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Ornelas Vicencio et al.(10) **Pub. No.: US 2008/0242567 A1**(43) **Pub. Date: Oct. 2, 2008**(54) **LUBRICANT FOR CONVEYOR CHAINS**(22) Filed: **Mar. 25, 2008**(75) Inventors: **Rafael Ornelas Vicencio**, Benito
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C10M 105/22 (2006.01)(52) **U.S. Cl.** **508/463**(57) **ABSTRACT**

A lubricant for conveyor chains, the lubricant consists of a mixture of a quantity of fatty acid, a quantity of amine, a quantity of polyglycol, and a quantity of hydrocarbon. The lubricant of the invention uses a direct application, without dilution, and forms a layer or film of lubricant on the surface of the conveyor chain so that the application is discontinued, in long intervals between the applications.

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LUBRICANT FOR CONVEYOR CHAINS

TECHNICAL FIELD OF THE INVENTION

[0001] The invention is related to lubricants for conveyor chains. In particular, it is related to a lubricant for metallic conveyor chains that is applied directly without dilution, and with the capacity to produce a lubricant layer with a convenient use, to avoid the proliferation of germs, and that does not react to spilled products, materials of the premises, neither to the materials of the containers used for the bottled products.

BACKGROUND OF THE INVENTION

[0002] At present drinks, food, or bottled products are available in different types of containers, such as glass, plastic or PET bottles, plasticized recipients, as well as metal cans, etc., whereby during processing and bottling it is necessary to transport the empty and/or full containers from one place to another, during the different stages of the industrial process to which they are submitted, using conveyor chains generally made of stainless steel or plastic, which provokes a constant friction between the conveyor chains and the containers, between the components of the conveyor chains, as well as the mutual collision among the containers during transportation.

[0003] Based on the aforementioned, a result of uncontrolled friction, of an inappropriate lubrication of the settings of the conveyor chains, may be a series of unfavorable situations, such as the containers tipping over or obstructing the passage (even though the conveyor chains continue operation), or otherwise, provoke more noise and discontinuity in the feeding or supply of containers to the following stages in the process, for example in the filling or labeling stages. Therefore, these situations may lead to a low performance in the stages of the process, provoking an accelerated wear of the conveyor chains and force the capacity of the motors, all the former because of an inappropriate lubrication.

[0004] At present, in order to control the effect of friction, it is common to use lubricants that are applied on the conveyor chains, and that are divided basically into two main groups as follows:

- [0005]** 1. Lubricants based on soap, and
- [0006]** 2. Lubricants based on fatty amines.

[0007] The common and characteristic disadvantage of each of these groups of lubricants is that to be applied on conveyor chains, they need to be diluted in great amounts of water, in concentrations from 0.1% to 1.0% of the lubricant, whereby the water is the remaining 99.0% to 99.9%; therefore resulting in a high water consumption, thus in a high operational cost.

[0008] Another common disadvantage of both lubricant groups is its permanence on the surface of the conveyor chains, that is, forming a lubricant layer that tends to disappear too rapidly, therefore requiring constant or very frequent applications on the conveyor chains; the reason for this, among other causes is that the lubricants have been diluted in high concentrations of water.

[0009] Additionally, in the specific case of lubricants based on soap that can relatively easily be applied, but present disadvantages such as their sensibility to the hardness of water which results in the plugging of the lubricant application sprays, therefore, they should be used with softened water and/or, if missing, use inhibiting agents by their composition, as for example EDTA (ethylene diamine tetra-acetic

acid or its salts). Moreover, the use of these inhibiting agents provokes an impact on the environment as they are very little biodegradable.

[0010] Another current disadvantage in the lubricants based on soap is the excessive foam that may be spilled on the floor, and consequently present an accident risk for the personnel, moreover, it affects the aspect of the premises, floors, and the transported product.

[0011] An additional disadvantage of this type of lubricants is that they provoke the proliferation of micro-organisms and biomasses in the conveyor chains, floors, and drainage, which leads to frequent cleaning and disinfection of the premises.

[0012] Related to the second type of lubricants based on fatty amines, lubricants were found based on primary neutralized fatty amines, secondary and tertiary amines, and polyamines.

[0013] Lubricants based on amines present the additional disadvantage that their lubricating effect is affected when applied on high speed conveyor chains, therefore, their application is limited to low or medium speed conveyor chains.

[0014] This type of lubricants does not present the disadvantages to react with the hardness of water, or to favor the proliferation of micro-organisms or biomasses compared with the lubricants based on soap, but due to their composition they have a low biodegradability, and moreover, particularly lubricants based on polyamines, due to their composition, tend to react with the contents of the product spilled on the conveyor chain.

[0015] Among the proposals for a solution to counter the above mentioned limitations, polyalkylene-glycol was found to be used as a base for the composition of the lubricant. Some examples of current solutions are described hereunder:

[0016] Minyu Li, Person Hei Kim and Amy Haupt, in the U.S. Pat. No. 6,855,676 B2, describe a lubricant solution for conveyor chains that contains polyalkylene-glycol, fatty acid, and neutralizing agents.

[0017] Minyu Li, Person Hei Kim, and Amy Haupt in U.S. Pat. No. 7,125,827 B2 describe a lubricant compound for conveyor chains that consists of polyalkylenglycol, fatty acid, anionic surfactant, and neutralizing agents.

[0018] Minyu Li, Person Hei Kim and Amy Haupt, in the publication of the patent application US-2005/0059564, describe a lubricant solution for conveyor chains that contains polyalkylene-glycol, fatty acid, and neutralizing agents.

SUMMARY OF THE INVENTION

[0019] According to the above and in order to give a solution to the limitations that were encountered, it is the objective of this invention to offer a lubricant for conveyor chains; the lubricant is composed by a mixture of a quantity of fatty acid, a quantity of amine, a quantity of polyglycol, and a quantity of hydrocarbon. The lubricant of this invention uses a direct application, without dilution, and forms a layer or film of lubricant on the surface of the conveyor chain so that the application is discontinued, in long intervals between the applications.

[0020] Additionally, it is the objective of this invention to offer a method for lubricating conveyor chains; said method consists of the step of applying the lubricant on the surface of the conveyor chain, where said lubricant consists of a mixture

of a quantity of fatty acid, a quantity of amine, a quantity of polyglycol, and a quantity of hydrocarbon.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0021] The characteristic details of this invention are described in the following paragraphs in order to define this invention without limiting its scope.

[0022] The lubricant for conveyor chains of bottled products according to this invention shows components that in turn, may consist of multiple components.

[0023] The components described hereby individually, are not necessarily described in their order of importance.

Compound I

[0024] The lubricant for conveyor chains of bottled products contains one or more fatty acids that increase the lubricity of the lubricant so that it may be used in containers of different materials, such as metal, glass, plastic, plasticized bottle, etc.

[0025] The fatty acid consists of an alkyd chain with a terminal carboxylic group, being the simplest configuration the completely saturated lineal chain. Fatty acids are classified in fatty acids of short, medium, and long chains, and through their saturation grade in saturated and unsaturated, the latter divided in turn in mono-unsaturated fatty acids and poly-unsaturated acids.

[0026] The lubricant for conveyor chains of bottled products uses saturated, unsaturated or substituted fatty acids with a scope of 8 to 22 atoms of carbon. Among the saturated fatty acids there may be, for example, the caprylic acid of 8 carbon atoms, the capric acid of 10 carbon atoms, the undecylic acid of 11 carbon atoms, the lauric acid of 12 carbon atoms, the tridecyl acid of 13 carbon atoms, the myristic acid of 14 carbon atoms, the palmitic acid of 16 carbon atoms, the stearic acid of 18 carbon atoms; among the mono-unsaturated fatty acids there may be, for example, the lauroleic acid of 12 carbon atoms, the myristoleic acid of 14 carbon atoms, the palmitoleic acid of 16 carbon atoms, and preferably the oleic acid of 18 carbon atoms; among the poly-unsaturated fatty acids there may be, for example, the linoleic acid (di-unsaturated) of 18 carbon atoms and the linolenic acid (tri-unsaturated) of 18 carbon atoms, and among the substituted fatty acids there may be, for example, the ricinoleic acid of 18 carbon atoms substituted by hydroxide.

[0027] Also, the mixed fatty acids, such as the derivatives from greases and oils may be used in the lubricant of this invention, as for example, the fatty acid from coconut oil, or the fatty acid from liquid resin.

Compound II

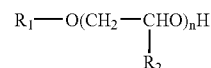
[0028] The lubricant for conveyor chains of bottled products contains at least a tensioactive product that is one or more amines derived from a fatty acid, characterized by a group of alkyl aliphatic of 8 to 22 atoms of carbon that contains one or more polyethoxylated groups.

[0029] The lubricant of this invention uses preferably a tensioactive product derived from an ethoxylated amine which function is to act as a surfactant and is associated with the fat portion of the molecule to provide homogeneity to the lubricant, lubricity, and to serve as an emulsifying and humidifying agent for said lubricant.

[0030] Among the former products there may be, for example, ethoxylated amine of coconut, ethoxylated alkyl amine of coconut, ethoxylated alkyl amine of oleic acid, ethoxylated alkyl amine of stearic acid, ethoxylated alkyl amine of tallow fatty acid, ethoxylated alkyl amine of soy, and combinations thereof.

Compound III

[0031] The lubricant for conveyor chains of bottled products contains at least a polymer selected from co-polymers of a block of polyglycol, particularly polyalkylene-glycol or any other polyalkylene-glycol oxide of a high molecular weight, soluble in water. The polyalkylene-glycol has a general structure as follows:



Where:

[0032] R_1 is a hydrogen or alkyl of C_1 to C_4 ;

[0033] R_2 is a hydrogen, methyl, or their mixtures; and

[0034] n is a whole number.

[0035] When R_2 is hydrogen, these materials are polymers of ethylene oxide that are also known as polyethyleneglycols. When R_2 is methyl, these materials are polymers of propylene oxide that are also known as polypropylene glycols. When R_2 is methyl, there are also various isomers included, of the resulting polymer position that may exist. The polyalkyleneglycols, polyethyleneglycols, polypropylene glycols, and combinations thereof are preferred for their use in the lubricant of the invention.

Compound IV

[0036] The lubricant for conveyor chains of bottled products contains one or more mineral oils or hydrocarbons, aliphatic as well as benzoic ones, or mixtures of the same that increase the lubricity of the lubricant of this invention. As to the saturated aliphatic hydrocarbon, that can be linear or ramified, there may be, for example, alkanes of the general formula $\text{C}_n\text{H}_{2n+2}$ such as heptane, octane, nonane, decanes, pentadecanes, alkenes of the general formula C_nH_{2n} such as ethane, propene, butane, pentene, and alkynes of the general formula $\text{C}_n\text{H}_{2n-2}$ such as ethyne, propyne, butane, pentene. Among the aliphatic hydrocarbons the white mineral oils of high purity are preferred, especially formulated for pharmaceutical processes and applications in the agricultural industry. The benzene hydrocarbons may be, for example, those of the general formula $\text{C}_n\text{H}_{2n-6}$ such as benzene, toluene, xylenes, and isomers.

Other Components

[0037] The lubricant for conveyor chains of bottled products can, moreover, contain at least a synthesis intermediate, at least an emulsifier and at least a microbicide.

[0038] In this case the type of intermediate synthesis performs the important stabilizing role of the emulsion, and it's an advantage to choose it from a group that comprises the systems constituted by propyleneglycol. Among the propyleneglycols there are monopropyleneglycol produced by the reaction of water with propylene oxide, dipropyleneglycol

produced by reaction of monopropylenglycol oxide of propylene, and from this when more propylene oxide is added, tripropylenglycol is obtained. The monopropylenglycol is used as a charge or vehicle.

[0039] The emulsifier is non-ionic with lyophobic characteristics, which is ideal for preparing the water emulsions in oil with a balanced lyophobic or hydrophilic performance. The type of emulsifier performs here an important role in the stability of the emulsion, and it's an advantage to select it from a group that comprises the systems constituted by sorbitan esters and ethoxylated sorbitan esters. As ethoxylated agents there may be, among others, sorbitan monooleate, sorbitan monolaurate, sorbitan monoestearate, sorbitan triestearate, poly-oxietylenated sorbitan trioleate with 14 to 40 ethylene oxide mols, monooleate of ethoxylated sorbitan with 11 to 40 ethylene oxide mols, monooleate of polyethylenglycol with a molecular weight between 480 and 1,200, ethoxylated nonilphenol with 6 to 50 ethylene oxide mols.

[0040] In order to avoid the proliferation of micro-organisms, within the lubricant as well as on the conveyor chains, the microbicide that is used, may be isotiazolinone, phormaldehyde, gluteraldehyde, and combinations thereof.

Mixture

[0041] The lubricant for conveyor chains of bottled products combines components I, II, III, and IV in the following weight percentage concentrations:

[0042] (a) from 5% to 80% of fatty acid (compound I),

[0043] (b) from 2% to 50% of amine (compound II),

[0044] (c) from 10% to 80% of polyalkylglycol (compound III), and

[0045] (d) from 5% to 50% of hydrocarbon (compound IV),

[0046] Additionally, the lubricant contains:

[0047] (e) up to 15% of propylenglycol as compound V, and

[0048] (f) from 5% to 30% emulsifier as compound VI.

[0049] An embodiment of lubricant for conveyor chains of bottled products of this invention shows the following contents in weight percentage concentrations:

[0050] (a) from 5% to 25% of oleic acid (compound I),

[0051] (b) from 2% to 15% of ethoxylated alkyl amine of soy (compound II),

[0052] (c) from 20% to 50% of polyalkylglycol (compound III), and

[0053] (d) from 5% to 20% of aliphatic hydrocarbon (compound IV).

[0054] Additionally, the lubricant contains:

[0055] (e) up to 10% of monopropylenglycol as compound V, and

[0056] (f) from 5% to 20% sorbitan monooleate as compound VI.

Examples of Preferred Embodiments

[0057] This invention will now be described in relation to the following examples that only have the objective to represent the way to implement the principles of this invention. The following examples do not intend to be a comprehensive representation of this invention, neither to limit the scope of said invention.

Preparation Mode

[0058] The lubricant for conveyor chains of bottled products is prepared mixing first the hydrocarbon with the fatty acid and the amine. Next, the polyalkylglycol, the emulsifier, and alternatively, the vehicle is added to the mixture which is shaken for about 20 minutes, or until the mixture is homogeneous.

[0059] Table 1 shows seven examples of the composition of the lubricant for conveyor chains of bottled products with the weight percentage of each component and the characteristics of the obtained lubricant for each example:

TABLE 1

Compound	Weight Percentage of each Component						
	Example 1	Example 2	Example 3	Example 4	Example 5	Example 6	Example 7
Aliphatic Hydrocarbon	14	0	14	14	14	14	14
Oleic acid	18	18	0	18	18	18	18
Polyalkylene-glycol	40	40	40	0	40	40	40
Sorbitan Monooleate	14	14	14	14	0	14	14
Soy Ethoxylated Alkyl Amine	9	9	9	9	9	0	9
Propylenglycol	5	5	5	5	5	5	0
Characteristic							
Formula	Good	Good	Dysphasic	Good	Dysphasic	Good	Good
Stability at 24 hrs.							
Appearance	Liquid - Viscous	Liquid - Viscous	Liquid - Viscous	Liquid - Viscous	Liquid - Viscous	Liquid - Viscous	Liquid - Viscous
Color	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Density (gr/cm ³)	0.948	0.952	0.955	0.951	0.950	0.952	0.955
concentrated pH	6.70	6.67	8.20	5.70	6.49	5.58	6.69
Viscosity (s/350 min ⁻¹ at 25° C.)	390	430	524	422	380	352	434

Application Mode

[0060] The lubricant for conveyor chains of bottled products is applied directly on the plastic and/or metallic surface of the chain without adding any extra dissolvent, through the preferred use of a broad plastic brush with nylon bristles (with a thickness of approximately 0.38 mm) that allows an adequate distribution of the lubricant along the conveyor chain to form a permanent layer or film of lubricant on the surface of said conveyor chain.

[0061] Another application form is through the use of manual or automatic sprayers that spray the conveyor chain surface with the lubricant.

[0062] In both cases, the lubricant is applied directly without diluting on the conveyor chain to form a lubricant layer that adheres to the surface of the conveyor chain for a period that may last up to 8 hours.

Measurement of the Friction Index at Laboratory Level

[0063] The friction index, defined as the force performed by the containers against the movement of the conveyor chain divided by the weight of the containers, obtained during laboratory testing on a dose of lubricant between 3 to 10 milliliters, that is, 0.07 to 0.12. The friction index when applying the lubricant of this invention is obtained at laboratory level, through the use of a certain amount of full bottles on a conveyor chain to provoke a stress force that is measured with a dynamometer. The full bottles are secured with a tape and the latter in turn to the dynamometer; next, the conveyor chain is operated after applying the lubricant directly on the conveyor chain. Every 20 to 30 minute-readings, or hourly readings are obtained from the dynamometer according to requirements until the lubricant is finished. The friction index is calculated with the average of the readings on the dynamometer, divided by the total weight in grams of the full bottles.

[0064] Lubrication testing at laboratory level was performed using the compound examples of the lubricant as shown in the Table 1 and whose results are shown in Tables 2, 3, 4, 5, 6, 7 and 8.

[0065] Conditions of the Lubrication Tests

[0066] Material of the Conveyor Chain: stainless steel

[0067] Speed of the conveyor chain: 40.8 m/min

[0068] Friction index=total value/weight of bottles

[0069] Total weight of glass bottles: 4,322.0 gr

[0070] Total weight of PET bottles: 4,076.0 gr

[0071] Total weight of metallic containers: 3,058.0 gr

[0072] Measurement equipment: dynamometer EXTECH brand

[0073] Six readings: Reading 0 (before applying the lubricant), Reading 1 (at the moment of application), Reading 2 (2 hours after the application), Reading 3 (3 hours after the application), Reading 4 (4 hours after the application), and Reading 5 (5 hours after the application).

TABLE 2

Lubrication Testing Results with Lubricant from Example 1 Table 1						
Reading	Glass Bottles		PET Bottles		Metallic Container	
	Value	Friction Index	Value	Friction Index	Value	Friction Index
0	1482	0.343	1235	0.303	970	0.317
1	340	0.079	315	0.077	238	0.078

TABLE 2-continued

Lubrication Testing Results with Lubricant from Example 1 Table 1						
Reading	Glass Bottles		PET Bottles		Metallic Container	
	Value	Friction Index	Value	Friction Index	Value	Friction Index
2	360	0.083	305	0.075	250	0.082
3	382	0.088	307	0.075	230	0.075
4	359	0.083	312	0.077	235	0.077
5	343	0.079	319	0.078	245	0.080
Average Friction Index		0.083		0.076		0.078

TABLE 3

Lubrication Testing Results with Lubricant from Example 2 Table 1						
Reading	Glass Bottles		PET Bottles		Metallic Container	
	Value	Friction Index	Value	Friction Index	Value	Friction Index
0	1482	0.343	1235	0.303	970	0.317
1	550	0.127	448	0.110	405	0.132
2	577	0.134	457	0.112	443	0.145
3	565	0.131	470	0.115	446	0.146
4	605	0.140	468	0.115	435	0.142
5	590	0.137	485	0.119	448	0.147
Average Friction Index		0.134		0.114		0.142

TABLE 4

Lubrication Testing Results with Lubricant from Example 3 Table 1						
Reading	Glass Bottles		PET Bottles		Metallic Container	
	Value	Friction Index	Value	Friction Index	Value	Friction Index
0	1482	0.343	1235	0.303	970	0.317
1	320	0.074	350	0.086	350	0.114
2	335	0.078	335	0.082	343	0.112
3	345	0.080	347	0.085	354	0.116
4	333	0.077	330	0.081	367	0.120
5	342	0.079	345	0.085	337	0.110
Average Friction Index		0.078		0.084		0.115

TABLE 5

Lubrication Testing Results with Lubricant from Example 4 Table 1						
Reading	Glass Bottles		PET Bottles		Metallic Container	
	Value	Friction Index	Value	Friction Index	Value	Friction Index
0	1482	0.343	1235	0.303	970	0.317
1	350	0.081	315	0.077	375	0.123
2	345	0.080	321	0.079	364	0.119
3	353	0.082	310	0.076	355	0.116
4	362	0.084	318	0.078	359	0.117
5	358	0.083	314	0.077	365	0.119

TABLE 5-continued

Lubrication Testing Results with Lubricant from Example 4 Table 1						
Reading	Glass Bottles		PET Bottles		Metallic Container	
	Value	Friction Index	Value	Friction Index	Value	Friction Index
Average Friction Index		0.082		0.077		0.119

TABLE 6

Lubrication Testing Results with Lubricant from Example 5 Table 1						
Reading	Glass Bottles		PET Bottles		Metallic Container	
	Value	Friction Index	Value	Friction Index	Value	Friction Index
0	1482	0.343	1235	0.303	970	0.317
1	325	0.075	345	0.085	364	0.119
2	339	0.078	336	0.082	367	0.120
3	328	0.076	327	0.080	362	0.118
4	332	0.077	329	0.081	370	0.121
5	337	0.078	333	0.082	368	0.120
Average Friction Index		0.077		0.082		0.120

TABLE 7

Lubrication Testing Results with Lubricant from Example 6 Table 1						
Reading	Glass Bottles		PET Bottles		Metallic Container	
	Value	Friction Index	Value	Friction Index	Value	Friction Index
0	1482	0.343	1235	0.303	970	0.317
1	330	0.076	352	0.086	374	0.122
2	319	0.074	341	0.084	379	0.124
3	324	0.075	345	0.085	382	0.125
4	321	0.074	336	0.082	376	0.123
5	327	0.076	339	0.083	370	0.121
Average Friction Index		0.075		0.084		0.123

TABLE 8

Lubrication Testing Results with Lubricant from Example 7 Table 1						
Reading	Glass Bottles		PET Bottles		Metallic Container	
	Value	Friction Index	Value	Friction Index	Value	Friction Index
0	1482	0.343	1235	0.303	970	0.317
1	314	0.073	336	0.082	364	0.119
2	310	0.072	330	0.081	362	0.118
3	307	0.071	325	0.080	359	0.117
4	312	0.072	333	0.082	361	0.118
5	308	0.071	337	0.083	358	0.117
Average Friction Index		0.072		0.082		0.118

[0074] Based on the embodiments described above, it is considered that the modifications of the described embodiment environments, as well as the alternative application embodiment environments will be considered evident for an expert in the art of the technique under the present description. Therefore, it is considered that the claims encompass said modifications and alternatives within the reach of the present invention or its equivalents. Having fully described the invention in such clear and concise terms as to enable those skilled in the art to understand and practice the same, the invention claimed is:

1. A lubricant for conveyor chains, said lubricant is characterized by comprising:

- a quantity of fatty acid;
- a quantity of amine;
- a quantity of polyglycol; and
- a quantity of hydrocarbon.

2. The lubricant of claim 1, wherein said quantity of fatty acid includes from about 5% to about 80% by weight of total weight of said lubricant.

3. The lubricant of claim 1, wherein the fatty acid is between 12 to 22 atoms of carbon.

4. The lubricant of claim 1, wherein the fatty acid is a quantity of oleic acid.

5. The lubricant of claim 4, wherein said quantity of oleic acid includes from about 5% to about 25% by weight of total weight of said lubricant.

6. The lubricant of claim 1, wherein said quantity of amine includes from about 2% to about 50% by weight of total weight of said lubricant.

7. The lubricant of claim 1, wherein said quantity of amine is a quantity of a tensoactive product derived from an ethoxylated amine.

8. The lubricant of claim 7, wherein said tensoactive product derived from an ethoxylated amine is selected from a group consisting of an ethoxylated amine of coconut, an alkyl ethoxylated amine of coconut, an ethoxylated alkyl amine of oleic acid, an ethoxylated alkyl amine of stearic acid, an ethoxylated alkyl amine of tallow fatty acid, a soy ethoxylated alkyl amine, and combinations thereof.

9. The lubricant of claim 1, wherein said quantity of tensoactive product derived from an ethoxylated amine includes from about 2% to about 15% by weight of total weight of said lubricant.

10. The lubricant of claim 1, wherein said quantity of polyglycol includes from about 10% to about 80% by weight of total weight of said lubricant.

11. The lubricant of claim 1, wherein said polyglycol is selected from a group consisting of polyalkylene-glycol, polyethyleneglycol, polypropileneglycol, and combinations thereof.

12. The lubricant of claim 11, wherein said quantity of polyglycol is a quantity of polyalkylglycol which includes from about 20% to about 50% by weight of the total weight of said lubricant.

13. The lubricant of claim 1, wherein said quantity of hydrocarbon includes from about 5% to about 50% by weight of the total weight of said lubricant.

14. The lubricant of claim 1, wherein said hydrocarbon is selected from a group consisting of aliphatic hydrocarbons, benzene hydrocarbons, alcohols, and combinations thereof.

15. The lubricant of claim 14, wherein said quantity of hydrocarbon is a quantity of aliphatic hydrocarbon which includes from about 5% to about 20% by weight of total weight of said lubricant.

16. The lubricant of claim 1, wherein further includes a quantity of propylenglycol.

17. The lubricant of claim 16, wherein said quantity of propylenglycol includes no more than about 15% by weight of total weight of said lubricant.

18. The lubricant of claim 16, wherein said propylenglycol is selected from a group consisting of monopropylenglycol, dipropylenglycol, tripropylenglycol, and combinations thereof.

19. The lubricant of claim 16, wherein said quantity of propylenglycol is a quantity of monopropylenglycol which includes from about 1% to about 10% by weight of total weight of said lubricant.

20. The lubricant of claim 1, wherein further includes a quantity of emulsifier.

21. The lubricant of claim 20, wherein said quantity of emulsifier includes from about 5% to about 30% by weight of total weight of said lubricant.

22. The lubricant of claim 20, wherein said emulsifier is selected from a group consisting of sorbitan monooleate, sorbitan monolaurate, sorbitan monoestearate, sorbitan tri-

estearate, polyoxyethylenated sorbitan trioleate, monoolaurate of ethoxylated sorbitan, polyethylenglycol monooleate, ethoxylated nonilphenol, and combinations thereof.

23. The lubricant of claim 22, wherein said quantity of emulsifier is a quantity of sorbitan monooleate.

24. The lubricant of claim 23, wherein said quantity of sorbitan monooleate includes from about 5% to about 25% by weight of total weight of said lubricant.

25. The lubricant of claim 1, wherein further includes a quantity of microbicide selected from a group consisting of isothiazolinones, phormaldehyde, glutaraldehyde, and mixtures of these.

26. A method for lubricating conveyor chains, said method includes the step of:

applying a lubricant on the surface of said conveyor chain, wherein said lubricant is characterized by comprising:
a quantity of fatty acid;
a quantity of amine;
a quantity of polyglycol; and
a quantity of hydrocarbon.

27. The method of claim 26, wherein said lubricant further includes a quantity of propylenglycol.

28. The method of claim 26, wherein said lubricant further includes a quantity of emulsifier.

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