

[DESCRIPTION]

[TITLE OF INVENTION]

WATER-IN-OIL EMULSIFIED COMPOSITION AND METHOD FOR PRODUCING SAME

[Technical Field]

5 [0001]

The present invention relates to improvement in workability in a freezing range of a water-in-oil emulsified composition.

[Background Art]

[0002]

10 Typical examples of a water-in-oil emulsified composition include butter, margarine and fat spreads. For professional use, these water-in-oil emulsified compositions are not only used as raw material oils and fats that are kneaded into dough at the time of baking, but also used as raw materials for confectionery production, baking, frozen desserts and the like by being melted and blended in.

15 Margarine or fat spreads are produced by a method in which an oil phase is prepared using, together with an emulsifier, an animal or vegetable oil or fat such as palm oil, safflower oil, soybean oil, rapeseed oil, coconut oil, lard or fish oil as it is or after being cured by adding hydrogen thereto, this oil phase and a water phase containing an emulsifier, stabilizer or a flavor ingredient such as skim milk or a fragrance in water are mixed and emulsified and then rapidly
20 cooled and kneaded with a pin machine or a votator.

[0003]

Water-in-oil emulsified compositions produced as described above are packaged in a variety of forms depending on intended uses, and typical examples thereof include a block shape of approximately 100 g to 200 g for general household use and a block shape of 10 kg to 30 kg
25 for professional use.

Normally, these water-in-oil emulsified compositions are cooled to a refrigeration

were changed to 85.0 parts by weight and 14.5 parts by weight, respectively, according to formulations shown in Table 1 below.

[0038]

As a water-in-oil emulsified composition of Comparative Example 4, butter containing

5 16.2% by weight of moisture (manufactured by Megmilk Snow Brand Co., Ltd.) was used.

[0039]

Table 1 Formulations of water-in-oil emulsified compositions

	Example						
	1	2	3	4	5	6	7
Palm kernel stearin	15.0 (%)	25.0	30.0	15.0	15.0	15.0	35.0
Transesterified oil	8.0	8.0	8.0	4.0	15.0	29.4	0.0
Soybean oil	52.0	42.0	37.0	56.0	45.0	30.6	40.0
Water	24.5	24.5	24.5	24.5	24.5	24.5	24.5
Emulsifier	0.5	0.5	0.5	0.5	0.5	0.5	0.5

	Example		Comparative Example			
	8	9	1	2	3	4
Palm kernel stearin	0.0	34.0	40.0	25.0		
Transesterified oil	40.0 (%)	9.0	80.0	25.0		
Palm oil					35.0	
Soybean oil	35.0	42.0	27.0	25.0	40.0	
Water	24.5	14.5	24.5	24.5	24.5	
Emulsifier	0.5	0.5	0.5	0.5	0.5	
Butter						100.0

10 · The unit is “% by weight”.

· As emulsifiers, stearate monoglyceride and lecithin were used.

[0040]

The water-in-oil emulsified compositions obtained in the examples and the comparative examples were evaluated by five panelists who were developing water-in-oil emulsified compositions at work and produced trial products of water-in-oil emulsified compositions on a daily basis based on the following evaluation standards. At this time, ratings of AA and A that were determined by consensual decision making, respectively, were regarded as pass.

Production aptitude

AA: A water-in-oil emulsified composition is easily produced in an appropriate hardness when filled, and block molding is also easy.

A: While slightly hard when filled, a water-in-oil emulsified composition can be produced, and block molding is also possible.

5 B: A water-in-oil emulsified composition is too hard when filled, and there is a possibility that the production may be hindered. Block molding is not possible.

Workability at -18°C

AA: A water-in-oil emulsified composition can be easily cut into an arbitrary shape with a kitchen knife.

10 A: A water-in-oil emulsified composition can be cut into an arbitrary shape with a kitchen knife while a slight force is required.

B: When attempted to be cut with a kitchen knife, a water-in-oil emulsified composition break irregularly and cannot be cut into an arbitrary shape.

C: It is difficult to cut a water-in-oil emulsified composition with a kitchen knife.

15 Workability at 20°C

AA: A water-in-oil emulsified composition has plasticity and is also preferable for kneading use.

A: A water-in-oil emulsified composition has slightly weak plasticity, but can be used for kneading use.

20 B: A water-in-oil emulsified composition has no plasticity and poor workability. In kneading use, a water-in-oil emulsified composition is not kneaded into dough.

[0041]

“Method for measuring hardness”

1. A measurement sample was molded to be 5 cm in length, 5 cm in width and 5 cm in
25 thickness.

2. The measurement sample was moved into a refrigerated vehicle (-18°C) or a temperature adjustable vehicle (20°C) and left to stand for 24 hours or longer.

3. The hardness was measured with a rheometer (manufactured by Rheotech, RTC-3002D) with a plunger diameter of 3 mm (-18°C) or 10 mm (20°C) at an intrusion rate of 5 cm/min.

[0042]

For the water-in-oil emulsified compositions obtained in the examples and the comparative examples, the hardness measured by the above-described “method for measuring hardness” and the evaluation results are summarized in Table 2.

[0043]

Table 2 Evaluation of kneading aptitude

	Example						
	1	2	3	4	5	6	7
Fatty acid composition in oil phase							
C12 (lauric acid) (%)	13.1	20.4	24.0	12.0	14.9	18.6	25.6
C16 (palmitic acid) (%)	11.4	11.2	11.0	10.9	12.2	13.9	10.0
C18 (stearic acid) (%)	5.7	5.4	5.2	4.7	7.3	10.7	3.2
Weight ratio of C18/C12	0.44	0.26	0.22	0.39	0.49	0.58	0.13
Evaluation of water-in-oil emulsified composition							
Production aptitude	A	AA	A	AA	AA	AA	A
Hardness at -18°C (gf)	800	1100	1380	730	860	970	1430
Hardness at 20°C (gf)	120	310	390	100	170	230	560
Difference between hardness at -18°C and hardness at 20°C	680	790	990	630	690	740	870
Workability at -18°C	AA	AA	A	AA	AA	AA	A
Workability at 20°C	A	AA	A	A	A	AA	A

	Example		Comparative Example			
	8	9	1	2	3	4
Fatty acid composition in oil phase						
C12 (lauric acid) (%)	10.4	24.0	31.4	24.8	0.0	3.6
C16 (palmitic acid) (%)	15.4	11.0	10.8	13.1	26.6	32.2
C18 (stearic acid) (%)	13.7	5.2	4.9	9.4	4.2	11.6
Weight ratio of C18/C12	1.32	0.22	0.16	0.38	91.00	3.22
Evaluation of water-in-oil emulsified composition						
Production aptitude	AA	AA	B	A	B	-
Hardness at -18°C (gf)	1380	1190	1640	1600	1860	-
Hardness at 20°C (gf)	290	290	680	360	330	630
Difference between hardness at -18°C and hardness at 20°C	1090	900	960	1240	1530	-
Workability at -18°C	A	AA	C	B	C	C
Workability at 20°C	A	A	A	A	A	A