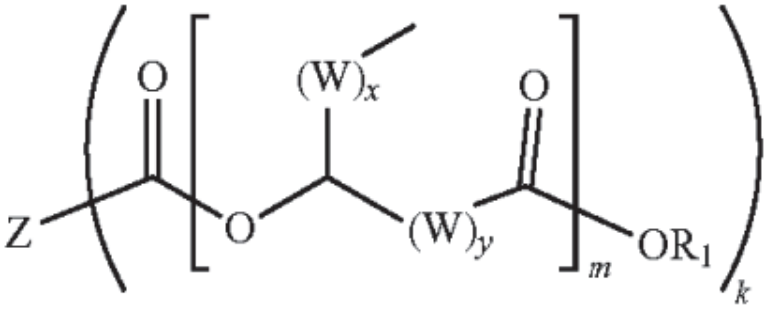
CLAIMS:

1. An ester compound of the general formula (I):



in which

the radical Z is selected from the group including hydrogenated or non-hydrogenated dimer acid, hydrogenated or non-hydrogenated trimer acid, 2,2'- thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical R^1 is selected from the group consisting of, branched or unbranched C1- to C30-alkyl radicals, branched or unbranched C1- to C30-alkenyl radicals, C7- to C30-arylalkyl radicals, C1- to C30-heteroarylalkyl radicals and C4- to C30-aryl radicals,

the radical W is selected from the group consisting of $-CH_2-$ and CH=CH-,

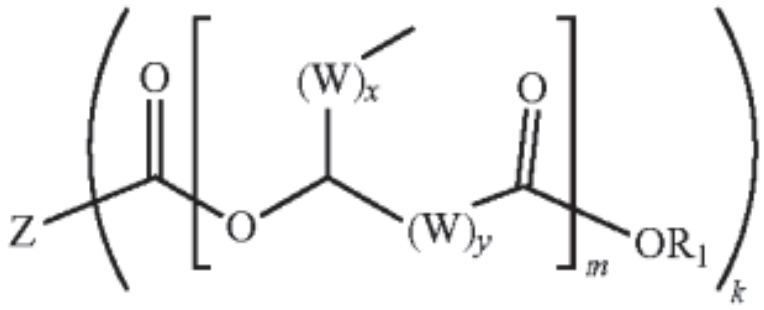
x is an integer from 1 to 20,

y is an integer from 1 to 20,

m is an integer from 1 to 10,

k is an integer from 2 to 10.

2. An ester compound of a general formula (I)



in which

the radical Z is selected from the group including phthalic acid, oxalic acid, admergic acid, 2,5-furandicarboxylic acid, cyclohexane-1,4-dicarboxylic acid, cyclohexane-1,2-dicarboxylic acid, and phenylsuccinic acid,

the radical R^1 is selected from the group consisting of branched or unbranched C1- to C30 -alkyl radicals, branched or unbranched C1- to C30-alkenyl radicals, C7- to C30-arylalkyl radicals, C1- to C30-heteroarylalkyl radicals and C4- to C30-aryl radicals,

the radical W is selected from the group consisting of -CH_2-and/or CH=CH-,

x is an integer from 1 to 20,

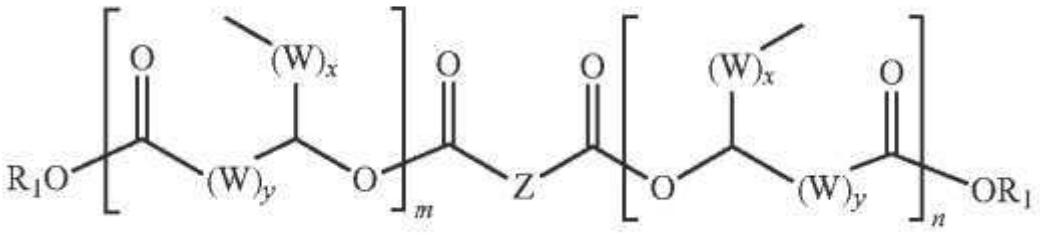
y is an integer from 1 to 20,

m is an integer from 1 to 10,

k is an integer from 2 to 10.

3. An ester compound having a general formula (II)

(II)



in which

the radical Z is selected from the group including hydrogenated or non-hydrogenated dimer acid, 2,2'- thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical R^1 is selected from the group consisting of branched or unbranched C_1- to C_{30}-alkyl radicals, branched or unbranched C_1- to 30-alkenyl radicals, C_7- to C_{30}-arylalkyl radicals, and C_1- to C_{30}-heteroarylalkyl radicals and C_4- to C_{30}-aryl radicals,

the radical W is selected from the group consisting of -CH_2- and -CH=CH-,

x is an integer from 1 to 20,

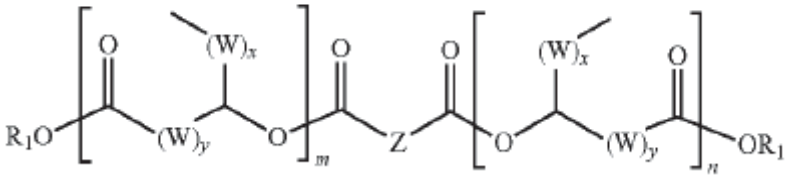
y is an integer from 1 to 20,

m is an integer from 1 to 10,

n is an integer from 1 to 10.

4. An ester compound having a general formula (II)

(II)



in which

the radical Z is selected from the group including phthalic acid, oxalic acid, admergic acid, cyclohexane-1,4-dicarboxylic acid, cyclohexane-1,2-dicarboxylic acid, and phenylsuccinic acid,

the radical R_1 is selected from the group consisting of branched or unbranched C_1- to C_{30}-alkyl radicals, branched or unbranched C_1- to C_{30}-alkenyl radicals, C_7- to C_{30}-arylalkyl radicals and C_1- to C_{30}-heteroarylalkyl radicals and C_4- to C_{30}-aryl radicals,

the radical W is selected from the group consisting of $-CH_2-$ and -CH=CH-,

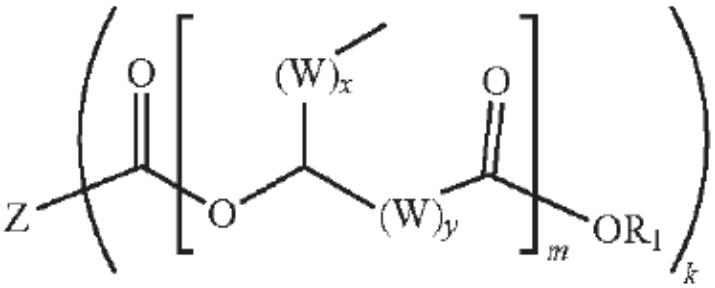
x is an integer from 1 to 20,

y is an integer from 1 to 20,

m is an integer from 1 to 10,

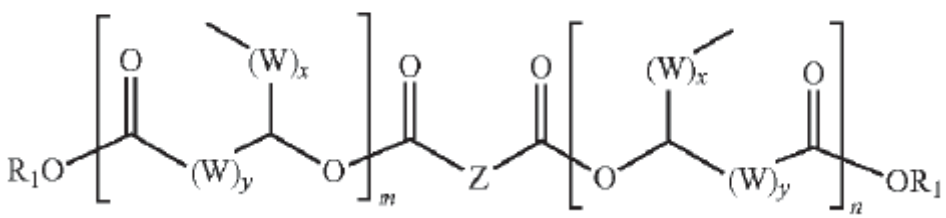
n is an integer from 1 to 10.

5. A method for producing an ester compound of the general formula (I)



or of the general formula (II)

(II)



in which

the radical Z for general formula (I) is selected from the group including hydrogenated or non-hydrogenated dimer acid, hydrogenated or non-hydrogenated trimer acid, 2,2'- thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical Z for the general formula (II) is selected from the group including hydrogenated or non-hydrogenated dimer acid, 2,2'- thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical R_1 is selected from the group consisting of branched or unbranched C_1- to C_{30}-alkyl radicals, branched or unbranched C_1- to C_{30}-alkenyl radicals, C_7- to C_{30}-arylalkyl radicals, C_1- to C_{30}-heteroarylalkyl radicals and C_4- to C_{30}-aryl radicals,

the radical W is selected from the group consisting of $-CH_2-$ and -CH=CH-,

x is an integer from 1 to 20,

y is an integer from 1 to 20,

m is an integer from 1 to 10,

k is an integer from 2 to 10, and

n is an integer from 1 to 10,

obtainable by;

(A) reacting a di-, tri- or higher functional carboxylic acid with a long-chain fatty acid having hydroxyl groups in the presence of a catalyst at 120 to 150°C., period of 30 minutes,

(B) reducing the pressure,

(C) portionwise or continuous addition of the long-chain fatty acid having hydroxyl groups over a period of 5 to 20 hours,

(D) stirring the reaction mixture obtained for 5 to 20 hours under reduced pressure and removing the water obtained,

(E) esterifying the intermediate with an alcohol at 120 to 150°C. for 3 to 5 hours with stirring,

(F) washing the crude product with aq. $NaHCO_3$ solution and water,

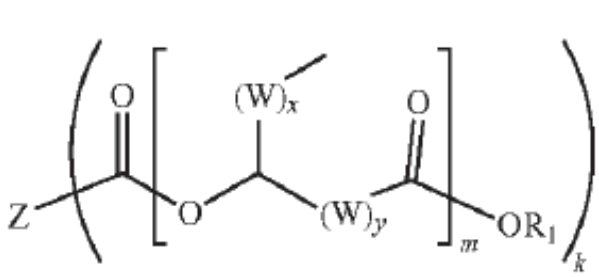
(G) drying over Na_2SO_4,

(H) purifying the crude product by means of a short-path evaporator under reduced pressure at 190 to 300°C.

6. The method for producing the ester compound of the general formula (I) or (II) as claimed in claim 5, in which the long-chain fatty acid having hydroxyl groups is selected from 12-hydroxystearic acid and/or ricinoleic acid; the alcohol is selected from the group consisting of 2-ethylhexan-1-ol and/or 2-propylheptan-1-ol and/or 2-hexyldecan-1-ol and/or 2-

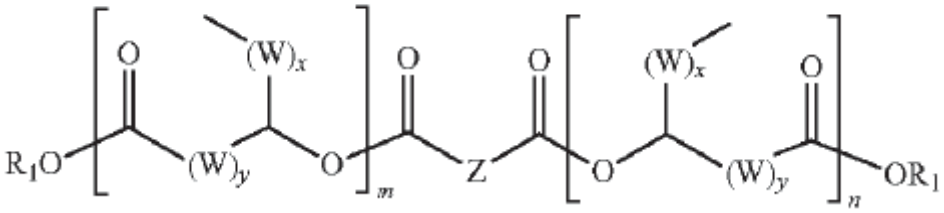
octyldodecan-1-ol and/or isoamyl alcohol; the catalyst in reaction step (A) is p-toluenesulfonic acid.

7. A method for producing ester compounds of the general formula (I)



(I)

or of the general formula (II),



(II)

in which

the radical Z for general formula (I) is selected from the group including hydrogenated or non-hydrogenated dimer acid, hydrogenated or non-hydrogenated trimer acid, 2,2'- thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical Z for the general formula (II) is selected from the group including hydrogenated or non-hydrogenated dimer acid, 2,2'- thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical R_1 is selected from the group consisting of branched or unbranched C_1- to C_{30}-alkyl radicals, branched or unbranched C_1- to C_{30}-alkenyl radicals, C_7- to C_{30}-arylalkyl radicals, C_1- to C_{30}-heteroarylalkyl radicals and C_4- to C_{30}-aryl radicals,

the radical W is selected from the group consisting of --CH_2- and/or -CH=CH-,

x is an integer from 1 to 20,

y is an integer from 1 to 20,

m is an integer from 1 to 10,

k is an integer from 2 to 10, and

n is an integer from 1 to 10,

obtainable by;

(A) reacting a long-chain fatty acid having hydroxyl groups with an alcohol in the presence of a catalyst at 60 to 90°C.,

(B) reducing the pressure,

(C) stirring the reaction mixture obtained over 6 to 10 hours under reduced pressure and removing the water obtained,

(D) removing the solvent and excess alcohol under vacuum,

(E) reacting the intermediate with a di-, tri- or higher functional carboxylic acid in the presence of a catalyst at 120 to 160°C. for 6 to 10 hours with stirring and removing the water obtained,

(F) removing the catalyst by (acid) washing of the crude product with aq. $NaHCO_3$ solution and water or by filtering off catalysts supported on supports or by evaporating volatile catalysts by applying a vacuum,

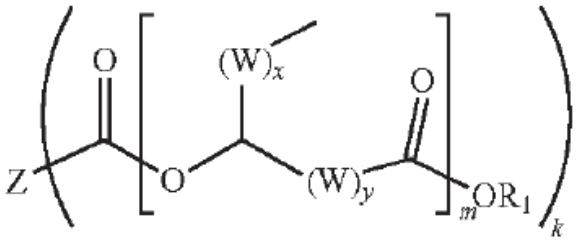
(G) drying over suitable drying agents, such as Na_2SO_4 ,

(H) purifying the crude product under reduced pressure at 190 to 300°C., for example by means of a short-path evaporator.

8. The method for producing ester compounds of the general formula (I) or (II) as claimed in claim 7, in which the long-chain fatty acid having hydroxyl groups is selected from 12-hydroxystearic acid and/or ricinoleic acid; the alcohol is selected from the group consisting of 2-ethylhexan-1-ol and/or 2-propylheptan-1-ol and/or 2-hexyldecan-l-ol and/or 2-octyldodecan-1-ol and/or isoamyl alcohol; the catalyst in reaction step (A) and (E) is p-toluenesulfonic acid.

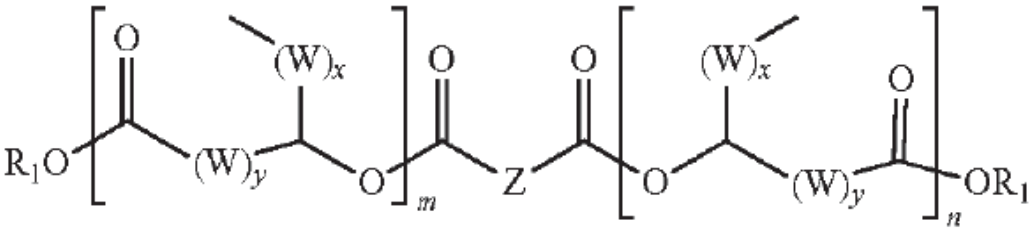
9. A lubricant composition comprising an ester compound of the general formula (I)

(I)



or of the general formula (II)

(II)



in which

the radical Z for general formula (I) is selected from the group including hydrogenated or non-hydrogenated dimer acid, hydrogenated or non-hydrogenated trimer acid, 2,2'- thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical Z for the general formula (II) is selected from the group including hydrogenated or non-hydrogenated dimer acid, 2,2'- thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical R_1 is selected from the group consisting of branched or unbranched C_1- to C_{30}-alkyl radicals, branched or unbranched C_1- to C_{30}-alkenyl radicals, C_7- to C_{30}-arylalkyl radicals, C_1- to C_{30}-heteroarylalkyl radicals and C_4- to C_{30}-aryl radicals,

the radical W is selected from the group consisting of $-CH_2-$ and/or -CH=CH-,

x is an integer from 1 to 20,

y is an integer from 1 to 20,

m is an integer from 1 to 10,

k is an integer from 2 to 10, and

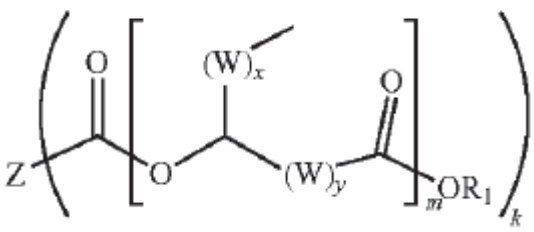
n is an integer from 1 to 10.

10. The lubricant composition as claimed in claim 9 used in the marine sector, for lubricating machinery in the food processing industry, for lubricating ball bearings and slide bearings, transport and control chains in vehicle technology, in conveyor technology, mechanical engineering, in office technology for lubricating bevel gears and spur gears, of roller bearings in continuous casting plants and transport bearings in continuous kilns and for open crown gear lubrication in rotary kilns, tubular mills, drums and mixers in the cement, lime, gypsum, mining and chemical industries.

11. The-lubricant composition as claimed in claim 9, further comprising a base oil, solid lubricants and additives.

12. The lubricant composition as claimed in claim 9, further comprising a thickener.

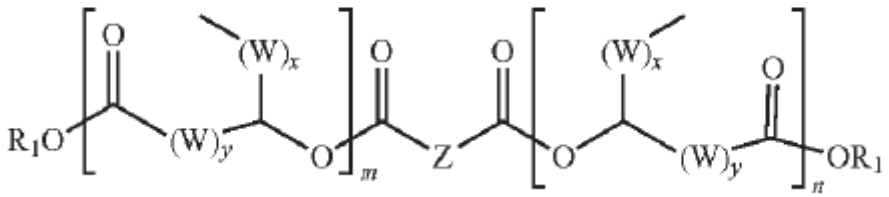
13. A method for using a lubricant compositions based on ester compounds of the general formula (I)



(I)

or of the general formula (II)

(II)



in which the radical Z for general formula (I) is selected from the group including hydrogenated or non-hydrogenated dimer acid, hydrogenated or non-hydrogenated trimer acid, 2,2'-thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical Z for the general formula (II) is selected from the group including hydrogenated or non-hydrogenated dimer acid, 2,2'- thiodiacetic acid, and 3,3'-thiodipropionic acid,

the radical R_1 is selected from the group consisting of branched or unbranched C_1- to C_{30}-alkyl radicals, branched or unbranched C_1- to C_{30}-alkenyl radicals, C_7- to C_{30}-arylalkyl radicals, C_1- to C_{30}-heteroarylalkyl radicals and C_4- to C_{30}-aryl radicals,

the radical W is selected from the group consisting of $-CH_2-$ and/or -CH=CH-,

x is an integer from 1 to 20,

y is an integer from 1 to 20,

m is an integer from 1 to 10,

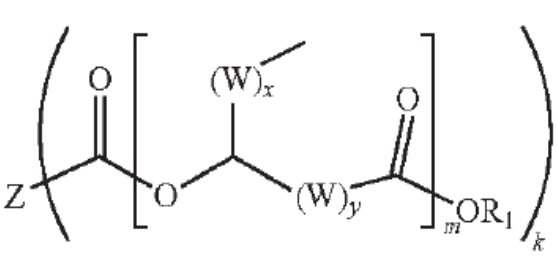
k is an integer from 2 to 10, and

n is an integer from 1 to 10;

comprising lubricating components in the marine sector, lubricating machinery in the food processing industry, lubricating ball bearings and slide bearings, transport and control chains in vehicle technology, lubricating components in conveyor technology, lubricating components in mechanical engineering, lubricating components in office technology, lubricating bevel gears and spur gears, lubricating roller bearings in continuous casting plants, lubricating transport bearings in continuous kilns and lubricating open crown gear lubrication in rotary kilns, tubular mills, drums and mixers in the cement, lime, gypsum, mining and chemical industries.

14. An ester compound of the general formula (I):

(I)



n which

the radical Z is selected from the group including itaconic acid and diglycolic acid,

the radical R_1 is selected from the group consisting of branched or unbranched C_1- to C_{30}-alkyl radicals, branched or unbranched C_1- to C_{30}-alkenyl radicals, C_7- to C_{30}-arylalkyl radicals, and C_1- to C_{30}-heteroarylalkyl radicals and C_4- to C_{30}-aryl radicals,

the radical W is selected from the group consisting of $-CH_2-$ and -CH=CH-,

x is an integer from 1 to 20,

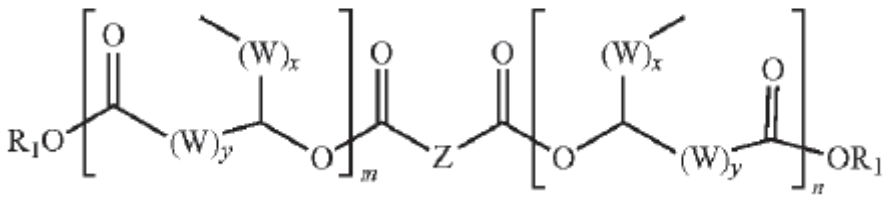
y is an integer from 1 to 20,

m is an integer from 1 to 10,

k is an integer from 2 to 10.

15. An ester compound having the general formula (II)

(II)



in which

the radical Z is selected from the group including itaconic acid and diglycolic acid,

the radical R_1 is selected from the group consisting of branched or unbranched C_1- to C_{30}-alkyl alkyl radicals, branched or unbranched C_1- to C_{30}-alkenyl radicals, C_7- to C_{30}-arylalkyl radicals and C_1- to C_{30}-heteroarylalkyl radicals and C_4- to C_{30}-aryl radicals,

the radical W is selected from the group consisting of $-CH_2-$ and -CH=CH-,

x is an integer from 1 to 20,

y is an integer from 1 to 20,

m is an integer from 1 to 10,

n is an integer from 1 to 10.