OLIVEM®300

INCI: OLIVE OIL PEG-7 ESTERS

In the range of derivatives from olive oil studied and produced by B&T, there is a watersoluble olive oil which has important peculiarities. Because of its chemical composition, it is easily soluble in water, in alcohol and in the major part of organic solvents, and it can therefore be employed in many cosmetic formulations for skin care and personal care. OLIVEM 300 is a watersoluble funcional lipid. The product is able to give strong emolliency and mildness to any formulation. It is added due to its origin from olive oil: in fact it contains quite a high amount of fats of natural origin that, deriving from olive oil, perform a particular and soft skin feel.

Thanks to its origin from olive oil, that among all natural oils is the most similar to human seboum, OLIVEM 300 performs a very high skin compatibility. This leads to a very strong emolliency power, together with a very safe action on our skin. Our skin, in fact, is somehow protected from delipidification due to aggressive cleansing by the rebuilding of the hydro-lipidic film of our skin, which is particularly high with OLIVEM 300 for it contains quite a high content of natural fats similar to the ones typical of our skin.

OLIVEM 300 is also soluble in many oils both of vegetal and mineral origin, it can be dispersed in liquid fatty alcohols and in synthetical esters from fatty acids. It is completely odourless, clear, pale yellow; its low acidity value makes it compatible even with the most delicate active principles.

The new important characteristics of OLIVEM 300 are:

- The **emollient and lubricant peculiarities** of olive oil promote an enriching effect which is very appreciated in shampoos, toiletries and personal care formulations, leaving a peculiar after use feel on the skin.
- **It reduces the irritating action** of the compounds of surfactant system.
- When enclosed in toiletries formulations, **it does not reduce the foaming activity** of the other surfactants.
- In shampoos, foam baths and toiletries, it usually reveals a thickening action, and **it does not reduce the viscosity of the formulations.**
- **It is endowed with a good solubilizing power**, which is much appreciated in order to disperse oil, perfumes and liposoluble active principles in lotions and toiletries. It may be employed to solubilize essential oils in foam bath formulations, or it may also be applied to make up removing products, because it has a stong solubilizing activity both on water based make up, and also on water resistant make up.
- Because of its **good skin and eye compliance**, it can be used as an oily compound that allows the absorption of lipophilic active principles in bath and massage formulations.
- It has **wetting and moisturizing properties**, such as in the formulations of

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- Carbomer gels it reduces stickyness and tackiness typical of the gelling agent, giving this gelly base a very pleasant touch (see formulations at the end of this bulletin).
- Its intermediate HLB value (11) makes of OLIVEM 300 a good **emulsifier or co-emulsifier in O/W systems**, especially in oil free products synergically with OLIVEM 700 (PEG-4 OLIVATE). In fact, if OLIVEM 700 is used as autoemulsifying system, as the only source of fats, OLIVEM 300 gives to this kind of oil free structure a very creamy and nice appearance, due to the common origin of both products from olive oil, performing a very high skin compliance.
- **It may be also easily included in soap bars**, where it performs a remarkable increase in the emolliency of the bar itself, lowering the aggressive action of the soap on our skin.
- It is also **recommended for bath oils**, thanks to its lubricant and enriching properties.

ADVANTAGES IN SKIN CARE FORMULATIONS

As we have remarked about the characteristics of OLIVEM 300, it is very important to observe how it may also be exploited as a **multifunctional ingredient**. In fact, due to its chemical structure, its emolliency and compatibility to our skin may also be used in O/W emulsions. In such emulsions, in fact, not only the nature of the emulsifier, but also the lipidic fraction is very important in order to ensure proper hydration, but no stickiness nor greasiness to our skin. For this reason, a lot of lipidic substances are often included into O/W emulsions to make the feel smoother and softer. OLIVEM 300, if employed in O/W emulsions, not only acts as a lipidic component extremely highly skin compliant due to its origin from olive, and to its high lipidic content, but also may be considered as a co emulsifier due to its double chemical nature, partly lipophilic and partly hydrophilic. In particular, we have also remarked an interesting sinergy with OLIVEM 700 (PEG-4 OLIVATE), a O/W emulsifier of the new generation of liquid crystals, containing an important lipophilic part from olive as well. A small addition of OLIVEM 300 to an emulsion containing OLIVEM 700 as emulsifier, in fact, shows a creamier appearance and an even higher skin compliance. The common origin from olive of these two products is probably playing an important role in improving the quality of the final products (see final section containing formulations for details).

ADVANTAGES IN PERSONAL CARE FORMULATIONS

In order to effectively prove what advantages a small addition of OLIVEM 300 may bring to a final formulation, the test on primary irritation on Red Blood Cell (alternative to Draize test for ocular irritation) has been made on two different samples of a baby shampoo: based on a commercial formulation, following the indication of the kind of surfactants enclosed:

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ORIGINAL FORMULATION		ADDITION OF OLIVEM 300
Cocoamide DEA……	replaced by……	**OLIVEM 300 (1 % active)**
Disodium Cocoamido Diacetate		Disodium Cocoamido Diacetate
SLS		SLS
Betaine		Betaine
APG……	replaced by……	OLIVEM 400 (3.6% active)

The test is based on the use of Red Blood Cell to quantify the adverse effect of surfactants on the cytoplamatic membrane (hemolysis), in combination with the damage of liberated cellular protein (denaturation). Various concentrations of the samples are incubated with a defined quantity of RBC suspension. At the end of incubation, the resulting supernatant is monitored to evaluate the ability of the samples to induce hemolysis or denaturation. The result, known as L/D ratio, is then calculated.
In order to have a general idea of this index for commercial formulations, the same test was done on a very popular baby shampoo used as a reference.

PRODUCT	L/D RATIO	LEGENDA	
Original Formulation	37.8	Not irritant >100	Irritant >0.1
Addition of OLIVEM 300	66	Very slightly irritant >10	Very irritant <0.1
Reference	53.9	Moderately irritant >1	

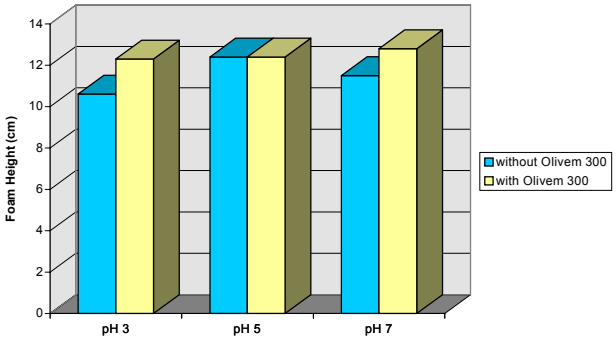
In the adopted conditions, all the samples belong to the group of 'very slighly irritant' substances, but going through the values of L/D ratio obtained, the addition of OLIVEM 300 gives a value much closer to the NON IRRITANT value. A small addition of OLIVEM 300 in the formulation (without affecting the amount of the active substance involved) increases mildness in a sensitive and measurable way. We also have to remark that the surfactants replaced by OLIVEM 300 and OLIVEM 400 (Cocoamide DEA and APG respectively) are already considered very mild.

FOAMING ACTIVITY

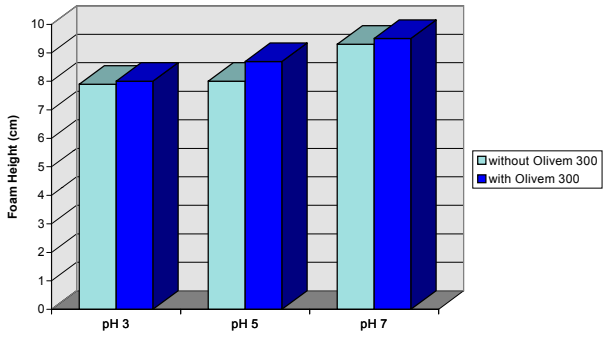
OLIVEM 300, in opposition to most of the similar products used in toiletries, **absolutely does not affect the foaming activity** of the most commonly used

surfactants. It can be enclosed in shampoos, foam baths and toiletries without reducing neither the foaming activity, nor the viscosity of the formulation.
On the contrary, its strong sinergical action with OLIVEM 400 (SODIUM PEG-7 CARBOXYLATE), creates a foam even higher, as remarked in the following graphic. Solutions containing 10% active washing substance are compared with the same diluition containing an additional 2% of OLIVEM 300.
The method to determine foam height is according to Ross&Miles procedure. A wide pH range has been evaluated, as remarked, and the foaming activity of the surfactant system (OLIVEM 400 in the following chart) is enhanced by the presence of OLIVEM 300. Quality of the foam is also remarkable, since it is extremely creamy, small bubbled and long lasting.

Influence of Foam Height of OLIVEM 300
OLIVEM 400



Cocoamide DEA



The same behaviour with the foam observed with OLIVEM 400 has been observed with Cocoamide DEA. Again, active washing substance was 10% in the sample without OLIVEM 300, and the evaluation has been done with the Ross&Miles method at different pH values.

VISCOSITY

On the contrary of many other emollients, **OLIVEM 300 does not reduce the viscosity** in formulations. Besides, OLIVEM 300 increases the viscosity in formulations where the surfactant system is composed by a carboxylate alkylether, both as a primary or as a secondary surfactant. In fact, the new trend is now directed towards the increasing use of carboxylates and other non ionic products instead of anionic sulphate and solfonate surfactants. Important is the association with OLIVEM 400, (SODIUM PEG-7 OLIVE OIL CARBOXYLATE), that is a carboxylate surfactant in which the fat portion derives from olive oil, and has therefore many chemical affinities with OLIVEM 300. The reason why the synergy between OLIVEM 300 and OLIVEM 400 is particularly remarkable is that these two

product contain the same natural fatty base from olive oil, and the two together create extremely mild products with a very high skin compliance.

SAFETY AND NO TOXICITY

Skin irritation has been tested both on human volunteers (Schwartz's PATCH TEST) and *in vitro* (Red Blood Cell Test). OLIVEM 300, such as all B&T products, has not been tested on animals, according to the new trend of cosmetic products. Considering the chemical similarity of OLIVEM 300 with some compounds that have been largely tested in the past, the existing data for chemical analogues allow to define **OLIVEM 300 as NOT IRRITANT and NOT TOXIC.**

- **PATCH TEST: OLIVEM 300**

  The primary irritation test has been made using OLIVEM 300 as it is, pure product. The test requires the application of an occlusive patch on the skin of the back on 20 adult healthy volunteers, and it is left there 48 hours. At the end of this period, the patch is removed and the conditions of the skin are evaluated after 15 minutes and after 24 hours from removing. Irritation Index was 0.05 after 15 minutes, and 0.05 after 24 hours. This allow us to define the product as NOT IRRITANT.

  Legenda:

Index	Classification	Index	Classification
< 0.5	not irritant	2.1 - 5.0	moderately irritant
0.5 - 2.0	slightly irritant	5.1 - 8.0	strongly irritant

It is very interesting to remark that for similar product usually the patch test employes surfactant in diluition not to run the risk of causing too much irritancy, while the patch test on OLIVEM 300 has been done on pure product, 100%. The very low Irritation Index (none of the pannelists tested has developed some irritation), is therefore even more meaningful.

BIODEGRADABILITY

The determination of biodegradability has been made according to the CEE Regulation N. 82/242. The results are satisfying: OLIVEM 300 is biodegradable over 90%.

FORMULATIONS

The following formulation are here indicated in order to give general directions for the employment of **OLIVEM 300**. Although they have been realized 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 .

	Cleansing Water	
A.1	Demineralized Water	up to 100
2	NaH_2PO_4	1.73%
3	K_2HPO_4	0.25%
4	Honey Cerestar	1.00%
5	**OLIVEM 300**	2.00%
6	Hamamelis Distilled Water	1.00%
7	EDTA	0.15%
8	Polyaminopropyl Biguanide	0.40%
B.1	SOL HCO 40	0.80%
2	Tween 20	0.30%
3	Perfume	0.07%

	Bath Oil	
A.1	Zetesol 100	30.0%
2	Papaja Glycolic Extract	0.1%
3	Paraffinum Liquidum	57.0%
4	Hazelnut Oil	3.0%
5	**OLIVEM 300**	10.0%
6	Aperoxid TLA	0.05%
7	Perfume	as needed

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Perlescent Shower Gel

A.1	Preserved Water	up to 100
2	SLES 70	25.0%
3	**OLIVEM 300**	2.0%
4	OLIVEM 400	17.0%
5	PEG 6000	1.7%
6	Latex	0.6%
7	Perfume	as needed

2 in 1 Shampoo

A.1	SLES 70	15.0%
2	Alchem	1.0%
3	OLIVEM 400	10.0%
4	**OLIVEM 300**	2.0%
5	Cocoamidopropyl Betaine	1.0%
6	Perfume	2.0%
B.1	Demineralized Water	up to 100
2	Polyquaternium-10	0.2%
3	Dimethicone Copolyol	0.2%
4	Kathon CG	0.05%
C.1	NaCl	

Transparent Bar Soap

A.1	Sodium Stearate	8.0%
2	Propylene Glycol	57.0%
3	**OLIVEM 300**	0.5%
4	OLIVEM 400	25.0%
5	SLES 70	10.0%
6	Perfume	0.1%
7	Color	as needed

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Refreshing Aftersun Moisturizer

A.1	Demineralized Water	up to 100
2	Carbopol ETD 2020	0.40%
B.1	**OLIVEM 300**	3.0%
2	Solution 10% Menthol in Propylen Glycol	1.0%
3	EUROL BT	0.24%
4	Glycerin	0.5%
5	Hydroserum Stabilized	10.0%
6	Blue 040-620/ Yellow 040-600	as needed
7	Preservatives	as needed
8	Perfume	as needed
9	NaOH	as needed

Mild Cleanser

A.1	Demineralized Water	up to 100
2	NaCl	1.0%
3	EUROL BT	0.1%
4	Propylene Glycol	26.0%
B.1	**OLIVEM 300**	5.0%
2	Dow Corning 245	25.0%
3	Dow Corning 5225	12.0%
4	Perfume	as needed

Foam Bath

A.1	Demineralized Water	up to 100
2	Bronopol	0.02%
3	Glycerin	1.00%
B.1	SLES 70%	20.00%
2	Cocoamide DEA	3.00%
3	OLIVEM 400	15.00%
4	**OLIVEM 300**	2.00%
C.1	Perfume (Lavender Essential Oil)	1.00%
2	BHT	0.01%
3	NaCl	0.50%
4	Blue No. 1	as needed
5	Red No. 3	as needed

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After Shampoo Hair treatment

A.1	OLIVEM 700	5.0%
2	Dimethicone	4.0%
B.1	**OLIVEM 300**	3.0%
2	Poliquaternium-7	4.0%
3	Glycerin	1.0%
4	Demineralized water	up to 100
5	Flocare ET 100	0.8%
6	Preservatives	as needed
7	Perfume	as needed

Siliconic Hair Conditioner

A.1	Demineralized Water	up to 100
2	NaCl	1.0%
3	Panthenol	0.1%
4	Glycerin	20.0%
5	**OLIVEM 300**	4.0%
B.1	Dow Corning 5225	15.0%
2	Dow Corning 245	16.0%
7	Perfume	0.1%

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TECHNICAL DATA SHEET

01. PRODUCT AND COMPANY IDENTIFICATION

Trade name…….	**OLIVEM 300**
Applications……	non ionic surface active ingredient derived from olive oil with emollient, solubilising and co-emulsifying properties. To be used in shampoos, toiletries and creams.
INCI Name……..	OLIVE OIL PEG-7 ESTERS
CAS Number……	226708-41-4
EINECS……	Not Applicable: polymer
Legislative Approval……	world-wide
Company……..	B & T Srl - Via O. da Tresseno, 9 - 20127 MILAN - Italy Tel. 0039.02.26142044 - Fax 0039.02.26142060

02. SPECIFICATIONS

Form @ 20°C……	clear liquid
Odor……	slight, characteristic
Color (Gardner)…..	4 max
pH sol. 5 %……	5 - 7
Viscosity @ 25°C…..	170 - 250 cPoise
Acid value……	3.0 max.

03. SOLUBILITY

Soluble……	in water and alcohols
Dispersible……	in vegetal and mineral oil

04. TYPICAL VALUES

Active Substance %.	99.0 min.
Water Content%….	1.0 max.
HLB……	11
Saponification value…….	70 - 100
Additives and preservatives.	none

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05. SHELF-LIFE

3 years stored unopened into original containers at a temperature between 5 and 35°C following GMP guidelines.

Revision : 4.11.2002

The information contained in this bulletin to the best of our knowledge is currently true and accurate. Any recommendations or suggestions are made without warranty or guarantee, since conditions of use and storage are beyond your control.

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