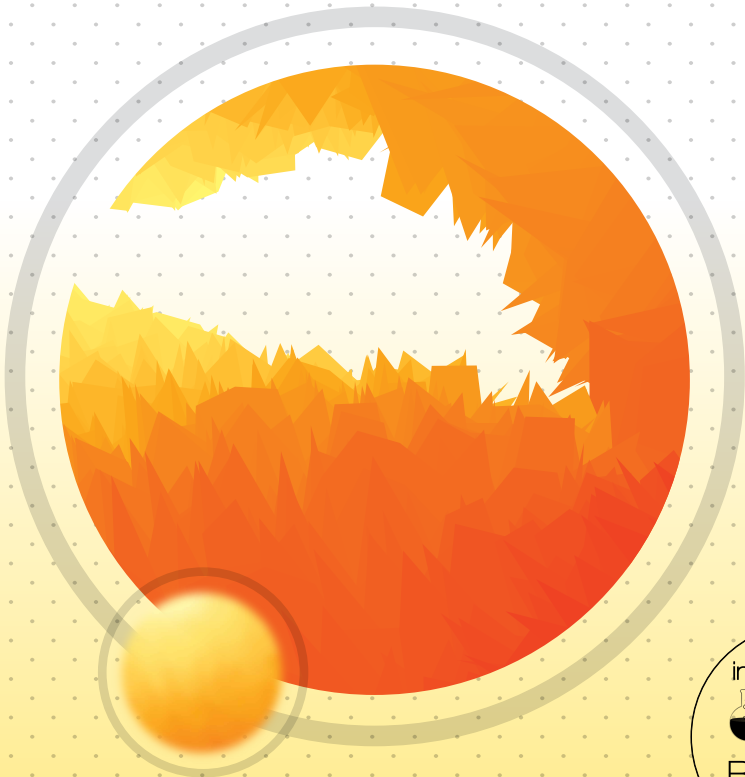


SUNCAPS[™]

Non-breakable and transparent
microcapsules containing UV filters,
ideal for all cosmetic formulations



Leader in Microencapsulation Technology



SUNCAPS™

Unbreakable and Transparent Encapsulated UV Filters Range

This range includes:

AvoCap™	encapsulated Avobenzone 56% payload and 14% of Octocrylene
OmcCap™	encapsulated Octyl Methoxycinnamate, 60% payload
HomCap™	encapsulated Homosalate, 60% payload
OctiCap™	encapsulated Octisalate 60% payload
ZinoCap™	encapsulated ZnO, 70% payload
TitanCap™	encapsulated TiO ₂ , 70% payload

Tagra's unique patented microencapsulation technology (US Patent Application No. 61/770,773) enables the manufacturing of unbreakable, transparent micron size microcapsules of organic and inorganic UV filters. This delivery system will:

- ° Prevent the UV filter leakage into the surrounding
- ° Retain the sunscreen on the superficial layers of the skin
- ° Improve safety profile - no risk of skin penetration and no skin irritation and/or photoallergy
- ° Enhance UV filters chemical and photostability
- ° Overcome incompatibilities between or among UV filters allowing new sunscreen combinations
- ° Prevent crystallization
- ° Enable UV filters dispersibility in water phase
- ° Prevent appearance of white residues caused by TiO₂ and ZnO
- ° Avoid need for UV filters solubilizers, therefore enabling light, aesthetic, gentle, smooth and non-greasy feel formulations

SunCaps™ microcapsules are made of a single layer Cellulose based polymer shell which provides optimal isolation of the UV filter and prevents its degradation while improving its UV protection profile (Figure.1 and Table.1).

SUNCAPS™ SIGNIFICANTLY INCREASE UV FILTERS PHOTOSTABILITY AND OVERCOME INCOMPATIBILITIES

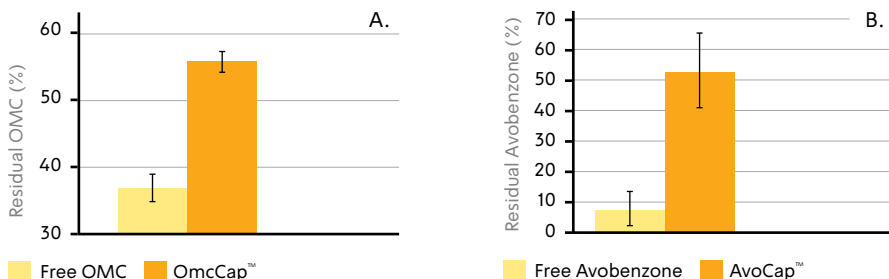


Figure.1. A. OmcCap™ significantly improves OMC stability in presence of 3% free Avobenzone within same formulation compared to free OMC. **B.** Avocap™ increases Avobenzone photostability compared to free Avobenzone following 4 hours exposure to direct sunlight.

SUNCAPS™ SIGNIFICANTLY IMPROVE UV FILTERS PROTECTION PROFILE

	SPF	Filter Efficiency (SPF / %UV filter)	UVA PF	UVA PF/SPF (EC Recommendation > 0.33)	Erythema UVA PF
Avocap™ (Tested Values)	7.9±0.82	2.11	18.23±1.73	2.31	13.61±0.98
Theoretical Values **	4.3	1.12	6.7	1.55	----
OmcCap™	8.10±0.41	2.70	2.47±0.22	0.31	2.10±0.11
Theoretical Values **	5.5	1.84	1.3	0.23	----

Table.1. Avocap™ and OmcCap™ protection profiles were evaluated using In-Vitro SPF measurements in “base formulation”. Avocap™ formulation contained final avobenzone concentration of 3%. OmcCap™ formulation contained final OMC concentration of 3%.

**** Theoretical Values are calculated based on BASF sunscreen simulator.**

FORMULATING WITH SUNCAPS™

SunCaps™ products appear in a free flowing powder form which exhibit average particle size of 10-20 µm, therefore are very easy to handle and formulate with. SunCaps™ products are compatible with all types of formulations and should be added at the last step of the formulation preparation using either low or high sheer mixing.

Tagra's Sun Protection Cream, (UVA+UVB)

Claims

- Improved UV protection profile
- No need for UV filters solubilizers such as C12-C15 Alkyl Benzoate
- Soft and comfortable skin feel
- Non-greasy sensory benefit

	Raw Material	Composition	% w/w	Supplier
Phase A	Polyaldo 10-2-P	Polyglyceryl-10 Dipalmitate	5.00	Lonza
	Ronacare AP	Bis-Ethylhexyl Hydroxydimethoxy Benzyl-malonate	1.00	Merck
	Cremer Vero Shea Butter	Butyrospermum Parkii (Shea Butter)	1.00	Cremer
	Nikkol DID	Propanediol Dicaprylate	4.00	Nikko
	CremerCoor MCT™ 60/40	Caprylic/capric triglyceride	4.00	Cremer
	Dermofeel™ Sensolv	Isoamyl Laurate	4.00	Dr. Straetmans
	Crodamol AB	C12-15 Alkyl Benzoate	4.00	Croda
Phase B	Verstatil PC	Phenoxyethanol, Caprylyl Glycol	1.00	Dr. Straetmans
	Water	Aqua	Add to 100.00	
	Rhodicare T	Xanthan Gum	0.30	Solvay
	Titriplex III	Disodium EDTA Dihydrate	0.10	Merck
Phase C	Glycerin	Glycerin	4.00	Cremer
	AvoCap™	Avobenzene, Octocrylene; Cellulose Acetate	5.4	Tagra
	OmcCap™	Octyl Methoxycinnamate; Cellulose Acetate	12.5	Tagra
	TitanCap™	Titanium Dioxide	5.0	Tagra

Procedure

- Heat Phase A and Phase B up to 70°C
- Add Phase A to Phase B and homogenize
- At 40°C homogenize again
- Adjust to pH: 6
- When temperature reaches about 40°C add phase C ingredients gradually to the emulsion while using continuous low shear mixing (~100 -150 RPM) for 15-25 min

Product Characteristics

In -Vivo SPF test :

- SPF=20
- UVA/UVB=0.864
- Critical Wavelength: Broad spectrum
- Boots star rating: Superior-Ultra
- **Stability:** 45°C for 8 weeks
- **Preservative efficacy test:** done

Contact the Tagra team to get more information at: info@tagra.com