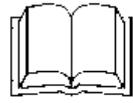


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Russian Lubrication Market

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Introduction

The present report comprises analysis of the Russian market of lubricants and contains a thorough investigation of the share of imports and suppliers for the Russian market.

The investigation is composed of the following principal parts: analyzing and assessing the principal manufacturers of lubricants, analyzing foreign-trade transactions, determining a range of large consumers of lubricants in different branches of industry. Appendix 1 delivers information on operation of Russian enterprises manufacturing antifriction coating.

Procedurally, the work has been done in two steps, namely in the so-called “book-learning” and the “field” ones. At the first step, many informational sources were analyzed, and first of all, the data from the governmental institutions, such as the Federal Statistics Office of RF (indices of production), JSC “RZhD” (Russian railway – on the statistics of railway transportation) and the Federal Customs Office of RF (data on foreign-trade transactions). Data from enterprises were also used, as well as the database of “InfoMine”.

At the second stage, summarized data were being confirmed and adjusted by telephone polls of experts of the enterprises mentioned in the present report.

All this allowed the authors of the report to reveal a clear picture of the market of lubricants in Russia as well as its prospects.

1. Production of Lubricants in Russia

The present chapter describes classification of lubricants and their characteristics, the structure of producing and consuming lubricants in RF, as well as manufacturing lubricants au naturel.

1.1. Classification and Characteristics of Lubricants

Over 150 kinds of lubricants are produced in Russia. They are classified according to their consistency, composition and field of use.

All lubricants are divided, according to their consistence, into the following categories: semi-fluid, plastic and solid. **Plastic** and **semi-fluid lubricants** are colloid systems consisting of dispersed medium, dispersed phase, as well as of some additions and admixtures. They are most widely used in friction and frictionless bearings, ball-joint, gear, screw-gear and chain drives, and in multi-core cables.

Solid lubricants are suspensions, until their solidification, the dispersed medium for which being tar or other binding substance and a solvent, and as thickeners, molybdenum disulfide, graphite, industrial carbon and other substances can act. After solidification (i. e. vaporization of the solvent), the solid lubricants become the sols possessing all the properties of solid substances and characterized by a low dry-friction coefficient.

The most common are plastic lubricants.

As to composition, the lubricants are divided into four groups:

1. **Soap lubricants**, for production of which salts of higher-order carboxylic acids (soap) are used as a thickener. Depending on the soap anion, lubricants containing the same cation are divided into common and complex ones (calcium, lithium, barium, aluminium and sodium).

Apart from those, there is a group of lubricants based on mixed soap, for which a mixture of soap (lithium-calcium, sodium-calcium, etc., the first component mentioned having the most content in the thickener) is used as a thickener. Soap lubricants, depending on the fat stock used for their production, are known either as conditionally synthetic (soap anion is a radical of synthetic fatty acids) or fatty (soap anion is a radical of natural fatty acids), the examples of which are synthetic and fatty solid oils.

2. **Inorganic lubricants**, for production of which thermo-stable high-dispersed inorganic substances are used as thickeners, with high-developed specific surface. Those are silica, bentonite, graphite, asbestos and other lubricants.

3. **Organic lubricants**, for production of which thermo-stable high-dispersed organic substances are used. Those are polymeric, pigment, urea-resin, carbon and other lubricants.

4. **Hydrocarbon lubricants**, for production of which high-melting

hydrocarbons are used as thickening materials.

Depending on the disperse medium, there are lubricants based either on natural or synthetic oil.

According to the *field of use*, lubricants are divided into the following categories, as is stipulated by GOST 23258-78:

1. Antifriction (lower wearing and friction between coupled parts),
2. Specialized (industrial),
3. Preservative (preserving the corrosion of metal parts and devices at storage, transportation and operation). They, in their turn, are subdivided into the lubricants of common use and cable compounds (preventing wearing and corrosion of steel cables),
4. Jointing pastes (sealing the gaps, facilitating assembling and disassembling armature, stuffing-box-seal assemblies, threaded, releasable and movable connections, including vacuum systems).

The group of *antifriction lubricants* has the largest sphere of application. This group, in its turn, is subdivided into the following:

- Lubricants for common use (Solidol S, Solidol Zh, Grafitin, and Grafitnaya Zh). Solid oils have been in great demand during recent years, being the cheapest lubricants. Recently, a tendency has appeared of cutting the production of solid oils. That was because of changing solid oils for multipurpose lubricants.

- Lubricants for common use at high temperature (the most common in this group is so-called “lubricant 1-13”, Konstalin).

- Multipurpose lubricants (the most common are Litol-24, Fiol-2).

- Thermo-stable lubricants (Tsiatim-221, Tsiatim-221s, Uniol-2M/1, VNIINP-207, VNIINP-210, VNIINP-214, VNIINP-219, VNIINP-231, VNIINP-233, VNIINP-235, VNIINP-246, VNIINP-247, Grafitol, Aerol, Silikol, Polimol, Maspol, BNZ-4, BNZ-5, PFMS-4S).

- Frost-resisting lubricants (Tsiatim-203, Snariadnaya VS, GOI-54p, Lita, Zimol).

- Chemical-resistant lubricants (Tsiatim-205, VNIINP-279, VNIINP-280, VNIINP-282, VNIINP-283, VNIINP-294, VNIINP-295, VNIINP-298, Kriogel, #8, Ftoruglerodnaya 10 OKF, Ftoruglerodnaya 3 F, Ftoruglerodnaya KST).

- Instrument lubricants (Tsiatim-201, Tsiatim-202, OKB-127-7, OKB-122-7-5, ATs-1, Ats-3, Delta-I, Delta-III, SOT, VNIINP-223, VNIINP-228, VNIINP-257, VNIINP-258, VNIINP-260, VNIINP-270, VNIINP-271, VNIINP-274, VNIINP-286, VNIINP-293, VNIINP-299, Orion).

- Semi-fluid lubricants (Tsiatim-208, Shakhtol, Shakhtol-K, STP-L, STP-3, OZP-1, Transol-100, Transol-200, Transol-300, Transol-ROM, Reduktol, Reduktol M, SKP-M, LZ-PZhL-00).

- Break-in pastes (Limol, VNIINP-225, and VNIINP-232).

Specialized lubricants are divided into the following categories:

- Lubricants for electric equipment (LDS-1, LDS-3, VNIINP-242, ESh-176, SVEM).

- Automobile lubricants (the most common are ShRUS-4, Fiol-2, as well as

Litin-2, Litol-459/5, AM Kardannaya, LSTs-15, ShRB-4, #58, LZ-31, KSB, DT-1, Dispersol-1, MZ-10).

- Railway lubricants (LZ-TsNII (U), Kulisnaya ZhK, TsNII-KZ, ZhT-72, ZhT-79L, ZhA, ZhR, ZhD, Kontaktnaya, Buksol, Kasetol).

- Sea-transport lubricants (AMS-1, AMS-3, MS-70, MUS-3A, MZ).

- Air-transport lubricants (Era, VNIINP-254, VNIINP-261, VNIINP-281, Svintsol-01, Svintsol-02, ST (NK-50), #9).

- Industrial lubricants (Uniol-2M/2, IP-1, LKS-2, LKS-Metallurgicheskaya, Pressol-M, KSB, LS-1P, Start, Siol, VNIINP-273, Rotatsionnaya IR, Termolita and other).

- Boring lubricants (Dolotol N, Dolotol AU, Dolotol NU, Geol-1, Plastol).

- Electro-contact lubricants (VNIIP-248, VNIIP-502, Pasta 164-39, Elektra-1).

The most common among *preservative* oils of common use is the so-called “Pushechnaya” (cannon) lubricant, and among *cable* compounds, Torsiol-35B.

The most common *joining* paste is Armatol-238. This group also comprises the following lubricants: R-2, R-113, R-402, R-416, VNIIP-263, VNIIP-291, VNIIP-292, VNIIP-300, Vakuumnaya, Kranol, Rezbol OM-2, LZ-162u and other.

There is a regulatory requirement for all manufacturers of lubricants in Russia concerning production in strict accordance with either State Branch Standards (GOST) or Technical Conditions (TU). GOST's and TU's are documents (certificates of conformance) which confirm conformity of products with quality and safety requirements. Technical Conditions (TU) is a document determining quality requirements for an item produced at the particular enterprise, and made-up at that enterprise. In practice, quality of the products manufactured under TU is sometimes lower than that of the analogous product manufactured in accordance with GOST. Sometimes the opposite is the case, and new brands of lubricants manufactured under TU, developed at an enterprise in accordance with a customer's requirements, are of better quality as compared with analogous products.

The same brand can be manufactured by different companies.