

OLIVEM 900 is a very versatile multifunctional ingredient, recommended not only as W/O emulsifier, but also as a functional lipid in the siliconic cosmetics, where interfacial interactions may easily cause formulation and manufacturing problems. Siliconic emulsions have a very shiny surface a fresh feel and leave on the skin a very pleasant feel of lightness even containing a high amount of siliconic phases at low volatility.

CHARACTERISTICS

INCI NAME: SORBITAN OLIVATE
FORM: WAXY SOLID
MELTING POINT: 65 - 75°C

- emulsifier of natural origin
- low use level (1-2%) in siliconic emulsion, performing stabilizing properties
- viscosity stabilizer
- compatibility with a wide range of siliconic emulsifiers
- improvement of sensorial characteristics and after use feel
- effective dispersant for powders and pigments
- improvement of spreadability and texture

MANUFACTURING METHOD OF SILICONIC EMULSIONS CONTAINING OLIVEM 900

OLIVEM 900 in siliconic emulsions excludes the possibility of cold manufacturing, in fact it is necessary to melt it, around 70°C.

It is suggested to combine OLIVEM 900 and low volatile siliconic oils with high molecular weight (dimethicone preferably) with powders and pigments to be included in the formulation, to reach homogeneity of this blend by heating, and finally add the resting amount of silicones, mixing to homogeneity.

Add watery phase (complete with moisturisers, and water soluble active ingredients) using a high speed stirrer (anchor shaped).

When emulsion is complete, homogenize the system in order to reduce the particle size and granting a longer stability.

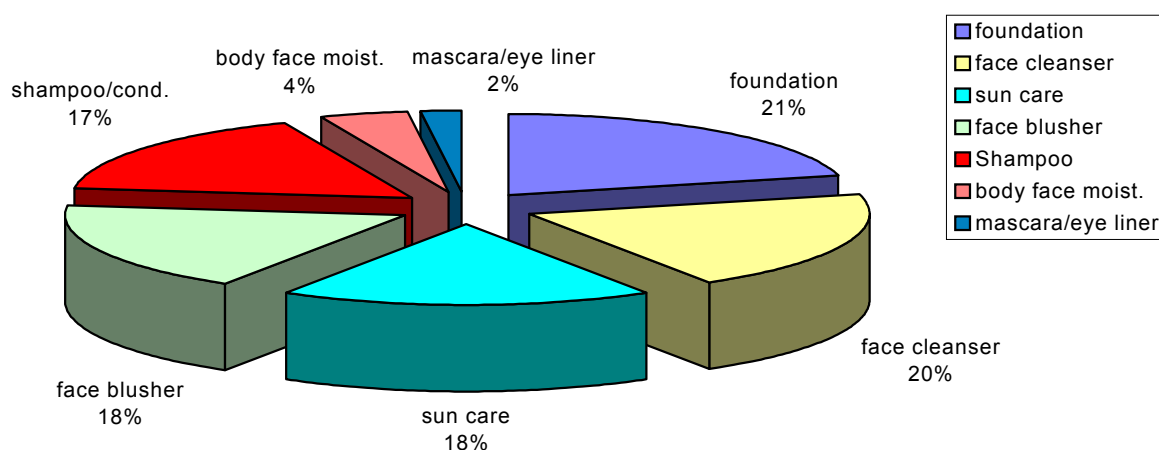
SILICONIC EMULSIONS

The choice to employ formulations containing high quantities of silicones is due to the market request for **OIL FREE products: greasy products but with a silky touch, easy and light to smear but still rich and nourishing.**

The versatility of silconic emulsions and the broad viscosity range, that may easily be modified, has determined their success and popularity on the market of protective and waterproof emulsions.

The portions of the market where OIL FREE products are more present are: foundation (10.4%), make up removers (10.1%) and sun protecting factors (9.6%).

The following chart shows the analysis of Personal Care products sold in the United States in 1991. While in 1990 only 19 products out of 443 where silconic emulsions (4.2%), in 1991 the amount increases to 6.8%, with 33 silconic emulsions out of 484 products. This trend of silconic emulsions is still growing even is the request of more natural products is also becoming important.



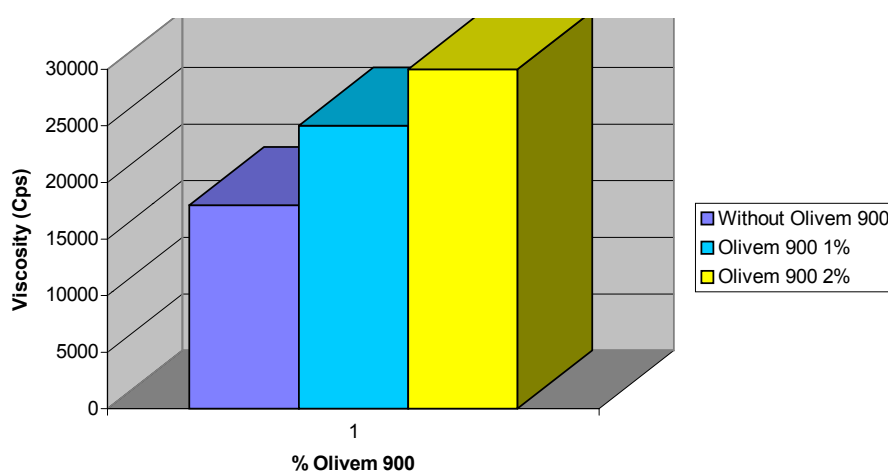
The presence of an OLIVE OIL DERIVED in an emulsion which is completely based on silicons makes W/Si emulsions more pleasant in the trend of a natural derived cosmetic required by the final user.

OLIVEM 900 is an important viscosizing agent compared to AMS-C30 or paraffinic waxes, and it also performs stabilisation by increasing rigidity and plasticity features of the emulsion containing pigments and iron oxides commonly employed in color cosmetics.

As reported in this chart, silconic formulations are becoming more and more important in the cosmetic market: in fact, as we can see, several different formulations may be based on silicons.

VISCOSITY INCREASE

Viscosity has been measured on samples of the emulsion ref. 1/100600 (W/S Foundation Sunscreen Base) three days after the preparation, in order to avoid the natural viscosity variations characteristics of W/S systems. The use of OLIVEM 900 sensitively increases the viscosity of the system without changing its organoleptic characteristics and the skin feel, and allowing the evaluation of the emulsion also just after it has been



produced. In fact the silconic emulsion without OLIVEM 900 needs some time for settlement (typical of this kind of systems), and it has been evaluated three days after the manufacture, while the addition of OLIVEM 900 allows the measure of viscosity at the end of the preparation, lowering the manufacturing times.

The stability to centrifugation essay is also greatly increased by OLIVEM 900, and this trial may also be done right after the emulsion was prepared.

The recommended concentration where OLIVEM 900 improves the characteristics of silconic systems is around 2%, while between 1 and 2% it may be employed as **viscosity enhancer and stabilizer**.

Viscosity was tested on a 100 g sample of emulsion at 25±1°C using a viscometer Brookfield model RV TDV II at 20 rpm (tiring device n. 5).

One measure was taken just after the preparation, and following another measure was taken three days later. The maintenance of the same viscosity in a structure is a sign of stability during the time.

STABILITY TEST

30 ml samples of the emulsions have been stored at different temperatures, in order to observe an acceleration of the termic degradation process. The stability and the organoleptic characteristics of the samples has been observed at 40°C, 50°C, 4°C, room temperature with light exposure.

These test give quite a good prediction of the system's behaviour, and samples are considered "compliant to stability tests" (stability test passed) if there is no separation of phases, color or odor modification, unusual viscosity variations.

These trials have been made on emulsions (at time 0) and after 3 months by centrifuge (centrifuge model ALC 4222) at 5000 rpm for 30 minutes. By increasing the rotations per minute the droplets of the emulsion may more easily cause coalescence induced by the destruction of the electrostatic barriers of emulsifiers and stabilizing agents. The test is passed is phases remain homogeneous.

Requested characteristics in order to define acceptable quality are:

- pleasant aspect and perfume
- appreciable skin feel
- pleasant sensation while smearing the cream
- pleasant after feel
- hydrating and emollient properties as requested

SENSORIAL EVALUTION OF EMULSIONS CONTAINING OLIVEM 900

The sensorial evaluation has been done on a panel of 10 people trained to compare the different sensorial characteristics of Personal Care and Skin Care products.

They have been requested to evaluate two different formulations, one of the two having OLIVEM 900 in the formulation. The aim was to evaluate the different characteristics of the emulsion containing OLIVEM 900.

The maximum score for each characteristic is 10.

ABSORPTION SPEED: a light improvement of this characteristic with a lower sticky after feel.

SPREADABILITY: increase remarked

COLOR: OLIVEM 900 has whitening properties toward the emulsion

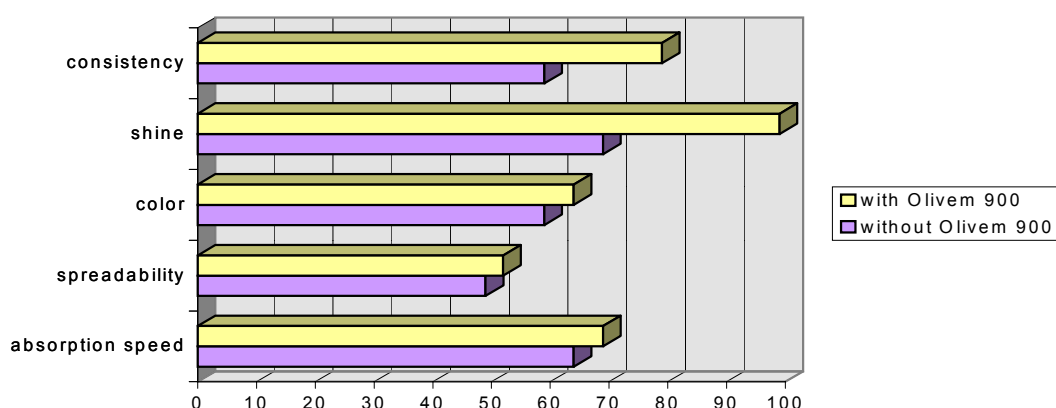
SHINE: shine has remarkably increased

CONSISTENCY: OLIVEM 900 improves the structure of the system without affecting its appearance.

SENSORIAL EVALUATION:

The reported data underline the performances of OLIVEM 900 in silconic emulsions, and the improvements that from this addition derive:

- presence of a natural derived ingredient, as a plus
- stability improvement and viscosity optimization



- improvement of some sensorial characteristics
- low levels of use

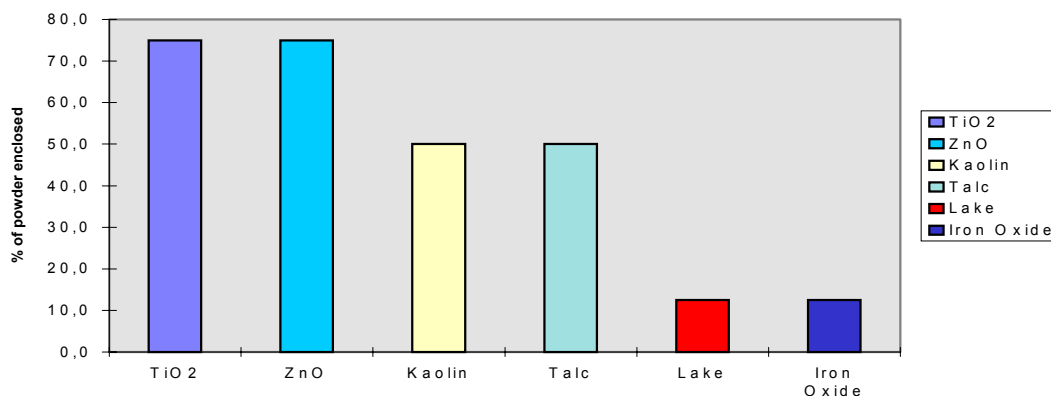
OLIVEM 900 offers to the formulator an interesting ingredient allowing to improve his product by satisfying the requests of using raw materials of natural origin, very important for the final user. The versatility of OLIVEM 900 (SORBITAN OLIVATE) and its characteristics of absorption make it recommended to be employed in sun care products, make up bases and all other topic products based on silicons.

POWDER DISPERSION

OLIVEM 900, thanks to its properties due to its structure, is very helpful in making powder dispersions homogeneous. In fact it is very effective in making the microgranules of the powders being wetted by the formulation, and this improves the homogeneity of the formulation. This characteristic is even more important since it is applicable to powders of any kind: talc, kaolin, zinc oxide, titanium dioxide, and even colored iron pigments and lakes.

This characteristic in skin care is very important in particular for sun screens, because the homogeneous dispersion of the physical filter grants a safe protection for the skin towards the aggression of Uvs.

The gel created with the following formula: OLIVEM 900 (10%) and Mineral Oil (90%), has shown the property to enclose a very high amount of any kind of powders, as shown by the following chart:



It is also very interesting to remark that the powder dispersant properties which we have mentioned are still maintained also in silconic emulsions: in fact the following formulation is based on the comparison with the product without OLIVEM 900.

		A	B
<i>Protective Cream with Zinc Oxide</i>			
A.1	Preserved Water	up to 100	up to 100
2	Sodium Chloride	1.0%	1.0%
3	Glycerin	10.0%	10.0%
B.1	OLIVEM 900	5.0%	
2	Cyclopentasiloxane and Dimethicone Copolyol	10.0%	10.0%
3	Cyclomethicone	6.0%	6.0%
4	Zinc Oxide	4.0%	4.0%
5	Dimethicone	2.0%	2.0%
6	Perfume	as needed	as needed

The emulsion A has a very good viscosity, very shiny and zinc oxide is very well dispersed, compared to the emulsion B which is less viscous, less shiny and zinc oxide is not properly dispersed. The manufacturing method is the same.

CONCLUSIONS

OLIVEM 900 is compatible with all the silconic ingredients testes, both silicon oils and silconic emulsifiers. When included in silconic emulsions, it improves the viscosity of the system without changing its organoleptic characteristics. The skin feel improves as well, thanks to the high compliance of OLIVEM 900 with our skin (see sensorial evaluation results).

The addition of a natural derivative in siliconic emulsions is also a strong marketing claim of a more natural and safe cosmetic. Powder dispersions are also improved by the presence of this ingredient.

FORMULATIONS

The following formulations are here indicated in order to give general directions for the employment of OLIVEM 900. Although they have been realised according to the best information we owe, this does not exonerate the user from verifying their validity. B&T Technical Assistance is at the user's disposal in order to contribute to the development of new formulations, and to give the needful information for a correct use of our products.

W/S Foundation Sunscreen Base (ref. 1/100600)

A.1	Demineralized Water	up to 100
2	Sodium Chloride	1.0%
B.1	OLIVEM 900	2.0%
2	Cyclomethicone and Dimethiconol	5.0%
3	Cyclopentasiloxane and Dimethicone Copolyol	10.0%
4	Cyclomethicone	8.0%
5	TiO ₂	10.0%
6	Octyl Metoxycinnamate	as required
7	Perfume	as needed

Protective Cream with Zinc Oxide

A.1	Demineralized Water	up to 100
2	Sodium Chloride	1.0%
3	Glycerin	10.0%
B.1	OLIVEM 900	5.0%
2	Cyclopentasiloxane and Dimethicone Copolyol	10.0%
3	Cyclomethicone	6.0%
4	Zinc Oxide	4.0%
5	Dimethicone	2.0%
6	Perfume	as needed

Tapioca Hydrating Lotion

A.1	Cyclopentasiloxane and Dimethicone Copolyol	12.0%
2	Cyclopentasiloxane and Dimethiconol	10.0%
3	OLIVEM 900	2.0%
4	Tapioca	2.0%
5	Cyclomethicone	10.0%
B.1	Glycerin	25.0%
2	Lactic Acid	1.0%
3	Preserved Water	40.0%
C.1	Perfume and Color	as needed

Rice Starch Comparative Emulsions

A.1	Demineralized Water	up to 100	up to 100
2	Sodium Chloride	2.0%	2.0%
3	Glycerin	3.0%	3.0%
B.1	OLIVEM 900	2.0%	-
2	Cyclopentasiloxane and Dimethicone Copolyol	10.0%	10.0%
3	Cyclomethicone	5.5%	5.5%
4	Rice Starch	3.5%	3.5%
5	Avocado Oil	1.0%	1.0%
6	Joboba Oil	1.0%	1.0%
7	Shea Butter	1.0%	1.0%
8	Phytosqualane	1.0%	1.0%
9	Perfume	as needed	as needed

Barrier Comparative Cream

A.1	Preserved Water	up to 100	up to 100
2	Sodium Chloride	2.0%	2.0%
B.1	OLIVEM 900	2.0%	-
2	Laurylmethicone Copolyol	2.0%	2.0%
3	Cyclomethicone	10.0%	10.0%
4	Paraffinum Liquidum	7.0%	7.0%
5	Dimethicone	0.5%	0.5%
6	Perfume	as needed	as needed

Mild Cleanser

A.1	Demineralized Water	up to 100
2	Sodium Chloride	1.0%
3	EUROL BT	0.1%
4	Propylene Glycol	26.0%
B.1	OLIVEM 900	2.0%
2	Cyclomethicone	25.0%
3	Cyclopentasiloxane and Dimethicone Copolyol	12.0%
4	Perfume	as needed

OLIVEM®900

IN SILICONICS APPLICATIONS
INCI:SORBITAN OLIVATE

TECHNICAL DATA SHEET

PRODUCT AND COMPANY IDENTIFICATION

Trade Name	OLIVEM 900
Applications	non ionic, not ethoxylated emulsifying system derived from olive oil for W/O creams and lotions
INCI Name	SORBITAN OLIVATE
CAS Number	92202-01-2
EINECS Number	2960335
Legislative	world-wide
Approval	
Company	B & T Srl - Via O. da Tresseno, 9 - 20127 MILAN - Italy Tel. 0039.02 26142044 - Fax 0039.02.26142060

SPECIFICATIONS

Form @ 20°C	flakes, waxy solid
Color	ivory
Odor	slight, characteristic
Active Substance%	99.0 min
Water Content %	< 1.0
Acid Value	10 - 30

SOLUBILITY

Soluble	in ethanol and xilol.
Dispersible	in warm water

TYPICAL VALUES

HLB	4.7
Saponification Value ...	160 - 190
Melting Point	65 - 75
Additives and preservatives	none

SHELF-LIFE

5 years stored unopened into original containers at a temperature between 5 and 3 following GMP guidelines

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