

# HelioNews

CELEBRATING  
ORIGINAL  
SPECIAL REPUBLICATION  
15 years 1999-2014

News about In Vitro Sun Protection Testing by



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IR and sun protection

The surface treatment of oxides of Ti and Zn (2 parts)



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### Updated version

Few modifications have been performed (highlighted with \*) in order to avoid misleading in comparison with original version in French

## In Vivo / In Vitro : a wedding of convenience...

Europe launched the tone in its directive (C/2006/647/CE) recently confirmed. The In Vitro tests: «**preference should be given to in vitro testing methods**». Colipa has proposed in stride the first method that ensures UVA protection by means of In Vitro method...

If we also take into account the requirement to assess the critical wavelength (CW), in vitro methods becoming unavoidable! But in vivo methods, especially the SPF, do nevertheless remain valid. So the question arises of who entrust their tests ...

Faced with this new situation, and strong collaboration of several years, DermScan and Helioscreen® laboratories have decided to enhance relationship by providing two original packs. **In Vivo SPF + In Vitro UVA** and everything you need for selling products on the European market: **In Vivo SPF + In Vitro UVA + CW**.

Remember that in principle, the new Colipa method involves a correction factor calculated from the known value of SPF in vivo, that allows to correct the absorbance values measured through

the product spread on its support.

Then we understand that for measuring the In Vitro UVA protection, the In Vivo SPF assessment is required and irradiation step adjusted in order to take into consideration the photostability of the product.

The results show, by Colipa, a great correlation with those obtained by In Vivo PPD method. The obvious advantage of this pack vivo / vitro is to perform all tests required for EU market in a single shot. The economic benefit is also not negligible!

Our desire to be a «SOLAR» actor could not exclude a permanent and regular monitoring, knowledge of trends in the market in order to adapt quickly or to influence events, we had to develop a specific tool for this technology intelligence.

We have decided to share this information with you now, to share our thoughts and even obtain yours. This is the goal of **HelioNews**.

D Lutz

## Editorial

It's going to be 10 years since the bet has been done that, one day, the in vitro tests in the field of solar protection would be recognized and finally accepted as a complementary tool to in vivo tests. The way was fraught with difficulties and lot of work has to be done in this field but we must recognize that the trend is unambiguous.

After several years of involvement in the improvement but also the acceptance of these methods, our laboratory has just passed a new step by deeply restructuring based on an international concept with the creation of the structure «HelioScreen Labs.».

With goals clearly shown with an ISO 9001 quality certification, an involvement in several innovative programs in order to remain a real source of proposals in the field of In Vitro test with fundamental events which will be announced in next months ...

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# Review of patents in solar

b1 - Patent EP1723944 by Dr. Streatmans Chemische Produktion GmbH published the 22/11/06 which described a new solubilizing agent of 3 filters: ethylhexyltriazone, butylmethoxydibenzoylmethane and the bis-phenol octyloxy methoxyphenyl triazine. This agent is glyceryl triheptanoate.

**Interest of this solubilizer for other sunscreens? (Ed)**

b3 - Patent EP1618927 by L'Oréal published the 25/01/06 and which describes a photoprotective composition, characterized by the fact that includes (a) at least one 1,3,5-triazine, and (b) at least one mixture consisting of: (i) at least one derivative arylalkyl benzoate, (ii) at least one oil containing in its structure at least one amide unit.

**This patent also highlights the need for good solubilization of UV filters. (Ed)**

b4 - Patent WO2006035007 by BEIERSDORF AG published the 06/04/06. The invention relates to a cosmetic preparation which is in the form of an aqueous preparation or an oil / water emulsion which contains a) inorganic particulate pigments protective UV filters having an average particle size ranging between 10 and 500 nm, and b) organic particulates pigments UV filters UV protective in a total amount of at least 5 wt%, based on the total weight of the preparation.

**This patent relates to the TiO<sub>2</sub> or ZnO mixed with Tinosorb M (CIBA). (Ed)**

b6 - Patent FR2873028 by L'Oréal published the 20/01/06, describes a photoprotective composition comprising, in a physiologically acceptable environment: a) at least one aqueous phase, b) at least hydrophilic metal oxide nanoparticles, c) at least one vinylpyrrolidone homopolymer.

**The polymer may have several actions: coating the particles (TiO<sub>2</sub> or ZnO), improve their fine dispersion and facilitate attachment of nanoparticles on the skin. (Ed)**

b8 - In a very similar patent FR2873020 published the same day (20/01/06) by L'Oréal describes a photoprotective composition comprising, in a physiologically acceptable environment: a) at least one aqueous phase b) at least one hydrophilic inorganic nanopigments based metal oxides, c) at least one polyalkylene glycol of less than 8000 g/mol molecular weight.

b10 - Patent EP1616840 by Shiseido published the 18/01/06 which relates to the use of a porous titanium oxide whose average particle size is between 1 and 50 nm and the specific surface area is particularly high (250 to 500 m<sup>2</sup> / g). A process for producing is described.

b11 - Patent WO2007059076 by DU PONT DE NEMOURS, published the 24/05/07 discloses a process for attaching an organic sunscreen to the skin through the use of peptide.

**Interesting process, influence of certain proteins? (Ed)**

b2 - Patent WO2007097304 by Shiseido published the 30/08/07. The invention relates to a sunscreen emulsion type water in oil characterized by the fact that contains (a) octocrylene 0.2 to 15 wt% cosmetic composition, (b) the zinc oxide subjected to a hydrophobing treatment (such as treatment with a coupling agent or a silane dextrin fatty acid) from 0.2 to 30 wt%, (c) a cationic surfactant and (d) silica.

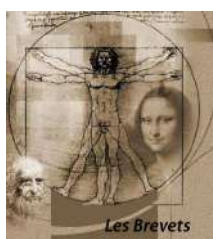
**The use of a cationic surfactant has probably a great interest to «paste» one or the UV filter (s) on the skin. (Ed)**

b5 - Patent FR2889447 by CNRS, university of Lyon and LVMH Recherche, published the 09/02/07 relates to the use of a composite material comprising: - nanoparticles of at least one metal derivative and at least one organic UV filter, chemically covalently bound to said nanoparticles, as a cosmetic agent for protection against UV radiation. It is conceivable to set an organic filter on a screen.

b7 - Patent EP1700825 by Degussa, titanium oxide manufacturer for solar applications, published the 13/09/06 and which discloses titanium dioxide mixed oxide, wherein the surface modified titanium dioxide and more particularly the mixture oxide - titanium oxide.

**It seems that some mixed oxide (TiO<sub>2</sub> or TiO<sub>2</sub> / oxydes iron / manganese oxide) and various surface treatments are patented (Ed)**

b9 - Patent WO2006086354 by TANNING RESEARCH LABORATORIES published the 17/08/06 relates to photostable compositions that provide protection against ultraviolet radiation. The invention particularly concerns sunscreen avobenzene, octocrylene, oxybenzone and forming a triple combination. The compositions of the invention are free of diesters or polyesters of naphthalene dicarboxylic acid, and essentially free of other.



## What happens in the solar...



27/08/07: American scientists are wondering about the safety of aluminum in solar products; application of a sunscreen product may result in the application of aluminum 200mg.

27/08/07: FDA proposes new rules for sunscreen products. Among them: the index of UVA protection, security warnings for the user of solar products, extending the maximum SPF 50+.

An article in the January 2007 Contact Dermatitis note of contact allergies with octyl salicylate. To be continued ...

Skin Pharmacology and Physiology in 2007 (6), the authors have shown on mice that the ingestion of certain carotenoid antioxidant, protecting the skin from sun damage skin.

An article in Skin Pharmacol Physiol 20 (3) May 2007 studied zinc oxide nano-fine penetration according to the technique of Franz cells. It was found that only 0.03% of the applied amount entered in keratinocytes which is negligible.

An article in Contact Dermatitis March 2007 reported a study of 3 years for allergies to sunscreens; it was shown that the Benzophenone-4 finished at the third place of allergies.

Since April 2007 a new reference book on solar is available, it is: The Encyclopedia of Ultraviolet Filters - Nadim Shaath, PhD - at Allured Publishing, 229 pages, price: \$ 109. This book describes in detail the UV filters allowed, giving physico-chemical characteristics of these filters as well as regulations in key countries.

# File of the month:



## UV index: Instructions

When we want to effectively use a sunscreen product it is necessary to know three indices:

- the sun protection factor of the product to be applied to the skin
- the phototype skin (from 1 to 6) that determines your sensitivity to the sun
- UV index or the place where you are and we will present this index

The UV Index is a forecast of the quality and intensity of UVB and UVA reaching the ground. This is a value between 1 and 15\*, a low value corresponding to a low amount of UV radiation reaching the ground.

The table below\* shows the relationship between the value of the UV index and sun protection that requires this value:

UV Index	UV radiation	Advice
1 to 2	Low	Sunglasses in case of sunny days.
3 to 5	Moderate	Cover up and wear a hat and sunglasses. Apply sunscreen medium protection index (SPF 15-29), especially for outdoor exposure for more than thirty minutes. Seek shade around midday when the sun is at its zenith.
6 to 7	High	Reduce exposure between 11 am and 4 pm. Apply sunscreen high protection index (SPF 30-50), wear a hat and sunglasses, and place in the shade.
8 to 10	Very high	Unprotected skin will be damaged and can burn. Sun exposure can be dangerous between 11 am and 16 pm; seeking shade is important. Are recommendable wearing long clothing, a hat and sunglasses and applying sunscreen of very high protection (SPF 50+).
11+	Extreme	Unprotected skin will be damaged and can burn in minutes. Exposure to the sun is dangerous, and in case of outdoor exposure must cover absolutely (hat, sunglasses, sunscreen application of very high protection index SPF 50+).

## What influences the UV index?

Several parameters are involved:

- Latitude: the closer you get to the equator, the higher the UV index increases.
- Time: the amount of UV is greatest between 11am and 4pm.
- The presence of clouds: these can reduce UV radiation by a factor of about 50% depending on the type of cloud. Warning, even in the presence of clouds, the UV radiation is always present.
- Altitude: it is considered that the amount of UV radiation doubles each 3000m.
- Ozone: ozone levels vary based on location, time and years.
- The ground reflection with knowledge that snow reflects more than 80% of solar radiation, water ~ 25%.
- The time of the year there is very little UV in winter in our latitudes.

Ultraviolet radiation and the INTERSUN Programme from the World Health Organization\*



## How do we calculate the UV index:

The UV irradiance, resulting from the calculation of which we discussed in the previous paragraph, a value expressed in W/m<sup>2</sup>. By convention, the UV index is the value obtained by multiplying the irradiance by 40, which leads to values between 1 and 15.

For a UV index of 12, the irradiance will be 0.3 W/m<sup>2</sup>. To see what is the impact on the skin, it must return to the concept of Minimum Erythema Dose (MED); reminder that this is the minimum UV dose that a person will receive for erythema or sunburn. In general, this dose is 100 J/m<sup>2</sup> for a person with sensitive skin and 250 J/m<sup>2</sup> for a person with «normal» skin.

Returning to our UV index of 12, in order to determine how long a person with «normal» skin will have a sunburn, the operation is as follows: 250/0.3 = 833 seconds is equal to 13 minutes (and 5 minutes for sensitive skin).

## How to get the UV Index?

Here are two websites\* where it is possible to obtain the value of the UV index according to the place:

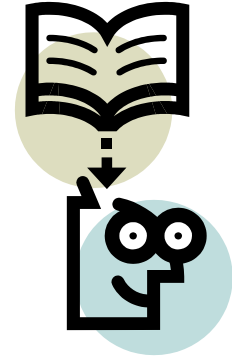
<http://www.uvawareness.com/>

<http://sunburnmap.com/>



# HelioNews

..... *Instructions*



**HelioNews will be distributed regularly to all customers**

Besides some items coming back systematically

- News from our laboratory.
- News on In Vitro evaluation and testing methods.
- News and trends in legislation, tests.
- Review of patents and summary report of events and conferences.
- Technological intelligence: Raw materials / New products etc ...

We will develop a thematic issue in the field of solar and we will answer all questions and queries that you will submit in a topic «forum».

However, we are at your disposal for each subject developed a comprehensive document, an entire article or almost non-exhaustive report of an event or conference.

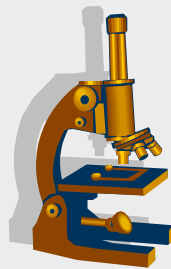
This additional service, which combined with the general issue but brief review developed in HelioNews therefore allow you to make a real technological intelligence allowing you to access more comprehensive or customized study or bibliographic research on one or more specific topics information .

You can also access a personalized advisory service in terms of orientation formulation, general advice on legislation solar matter for the placing on the market of your products, specific market research for finished products To use this new service, please ask for our special brochure detailing the specific conditions of access to these services by allowing you to set up technological intelligence that you do not always have the time or the resources to organize and take specialist advice solar questions.

For further information and receipt of this information, thank you to send us an email with contact details at the following address:

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## Technological intelligence...



### 1 - Information about raw materials:

- Pentapharm and watermelon as protector of the DNA of keratinocytes.
- Solarchem launched an anti-aging cream with a mixture of six peptides.
- Aqua Tan sunless tanning products (USA) operate formulas with water from Lourdes.
- DSM proposes a product (Parsol Guard) to protect the colored products packaged in blister pack
- Vevy offers the Daucoil ®, oily carrot extract as an emollient.
- Baerlocher France, moved Asensa range whose homopolymer Asensa TM PR200.

### 2 - Economic Information:

- The cosmetics market in China will become the world's first from 2009.
- Survey conducted by Marketing Daily on 27/06/07 and published on the use of solar products.
- The dermatologist Diane R.Baker conducted a study of 32 U.S. cities regarding their knowledge and attitudes toward solar questions.
- According to the French Fédération des Industries de la Parfumerie, 2006 was a good year with growth of 5.7%.
- The Asia-Pacific region offers new perspectives.

### 3 - Dermatology:

- Vitamin A can counteract the formation of age-related wrinkles.
- Cancer, sun and UV rays. What protection?
- Sun exposure: good for health?

### 4 - Formulas:

- According to an Environmental Working Group (EWG) a study over 700 solar products shows that some are false advertising and / or contains unsafe raw materials.
- Banana Boat (Playtex company) has included in its portfolio a new active solar called AvoTriplex and contains Avobenzone, a stabilizer of this raw material and UVB enhancer.
- Detailed INCI formulas and arguments for the following products:
  - Jack Black Sun Guard Oil-Free Ultra Light Sunscreen SPF 20.
  - PCA SKIN Phaze 7 Protect Hydrator SPF25.
  - L'Occitane Shea Ultra Moisturizing Care SPF 15.
  - MD Skincare Powerful Sun Protection SPF 30 Sunscreen Lotion.
  - Dermalogica Solar Defense Wipes SPF 15.
  - TESS Out And About Lavender Oil-Free SPF 15 Sunscreen.
  - Blue Lizard Australian Suncream, Baby, SPF 30 +, 9 Ounces.

### 5 - Regulation:

Dated 10/07/07, the European Commission informs consumers about new measures labeling.

### 6 - Miscellaneous:

According to NASA the «protector solar» Earth would weaken. A paper published in 2007 by the Skin Cancer Foundation American shows which sun protection is provided by clothing.