However, generally speaking, the possibility of depressing the pour point of a product derived from a plant or animal oil in order to enable the use thereof in cold weather depends on the nature and the properties of this product. Consequently, there is a need to be able to improve a mixture of fatty acid methyl esters derived from castor oil so as to enable the use thereof in cold weather.

SUMMARY OF THE INVENTION

In an aspect, there is provided a composition comprising:

- at least 95% by weight of a mixture of castor oil fatty acid methyl esters;
- a pour point depressant additive;

the pour point of the composition being less than or equal to 0°C.

According to one embodiment, the pour point of the composition is less than or equal to -5°C, preferably less than or equal to -9°C.

According to one embodiment, the mixture of castor oil fatty acid methyl esters has an iodine number of 100 to 120 g / 100 g and comprises, in proportions by weight:

- from 5 to 20%, preferably from 8 to 12%, of methyl stearate;
- from 20 to 40%, preferably from 25 to 35%, of methyl oleate;
- from 30 to 50%, preferably from 35 to 45%, of methyl linoleate;
- less than 10%, preferably less than 8.5%, of methyl palmitate;
- from 1.5 to 4%, preferably from 2 to 3%, of methyl ricinoleate;
- from 0.4 to 1.5%, preferably from 0.6 to 1%, of 10-undecylenic acid.

According to one embodiment, the composition comprises a proportion by weight of pour point depressant additive of 1 to 2%, preferably 1.2 to 1.8%.

According to one embodiment, the pour point depressant additive is an acrylic polymer (preferably in accordance with the general formula presented below) dissolved in an oil, the proportions preferably being from 60 to 100 parts of acrylic polymer per 15 to 40 parts of oil.

According to one embodiment, the oil is a paraffinic distillate.

According to one embodiment, the additive has:

- a viscosity at 100°C according to standard ASTM D445 of 200 to 500 mm^2/s, preferably 300 to 400 mm^2/s;
- a pour point according to standard ASTM D97 of less than or equal to -30°C, preferably less than or equal to -36°C;

– an acid number according to standard ASTM D974 of less than or equal to 0.6 mg KOH/g, preferably less than or equal to 0.5 mg KOH/g.

In another aspect, there is provided the use of the above composition as lubricant, concrete release agent, degreasing agent or cleaning agent.

The present disclosure makes it possible to overcome the disadvantages of the state of the art. It more particularly provides a mixture of fatty acid methyl esters derived from castor oil, which may be used in cold weather.

This is achieved by virtue of the use of an additive making it possible to depress the pour point of the mixture to less than 0°C, preferably to less than -5°C or to less than -9°C.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 represents the crystallization kinetics of various compositions, estimated by the thickness of the layer of crystals formed (on the y-axis, in mm) as a function of the temperature (on the x-axis, in °C). The details are featured in example 1 below.

DESCRIPTION OF EMBODIMENTS OF THE INVENTION

The invention is now described in greater detail and in a nonlimiting manner in the description which follows.

The composition according to the invention is obtained by mixing a mixture of fatty acid methyl esters derived from castor oil and a pour point depressant additive.

The mixture of fatty acid methyl esters derived from castor oil is obtained by transesterification of a castor oil with methanol. The degree of transesterification of the mixture is not necessarily 100%, which means that the mixture of methyl esters in question may comprise a certain proportion of non-esterified fatty acids.

The mixture of fatty acid methyl esters derived from castor oil is preferably characterized by a pour point according to standard ASTM D97 of 5 to 8°C; and/or by an iodine number of 100 to 120 g/100 g. The iodine number may be determined according to standard ISO 3961.

The mixture of fatty acid methyl esters in question preferably comprises:

- from 5 to 20%, preferably from 8 to 12%, of methyl stearate (C18:0);