ISOLAN® GI 34

Emulsifier for the formulation of cosmetic W/O creams

- Low usage concentration of 2.5 – 4.0 %
- Emulsifier for W/O creams with a brilliant appearance and pleasant application properties
- Formulations of W/O creams with and without paraffin oils
- Emulsions with good heat and freeze stability
- Liquid at room temperature
- Emulsifier composed of natural based raw materials

Personal Care

INCI name (CTFA name)

Polyglyceryl-4 Isostearate

Chemical and physical properties (not part of specifications)	
Form	liquid
Colour	yellow
HLB-value	approx. 5

Application

ISOLAN® GI 34 is a lipophilic isostearic acid ester of an optimized polyglycerol. The molecular structure of this emulsifier is similar to natural skin lipids. ISOLAN® GI 34 is noted for its good stability against oxidation.

- ISOLAN® GI 34 is suitable for the formulation of W/O creams.
- The amount used, referred to the emulsion, is 2.5 - 4.0 %.
- Depending on the formulation, it may be necessary to add consistency-providing or emulsion-stabilizing waxes. Amongst others, hydrogenated castor oil in combination with high-melting carbohydrate waxes or beeswax are suitable.
- The optimum range for the content of the oil phase is between 25 - 35 %.
- Substances which can be processed include not only paraffin oils, which from the emulsion-technological point of view provide relatively few problems, but also fatty acid esters of short- and long-chain alcohols.
  Also vegetable triglycerides which are known to be difficult to emulsify can be used, but their portion of the oil phase should not be more than one half.
  Paraffins generally have a positive influence on the stability of the emulsions. However, it is also possible to produce stable creams which do not contain any paraffins.
- As stabilizing additives, 2.0 - 5.0 % of glycerol and approx. 0.5 % of magnesium sulfate (heptahydrate) should be added to the water phase.
- Substances with specific properties, such as UV filters, plant extracts, moisturizers and antiperspirants, are well tolerated by the emulsion.
- Depending on the formulation, W/O creams based on ISOLAN® GI 34 are stable in a temperature range from -10 °C/ -25 °C up to +45 °C. It may be possible to achieve even better heat and freeze stability by incorporation of 0.3 - 0.5 % of the organosilicone emulsifier ABIL® EM 90.

Preparation

A pre-requisite is the careful adjustment of the formulation (phase ratio, viscosity of the oil phase) and optimum emulsification. The particle size for creams which are stable over a long period of time is below 1 µm. More coarsely dispersed emulsions tend to separate.

Thorough, but not too intensive homogenization is required. Extreme energy input frequently causes the formation of highly viscous, metastable secondary structures which break down on storage.

Optimum manufacturing conditions correspond to the principles of normal production processes for W/O emulsions. The water phase is incorporated slowly into the oil phase which contains the emulsifier while stirring intensively. The coarsely dispersed pre-emulsion is then homogenized. The final homogenization should be performed below 30 °C in order to ensure that the waxes are largely recrystallized.

The temperature programme is variable. In addition to the traditional hot/hot procedure (both phases 80 - 90 °C) the hot/cold procedure can be used.

The decisive criterion for production is the viscosity. Mechanical processing is discontinued when the viscosity is equal to that of the standard emulsion developed and tested in the laboratory.

Emulsifying machines

Stirring equipment or planetary mixers with high sheering force are very suitable for the manufacture of creams and lotions on the laboratory and production scale, provided that they guarantee uniform work-up of the emulsion. Machines predominately used in the cosmetic industry, which are equipped with stirrer, stripper and rotor-stator homogenizer, fulfil all requirements for optimum emulsification. However, utilization of their maximum capacity may result in over-emulsification. High-pressure emulsifiers may cause problems because of the danger of over-emulsification and liberation of water due to cavitation.

Recommended usage concentration

2.5 - 4.0 %

Packaging

760 kg pallet (4 x 190 kg)

Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport and for dangerous substances
- protective measures for storage and handling
- measures in case of accidents and fires
- toxicity and ecological effects

is given in our material safety data sheets.

Guide Line Formulations

W/O Cream F 17/96	
Phase A	
ISOLAN® GI 34	4.0 %
Beeswax	1.5 %
Hydrogenated Castor Oil	1.5 %
TEGOSOFT® OS	11.5 %
TEGOSOFT® CT	11.5 %
Phase B	
Glycerin	3.0 %
Magnesium Sulfate Heptahydrate	0.5 %
Water	66.5 %
Preservative, Perfume	q.s.

W/O Cream F 25/96	
Phase A	
ISOLAN® GI 34	1.5 %
ABIL® EM 90	1.0 %
Hydrogenated Castor Oil	0.8 %
Microcrystalline Wax[1]	1.2 %
TEGOSOF® OP	11.0 %
TEGOSOFT® DO	10.5 %
Phase B	
Glycerin	3.0 %
Magnesium Sulfate Heptahydrate	0.6 %
Water	70.4 %
Preservative, Perfume	q.s.

W/O Sun Protection Cream BK 33/94	
Phase A	
ABIL® EM 90	2.0 %
ISOLAN® GI 34	2.0 %
TEGOSOFT® DO	8.0 %
TEGOSOFT® OP	7.0 %
Hydrogenated Castor Oil	0.8 %
Microcrystalline Wax[1)]	1.2 %
Octyl Methoxycinnamate	5.0 %
Butyl Methoxydibenzoylmethane	2.0 %
Phase B	
Sodium Chloride	0.8 %
Water	71.2 %
Preservative, Perfume	q.s.

W/O Sun Protection Cream with Zinc Oxide F 22/96	
Phase A	
ISOLAN® GI 34	3.0 %
Mineral Oil (30 mPas)	12.0 %
TEGOSOFT® CT	12.0 %
Hydrogenated Castor Oil	0.8 %
Microcrystalline Wax[1)]	1.2 %
Octyl Methoxycinnamate	5.0 %
Isostearic Acid	1.0 %
Phase B	
Zinc Oxide	5.0 %
Phase C	
Glycerin	3.0 %
Magnesium Sulfate Heptahydrate	0.5 %
Water	56.5 %
Preservative, Perfume	q.s.

[1)]e. g. Paracera W 80, Paramelt B. V.

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