CLAIMS

1. An alkoxylation catalyst for use in a reaction of alkoxylation of a fatty acid alkyl ester represented by general formula (I) shown below, the alkoxylation catalyst being formed when a component (B) that is at least one member selected from the group consisting of an alkaline-earth metal salt of a carboxylic acid, an alkaline-earth metal salt of a hydroxycarboxylic acid, an oxide of an alkaline-earth metal and a hydroxide of an alkaline-earth metal and a component (C) that is sulphuric acid are reacted in a component (A) that is a liquid dispersion medium, wherein the molar ratio represented by the component (C)/the component (B) is 0.8 to 1:

$R^{11}COOR^{12}$ ··· (I)

in the formula (I), R^{11} is a hydrocarbon group having 1 to 40 carbon atoms; and R^{12} is a linear alkyl group having 1 to 3 carbon atoms.

2. The alkoxylation catalyst according to Claim 1, wherein

the component (A) is at least one member selected from the group consisting of an alcohol represented by general formula (1) shown below, an alkylene oxide adduct of the alcohol, a fatty acid alkyl ester represented by general formula (2) shown below, an alkylene oxide adduct of the fatty acid alkyl ester, a fatty acid represented by general formula (3) shown below and an alkylene oxide adduct of the fatty acid:

ROH ··· (1)

in the formula (1), R is a hydrocarbon group having 3 to 18 carbon atoms;

R^1COOR^2 ··· (2)

in the formula (2), R^1 is a hydrocarbon group having 3 to 18 carbon atoms; and

R^2 is a linear alkyl group having 1 to 3 carbon atoms; and

R^3COOH ··· (3)

in the formula (3), R^3 is a hydrocarbon group having 3 to 18 carbon atoms.

3. A method for producing an alkoxylation catalyst, comprising:

mixing a component (B) that is at least one member selected from the group consisting of an alkaline-earth metal salt of a carboxylic acid, an alkaline-earth metal salt of a hydroxycarboxylic acid, an oxide of an alkaline-earth metal and a hydroxide of an alkaline-earth metal and a component (C) that is sulphuric acid are reacted in a component (A) that is a liquid dispersion medium, wherein

the molar ratio represented by the component (C)/the component (B) is 0.8 to 1.

4. The method for producing an alkoxylation catalyst according to Claim 3, wherein

the weight ratio represented by [the component (B) + the component (C)]/the component (A) is 1 to 1/3.

5. A method for producing a fatty acid alkyl ester alkoxylate, comprising

adding an alkylene oxide to a fatty acid alkyl ester in the presence of an alkoxylation catalyst of Claim 1 or 2.

6. A method for producing a fatty acid alkyl ester alkoxylate, comprising

adding an alkylene oxide to a fatty acid alkyl ester in the presence of a polyhydric alcohol and an alkoxylation catalyst of Claim 1 or 2.

[Claim 1] An alkoxylation catalyst for use in a reaction of alkoxylation of a fatty acid alkyl ester represented by general formula (I) shown below, the alkoxylation catalyst being formed when a component (B) that is at least one member selected from the group consisting of an alkaline-earth metal salt of a carboxylic acid, an alkaline-earth metal salt of a hydroxycarboxylic acid, an oxide of an alkaline-earth metal and a hydroxide of an alkaline-earth metal and a component (C) that is sulphuric acid are reacted in a component (A) that is a liquid dispersion medium, wherein the molar ratio represented by the component (C)/the component (B) is from greater than 0.8 to less than 1:

$R^{11}COOR^{12}$ ⋯ (I)

in the formula (I), R^{11} is a hydrocarbon group having 1 to 40 carbon atoms; and R^{12} is a linear alkyl group having 1 to 3 carbon atoms.

[Claim 2] The alkoxylation catalyst according to Claim 1, wherein

the component (A) is at least one member selected from the group consisting of an alcohol represented by general formula (1) shown below, an alkylene oxide adduct of the alcohol, a fatty acid alkyl ester represented by general formula (2) shown below, an alkylene oxide adduct of the fatty acid alkyl ester, a fatty acid represented by general formula (3) shown below and an alkylene oxide adduct of the fatty acid:

ROH ⋯ (1)

in the formula (1), R is a hydrocarbon group having 3 to 18 carbon atoms;

R^1COOR^2 ⋯ (2)

in the formula (2), R^1 is a hydrocarbon group having 3 to 18 carbon atoms; and

R^2 is a linear alkyl group having 1 to 3 carbon atoms; and

R^3COOH ⋯ (3)

in the formula (3), R^3 is a hydrocarbon group having 3 to 18 carbon atoms.

[Claim 3] The alkoxylation catalyst according to Claim 1 or 2, wherein

the molar ratio represented by the component (C)/the component (B) is 0.9 to 0.98.

[Claim 4] A method for producing an alkoxylation catalyst of Claim 1 or 2, comprising:

mixing a component (B) that is at least one member selected from the group consisting of an alkaline-earth metal salt of a carboxylic acid, an alkaline-earth metal salt of a hydroxycarboxylic acid, an oxide of an alkaline-earth metal and a hydroxide of an alkaline-earth metal and a component (C) that is sulphuric acid in a component (A) that is a liquid dispersion medium, wherein

the molar ratio represented by the component (C)/the component (B) is from greater than 0.8 to less than 1.

[Claim 5] The method for producing an alkoxylation catalyst according to Claim 4, wherein

the weight ratio represented by [the component (B) + the component (C)]/the component (A) is 1 to 1/3.

[Claim 6] The method for producing an alkoxylation catalyst according to Claim 4 or 5, wherein

the molar ratio represented by the component (C)/the component (B) is 0.9 to 0.98.

[Claim 7] A method for producing a fatty acid alkyl ester alkoxylate, comprising adding an alkylene oxide to a fatty acid alkyl ester in the presence of an alkoxylation catalyst of any one of Claims 1 to 3.

[Claim 8] A method for producing a fatty acid alkyl ester alkoxylate, comprising adding an alkylene oxide to a fatty acid alkyl ester in the presence of a polyhydric alcohol and an alkoxylation catalyst of any one of Claims 1 to 3.