unit operation carried out in a food processing establishment with the purpose of producing a consumable, human food product

3.5

acceptable

acceptable to the authority administering this standard

3.6

batch/lot

material from a single mix (blend) or, in the case of a continuous production process, the material from a single day's production

3.7

risk assessment

overall process comprising risk analysis and risk evaluation

3.8

defective

lubricant that fails to comply with one or more of the requirements of this standard

4 Requirements

4.1 General

All lubricants likely to be in contact with food, either incidentally or otherwise when used on equipment and machinery for producing, manufacturing, processing, preparing, conditioning, treating, packaging, packing, transporting and holding food products, shall be food-grade lubricants and shall conform to all the requirements of this standard. Lubricants with incidental food contact potential shall be selected from ISO 6743-99 depending on their intended applications; they shall also conform to the description given in other relevant parts of ISO 6743.

4.2 Classification

For the purpose of this standard, lubricants for use in food processing shall be classified as follows:

Type 1: Food-grade lubricants used in food processing environment where there is the possibility of incidental food contact.

Type 2: Food-grade lubricants, typically edible oils such as corn oils, soy oils, etc. used to prevent rust on hooks, trolleys and similar equipment.

Type 3: Non-food-grade lubricants used on equipment and machine parts in locations where there is no possibility of food contact.

4.3 Raw materials

4.3.1 Any raw material substance and ingredients utilized in the formulation and production of the food-grade lubricants shall not be hazardous or toxic by itself or in combination and shall not render the lubricant hazardous or toxic when it is used correctly in accordance with the manufacturer's direction of use. Use of any raw material or ingredient shall be limited to the amount only necessary to achieve the minimal needed technical effect.

4.3.2 When assessed in accordance with clause 4, acceptable evidences shall be provided to demonstrate that the raw materials used in the formulation are suitable for use in the food processing establishment.

4.4 Formulation

4.4.1 Type 1 and type 2 lubricants shall be:

- a) Formulated so as to have a neutral in taste and colour and have no negative impact on the food organoleptic characteristics; and
- b) Free from contamination by microorganisms such as microbes, yeast, fungi, etc.

4.4.2 Type 1 and type 2 lubricants shall not:

- a) contain any of the following heavy metals: antimony, arsenic, cadmium, lead, mercury and selenium
- b) be formulated using ingredients that are known as carcinogens, mutagens and teratogens.
- c) contain mineral acids

4.5 Operational stability

4.5.1 Lubricants to be used in food processing shall be appropriately selected and used, such that it can withstands anticipated temporal and prolonged, chemical, biological, hydrolytic, thermal and mechanical stresses without premature degradation.

4.5.2 The food-grade lubricant shall be compatible with paint, rubber, seals and other equipment materials it comes in contact with and shall not decompose under normal working conditions.

4.5.3 When used correctly and in accordance with manufacturer's recommendations or when it incidentally comes into contact with food, the food grade lubricant shall leave no residue in concentrations that might be harmful to humans; any incidental contact with food shall not affect its organoleptic characteristics.

4.6 Safety evaluation

4.6.1 Disclosure

For the purpose of assessing compliance to this standard, the food processor shall hold at all time and provide upon request by the authority administering this standard, the following information in full:

- a) Product name and type of lubricant;
- b) Qualitative and quantitative (% w/w) identification of all constituents of the lubricants;
- c) Names of the chemical ingredients based on the IUPAC rules of nomenclature;
- d) Complete information on the manufacturer and suppliers of the lubricant;
- e) Laboratory test certificate for each batch of the lubricant in his possession;
- f) Details of the study conducted on the lubricant by the manufacturer;
- g) Minimum amount of the lubricant necessary to provide the intended effect;
- h) Identified chemical and physical changes caused by mechanical, chemical hydrolytic, degradation and thermal decomposition due to exposure to temperatures up to twice the normal operating temperature; and
- i) Approval for the lubricant to be used as "food-grade lubricant" by the authorized organ of the manufacturing country.

4.6.2 Specific measures

Lubricants shall not be mixed with food either for processing purpose or otherwise.

The food processor shall establish, implement and maintain a documented system which shall ensure that the food produced where the lubricant is used is safe. The system shall include:

- a) A documented procedure for evaluating the quality and safety of the purchased lubricant before use and records thereof;
- b) Identification and risk assessment of all the hazards which are reasonably likely to occur from the use of the lubricant on the food being produced;

- c) Design, validate and implement methods and measures to efficiently eliminate the risks associated with the used of the lubricant;
- d) Records of laboratory test carried out on the final food product in relation to freedom from the presence of the lubricant in the food;
- e) All lubrication points in and on equipment where direct and/or indirect contact between the lubricant and the food is possible shall be clearly identified and properly marked with visible signs to prevent contamination with non food-grade lubricants or food-grade lubricants; and
- f) A system of identification which ensures that the food product can traced back to the relevant records of the batch of lubricant used during the food product processing.

4.7 Storage stability

4.7.1 Adequate environment, in a separate facility, shall be provided for storage of the lubricants to prevent its deterioration and unintentional food contamination of food products.

4.7.2 During storage in its original container for 18 months at $25\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$, the lubricants shall remain stable and shall show no signs of separation, change in colour, nor shall it develop unpleasant odour.

4.7.3 In addition, a lubricant in grease form shall remain homogeneous, smooth textured and free from lumps. After storage under such conditions, the lubricant shall still comply with all the requirements of this standard.

5 Packaging and labelling

5.1 Packaging

The products shall be packaged in such a way that they are safe and secure during transportation and handling. The container shall not alter or contaminate the products.

5.2 Labelling

5.2.1 Each container shall be securely closed and labelled with the following information:

- a) Name of the product or trade/brand name accompanied by the word "FOOD GRADE LUBRICANT";
- b) Name of the manufacturer and that of the distributor, if any;
- c) The intended purpose, suitability and applicability;
- d) The minimum amount of lubricant required to accomplish the required technical effect;
- e) Hazard warnings, if any;
- f) Manufacture and expiry dates;

- g) Batch identification;
- h) Direction of use; and
- i) Disposal instructions.

5.2.2 The packaged lubricant shall be accompanied by a material safety data sheet conforming to ISO 11014.

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