

LA FOTOPROTECCIÓN

Fundación Ricardo Fisas Natura Bissé

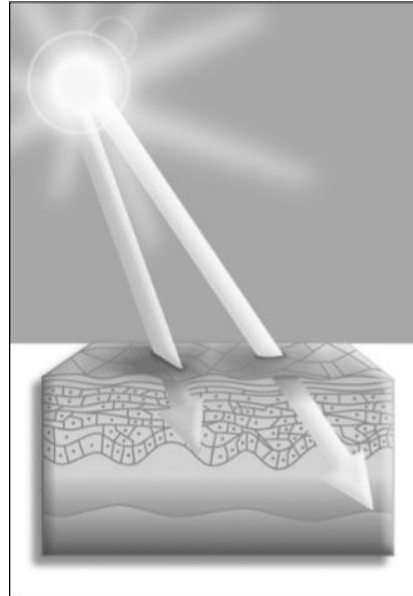
Ricardo Fisas
FUNDACIÓN | NATURA BISSÉ

**POR UN CUIDADO ESTÉTICO Y SOLIDARIO DE LA PIEL
DE PERSONAS EN TRATAMIENTOS ONCOLÓGICOS**



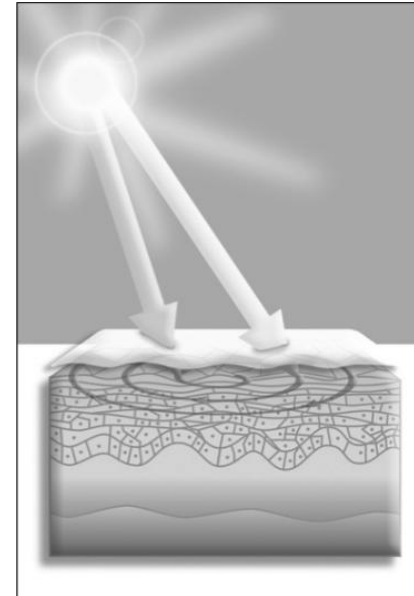
Filtros solares

REDUCEN EL DAÑO SOLAR



PIEL SIN FOTOPROTECCIÓN

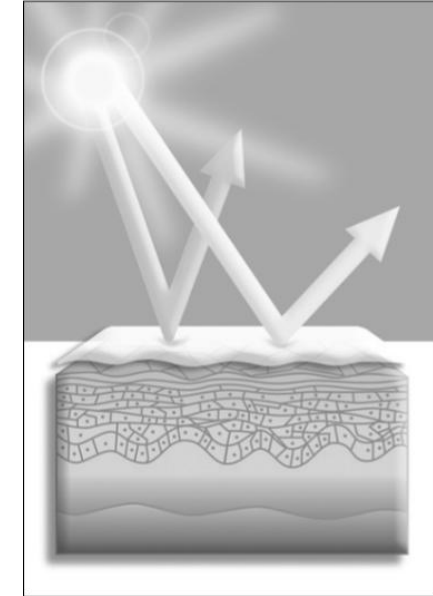
Penetración de la radiación solar.



FILTROS QUÍMICOS

Absorben los rayos y liberan la energía (calor, isomerización...).

Interacción con la piel.



FILTROS FÍSICOS

Reflexión y limitan el daño oxidativo.

Inertes, actúan como una pantalla.

Principios activos según su función

Name	Maximum Threshold	Restriction(s)		Warning Label	Notes
1,1'- (1,4-piperazinediyl) bis[1-[2-[4-(diethylamino)-2-hydroxybenzoyl]phenyl]-methanone; HAA299	10 %	Only nanomaterials having the following characteristics are allowed: — Purity ≥ 97 % — Median particle size D50 (50 % of the number below this diameter): ≥ 50 nm of number size distributionNot to be used in applications that may lead to exposure of the end user’s lungs by inhalationIn case of combined use of Bis-(Diethylaminohydroxybenzoyl Benzoyl)Piperazine and Bis-(Diethylaminohydroxybenzoyl Benzoyl)Piperazine (nano), the sum shall not exceed 10 %			
1,1'- (1,4-piperazinediyl) bis[1-[2-[4-(diethylamino)-2-hydroxybenzoyl]phenyl]-methanone; HAA299	10 %	In case of combined use of Bis-(Diethylaminohydroxybenzoyl Benzoyl)Piperazine and Bis-(Diethylaminohydroxybenzoyl Benzoyl)Piperazine (nano), the sum shall not exceed 10 %			
1,3,5-Triazine, 2,4,6-tris [1,1'-biphenyl]-4-yl-	10 %	Not to be used in sprays			
1,3,5-Triazine, 2,4,6-tris [1,1'-biphenyl]-4-yl-	10 %	Not to be used in spraysOnly nanomaterials having the following characteristics are allowed: - Median primary particle size > 80 nm - Purity ≥ 98 % - Uncoated			
Avobenzone1-(4-tert-Butylphenyl)-3-(4-methoxyphenyl)propane-1,3-dione	5 %				
2,2'- (6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis((2-ethylhexyl)oxy)phenol)Bemotrizinol	10 %				
Bisoctrizole2,2'-Methylene-bis(6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethyl-butyl)phenol)	10 %				In case of combined use of Methylene Bis-Benzotriazolyl Tetramethylbutylphenol and Methylene Bis-Benzotriazolyl Tetramethylbutylphenol (nano), the sum shall not exceed the limit given in column g
Bisoctrizole2,2'-Methylene-bis(6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethyl-butyl)phenol)	10 %	Not to be used in applications that may lead to exposure of the end-user's lungs by inhalationOnly nanomaterials having the following characteristics are allowed: - Purity ≥ 98.5 %, with 2,2'-methylene-bis-(6(2H-benzotriazol-2-yl)-4-(isooctyl)phenol) isomer fraction not exceeding 1.5 % - Solubility < 5 ng/L in water at 25 °C. - Partition coefficient (Log Pow) 12.7 at 25 °C - Uncoated - Median particle size D50 (50 % of the number below this diameter): ≥ 120 nm of mass distribution and/or ≥ 60 nm of number size distribution			In case of combined use of Methylene Bis-Benzotriazolyl Tetramethylbutylphenol and Methylene Bis-Benzotriazolyl Tetramethylbutylphenol (nano), the sum shall not exceed the limit given in column g
2,4,6-Trianilino-(p-carbo-2'-ethylhexyl-1'-oxy)-1,3,5-triazine	5 %				
Octocrilene2-Cyano-3,3-diphenyl acrylic acid, 2-ethylhexyl ester	9 %				Benzophenone as an impurity and/or degradation product of Octocrylene shall be kept at trace levelCosmetic products containing that substance and complying with the restrictions set out in Regulation (EC) No 1223/2009 as applicable on 27 July 2022 may be placed on the Union market until 28 January 2023 and be made available on the Union market until 28 July 2023
Octocrilene2-Cyano-3,3-diphenyl acrylic acid, 2-ethylhexyl ester	10 %				Benzophenone as an impurity and/or degradation product of Octocrylene shall be kept at trace levelCosmetic products containing that substance and complying with the restrictions set out in Regulation (EC) No 1223/2009 as applicable on 27 July 2022 may be placed on the Union market until 28 January 2023 and be made available on the Union market until 28 July 2023
2-Ethoxyethyl (2Z)-2-cyano-2-[3-(3-methoxypropylamino) cyclohex-2-en-1-ylidene]acetate	3 %	Not to be used in applications that may lead to exposure of the end user's lungs by inhalationDo not use with nitrosating agentsMaximum nitrosamine content: 50 µg/kgKeep in nitrite-free containers			
2-Ethylhexyl 4-(dimethylamino)benzoatePadimate O (USAN:BAN)	8 %				
Octinoxate2-Ethylhexyl 4-methoxycinnamate	10 %				
2-Ethylhexyl salicylateOctisalate	5 %				
Sulisobenzone2-Hydroxy-4-methoxybenzophenone-5-sulfonic acid	5 %				
2-Hydroxy-4-methoxybenzophenoneOxybenzone	0.5 %				Cosmetic products containing that substance and complying with the restrictions set out in Regulation (EC) No 1223/2009 as applicable on 27 July 2022 may be placed on the Union market until 28 January 2023 and be made available on the Union market until 28 July 2023

2-Hydroxy-4-methoxybenzophenoneOxybenzone	6 %	Not more than 0.5% to protect product formulationIf used at 0,5 % to protect product formulation, the levels used as UV filter must not exceed 5,5 %		Contains Benzophenone-3	Warning not required if concentration is 0,5 % or less and when it is used only for product protection purposesCosmetic products containing that substance and complying with the restrictions set out in Regulation (EC) No 1223/2009 as applicable on 27 July 2022 may be placed on the Union market until 28 January 2023 and be made available on the Union market until 28 July 2023
2-Hydroxy-4-methoxybenzophenoneOxybenzone	2.2 %	Not more than 0.5% to protect product formulationIf used at 0,5 % to protect product formulation, the levels used as UV filter must not exceed 1,7 %		Contains Benzophenone-3	Warning not required if concentration is 0,5 % or less and when it is used only for product protection purposesCosmetic products containing that substance and complying with the restrictions set out in Regulation (EC) No 1223/2009 as applicable on 27 July 2022 may be placed on the Union market until 28 January 2023 and be made available on the Union market until 28 July 2023
2-Phenylbenzimidazole-5-sulfonic acid, potassium salt	8 %				
2-Phenylbenzimidazole-5-sulfonic acid, sodium salt	8 %				
2-Phenylbenzimidazole-5-sulfonic acid, triethanolamine salt	8 %				
2-Phenylbenzimidazole-5-sulfonic acidEnsulizole	8 %				
3,3'-(1,4-Phenylene)bis(5,6-diphenyl-1,2,4-triazine)	5 %	Not to be used in applications that may lead to exposure of the end user's lungs by inhalation			
3,3'-(1,4-Phenylenedimethylene) bis(7,7-dimethyl-2-oxobicyclo-[2.2.1]hept-1-yl-methanesufonic acid)Ecamsule	10 %				
alpha-(2-Oxoborn-3-ylidene)-toluene-4-sulphonic acid	6 %				
Amiloxatelsopentyl-4-methoxycinnamate	10 %				
Anatase (TiO2)	25 %	Titanium dioxide in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm: (a) to be used in compliance with Annex III, No [321] (b) for cosmetic products other than face products in loose powder form and hair aerosol spray products the maximum concentration in ready for use preparation provided in column (g) of this entry applies			For use other than as a colorant, see Annex IV, No. 143In case of combined use of Titanium Dioxide and Titanium Dioxide (nano), the sum shall not exceed the limit given in column g
Anatase (TiO2)	25 %	Not to be used in applications that may lead to exposure of the end-user's lungs by inhalationOnly nanomaterials having the following characteristics are allowed: - Purity ≥ 99 % - Rutile form, or rutile with up to 5 % anatase, with crystalline structure and physical appearance as clusters of spherical, needle, or lanceolate shapes - Median particle size based on number size distribution ≥ 30 nm - Aspect ratio from 1 to 4,5, and volume specific surface area ≤ 460 m2 /cm3 - Coated with Silica, Hydrated Silica, Alumina, Aluminium Hydroxide, Aluminium Stearate, Stearic Acid, Trimethoxycaprylylsilane, Glycerin, Dimethicone, Hydrogen Dimethicone, Simethicone or coated with one of the following combinations: - Silica at a maximum concentration of 16 % and Cetyl Phosphate at a maximum concentration of 6 %, - Alumina at a maximum concentration of 7 % and Manganese Dioxide at a maximum concentration of 0,7 % (not to be used in lip products), - Alumina at a maximum concentration of 3 % and Triethoxycaprylylsilane at a maximum concentration of 9 %, - Photocatalytic activity ≤ 10 % compared to corresponding non-coated or non-doped reference - Nanoparticles are photostable in the final formulation		For face products containing Titanium Dioxide (nano) coated with the combination Alumina and Manganese Dioxide: Not to be used on the lips.	For use as a colorant, see Annex IV, No. 143In case of combined use of Titanium Dioxide and Titanium Dioxide (nano), the sum shall not exceed the limit given in column g
Benzenesulfonic acid, 5-benzoyl-4-hydroxy-2-methoxy-, monosodium salt	5 %		As acid		
Benzoic acid, 2-[4-(diethylamino)-2-hydroxybenzoyl]-, Hexyl ester	10 %				
Benzoic acid, 2-hydroxy-, 3,3,5-trimethylcyclohexyl esterHomosalate	7.34 %				From 1 January 2025 cosmetic products containing that substance and not complying with the conditions shall not be placed on the Union market. From 1 July 2025 cosmetic products containing that substance and not complying with the conditions shall not be made available on the Union market
Benzoic acid, 4,4-((6-(((4-(((1,1-dimethylethyl)amino)carbonyl)phenyl)amino)-1,3,5-triazine-2,4-diy)diimino)bis-, bis (2-ethylhexyl) esterIscotrizinol (USAN)	10 %				
Sodium salt of 2,2'-bis(1,4-phenylene)-1H-benzimidazole-4,6-disulfonic acidBisdisulizole disodium (USAN)	10 %		As acid		
Dimethicodiethylbenzalmalonate	10 %				
Ethoxylated ethyl-4-aminobenzoate	10 %				
N,N,N-Trimethyl-4-(2-oxoborn-3-ylidenemethyl) anilinium methyl sulfate	6 %				
Phenol,2-(2H-benzotriazol-2-yl)-4-methyl-6-(2-methyl-3-(1,3,3,3-tetramethyl-1-((trimethylsilyl)oxy)-disiloxanyl)propyl)-	15 %				
Polymer of N-((2 and 4)-[(2-oxoborn-3-ylidene)methyl-]benzyl) acrylamide	6 %				

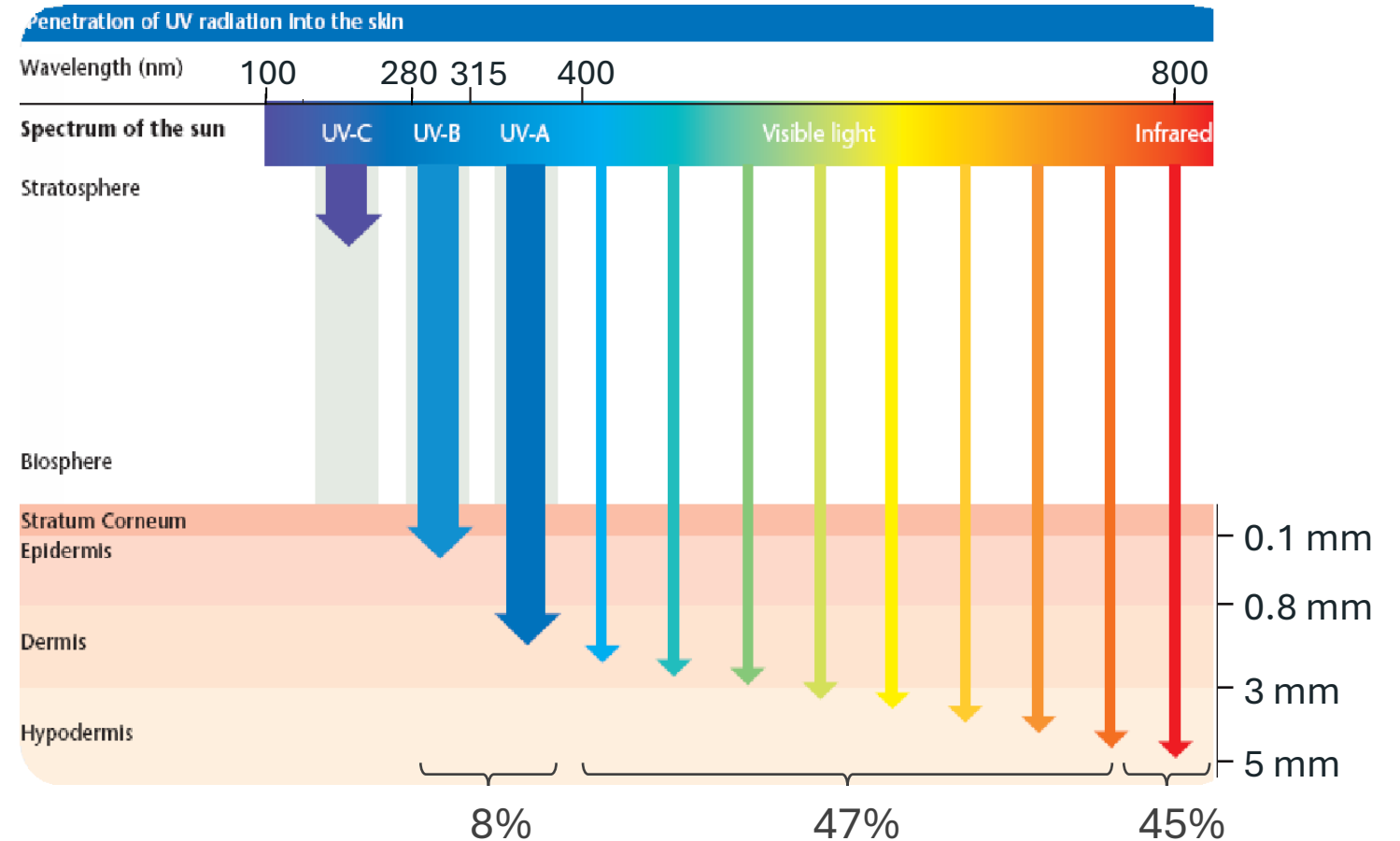
Rutile (TiO2)	25 %	Titanium dioxide in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm: (a) to be used in compliance with Annex III, No [321] (b) for cosmetic products other than face products in loose powder form and hair aerosol spray products the maximum concentration in ready for use preparation provided in column (g) of this entry applies			For use other than as a colorant, see Annex IV, No. 143In case of combined use of Titanium Dioxide and Titanium Dioxide (nano), the sum shall not exceed the limit given in column g
Rutile (TiO2)	25 %	Not to be used in applications that may lead to exposure of the end-user’s lungs by inhalationOnly nanomaterials having the following characteristics are allowed: - Purity ≥ 99 % - Rutile form, or rutile with up to 5 % anatase, with crystalline structure and physical appearance as clusters of spherical, needle, or lanceolate shapes - Median particle size based on number size distribution ≥ 30 nm - Aspect ratio from 1 to 4,5, and volume specific surface area ≤ 460 m2 /cm3 - Coated with Silica, Hydrated Silica, Alumina, Aluminium Hydroxide, Aluminium Stearate, Stearic Acid, Trimethoxycaprylylsilane, Glycerin, Dimethicone, Hydrogen Dimethicone, Simethicone or coated with one of the following combinations: - Silica at a maximum concentration of 16 % and Cetyl Phosphate at a maximum concentration of 6 %, - Alumina at a maximum concentration of 7 % and Manganese Dioxide at a maximum concentration of 0,7 % (not to be used in lip products), - Alumina at a maximum concentration of 3 % and Triethoxycaprylylsilane at a maximum concentration of 9 %, - Photocatalytic activity ≤ 10 % compared to corresponding non-coated or non-doped reference - Nanoparticles are photostable in the final formulation		For face products containing Titanium Dioxide (nano) coated with the combination Alumina and Manganese Dioxide: Not to be used on the lips.	For use as a colorant, see Annex IV, No. 143In case of combined use of Titanium Dioxide and Titanium Dioxide (nano), the sum shall not exceed the limit given in column g
Salts of 3,3'-(1,4-Phenylenedimethylene) bis(7,7-dimethyl-2-oxobicyclo-[2.2.1]hept-1-yl-methanesufonic acid)	10 %		As acid		
Salts of alpha-(2-Oxoborn-3-ylidene)-toluene-4-sulphonic acid	6 %		As acid		
Titanium dioxide	25 %	Not to be used in applications that may lead to exposure of the end-user’s lungs by inhalationOnly nanomaterials having the following characteristics are allowed: - Purity ≥ 99 % - Rutile form, or rutile with up to 5 % anatase, with crystalline structure and physical appearance as clusters of spherical, needle, or lanceolate shapes - Median particle size based on number size distribution ≥ 30 nm - Aspect ratio from 1 to 4,5, and volume specific surface area ≤ 460 m2 /cm3 - Coated with Silica, Hydrated Silica, Alumina, Aluminium Hydroxide, Aluminium Stearate, Stearic Acid, Trimethoxycaprylylsilane, Glycerin, Dimethicone, Hydrogen Dimethicone, Simethicone or coated with one of the following combinations: - Silica at a maximum concentration of 16 % and Cetyl Phosphate at a maximum concentration of 6 %, - Alumina at a maximum concentration of 7 % and Manganese Dioxide at a maximum concentration of 0,7 % (not to be used in lip products), - Alumina at a maximum concentration of 3 % and Triethoxycaprylylsilane at a maximum concentration of 9 %, - Photocatalytic activity ≤ 10 % compared to corresponding non-coated or non-doped reference - Nanoparticles are photostable in the final formulation		For face products containing Titanium Dioxide (nano) coated with the combination Alumina and Manganese Dioxide: Not to be used on the lips.	For use as a colorant, see Annex IV, No. 143In case of combined use of Titanium Dioxide and Titanium Dioxide (nano), the sum shall not exceed the limit given in column g
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Zinc oxide	25 %	Not to be used in applications that may lead to exposure of the end-user’s lungs by inhalationOnly nanomaterials having the following characteristics are allowed: - Purity ≥ 96 %, with wurtzite crystalline structure and physical appearance as clusters that are rod-like, star-like and/or isometric shapes, with impurities consisting only of carbon dioxide and water, whilst any other impurities are less than 1 % in total - Median diameter of the particle number size distribution D50 (50 % of the number below this diameter) > 30 nm and D1 (1 % below this size) > 20 nm - Water solubility < 50 mg/L - Uncoated, or coated with triethoxycaprylylsilane, dimethicone, dimethoxydiphenylsilanetriethoxycaprylylsilane cross-polymer, or octyl triethoxy silane			In case of combined use of zinc oxide and zinc oxide (nano), the sum shall not exceed the limit given in column g
Zinc oxide	25 %	Not to be used in applications that may lead to exposure of the end-user’s lungs by inhalation			In case of combined use of zinc oxide and zinc oxide (nano), the sum shall not exceed the limit given in column g

Radiación solar en la piel

Según la radiación

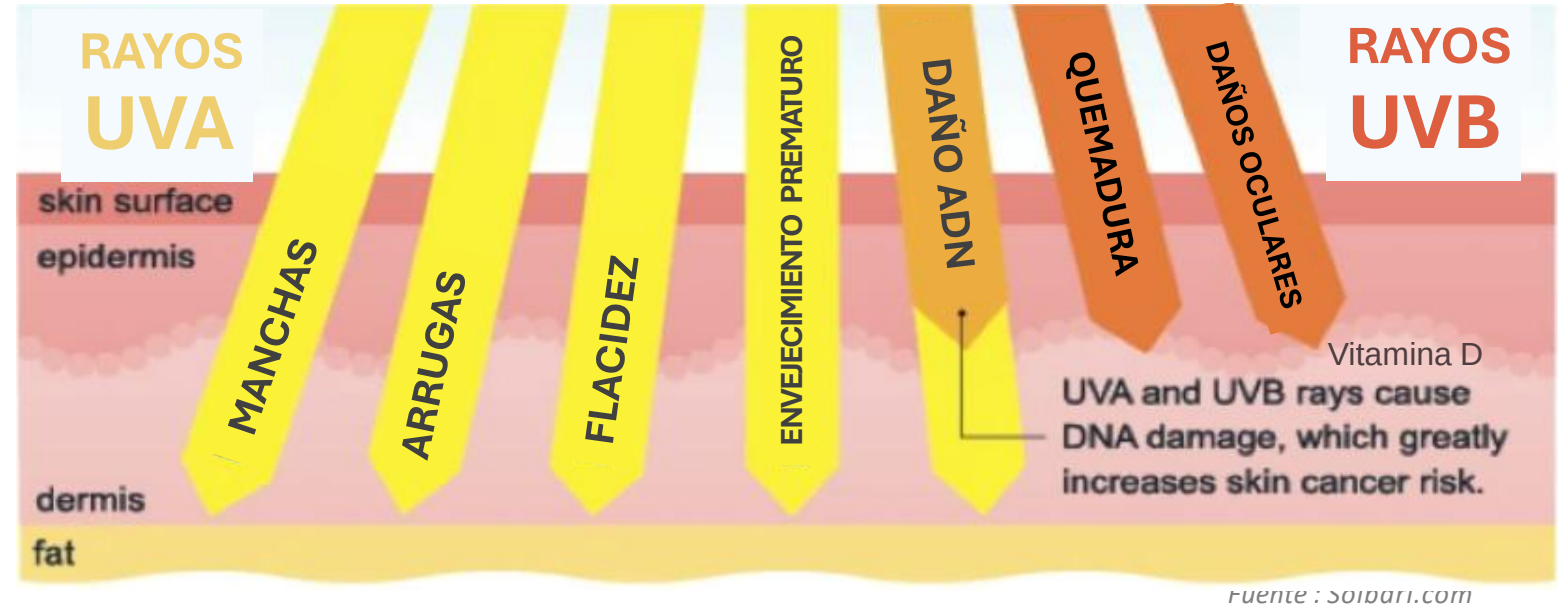
- UV
- IR
- LUZ VISIBLE (HEV)

CAPACIDAD DE PENETRACIÓN



Fuente : Nutrein.blogspot.com

Cómo afectan los rayos UV en la piel



¿QUÉ TIPOS DE FOTOSENSIBILIDAD HAY?

Fototoxicidad: tiene la apariencia:

- una quemadura exagerada
- una reacción fotoquímica con inflamación (5-20 h post exposición)
- una reacción confinada en las áreas expuestas.

Fotoalergia: tiene la apariencia:

- un eczema que cursa con picor
- una reacción inmunológica (24-72 h post exposición)
- una reacción que se expande más allá de las áreas expuestas a la luz
- menos dependiente de la dosis del fármaco.

Protectores solares

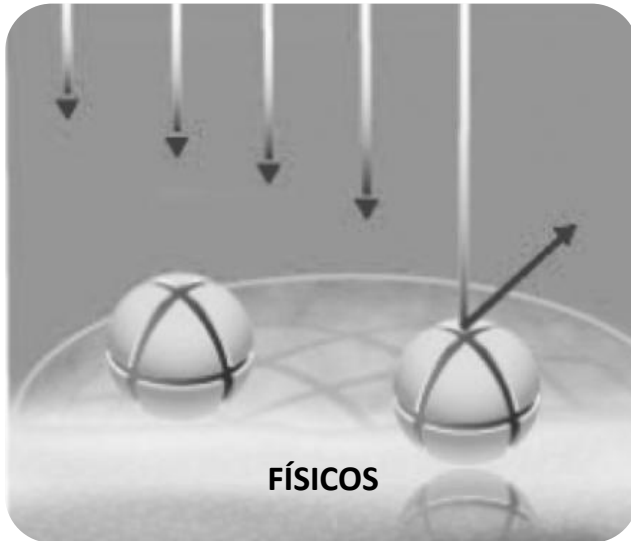
Selección de filtros

- Protección UVA.
- Protección UVB.
- Protección amplio espectro: UVA + UVB.
- **Un buen fotoprotector debe cumplir 5 condiciones:**
 - Seguridad.
 - (Foto)estabilidad.
 - Eficacia.
 - Versatilidad.
 - Cumplir con la legislación vigente.



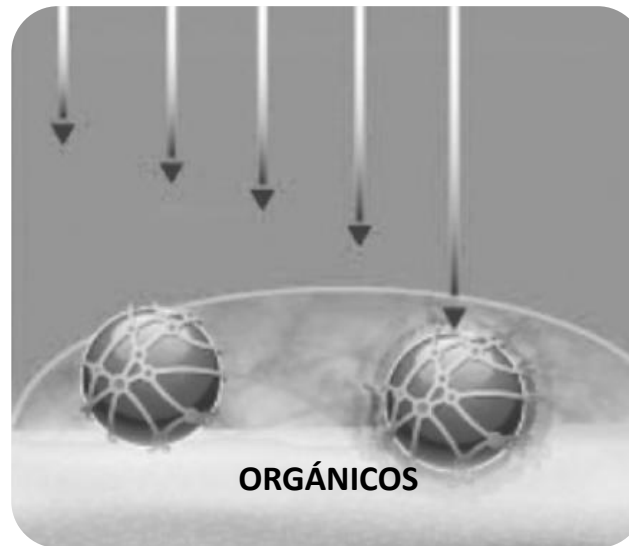
Protectores solares

FILTROS FÍSICOS



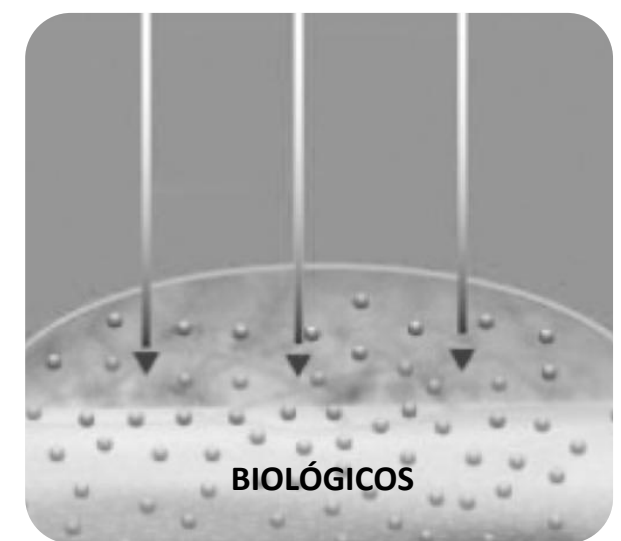
- Óxido de zinc y dióxido de titanio.
- Reflejan y dispersan la luz.

FILTROS ORGÁNICOS



- Etilhexil metoxicinamato (octinoxato), octocrileno, homosalato, avobenzona o ácido fenilbenzimidazol sulfónico.
- Absorben los rayos y liberan la energía (calor, isomerización).

PROTECCIÓN BIOLÓGICA



- Antioxidantes.
- Neutralizan los radicales libres y limitan el daño oxidativo.

La importancia de proteger la piel del sol

¿Los tratamientos médicos pueden hacer que la piel sea más sensible al sol?

Sí, los tratamientos oncológicos* pueden provocar que la piel sea más sensible al sol.

*Quimioterapia, inmunoterapia, radiación y cirugía

¿Dónde estará más sensible?

Todo el cuerpo

- Quimioterapia
- Inmunoterapia
- Hormonoterapia
- Terapias dirigidas

Las zonas tratadas

- Radiación -> fotosensibilidad
- Cirugía -> hiperpigmentación

¿Cuánto tiempo estará la piel sensible?

Normalmente hasta 2 meses post tratamiento (quimioterapia y inmunoterapia) y hasta 1 año (radiación y cirugía).

Recomendaciones de protección solar

Evitar el sol de 12 h a 16 h
Usa protector solar SPF50+

Mantente cubierta
Hidrátate

Usa gafas de sol y sombreros
Ponte ropa ligera y fresca

Busca la sombra
Remójate



Fuente de la imagen: NB.

Fuente: cancer.livebetterwith.com, ASCO

Filtros solares ¿Cuestionados?

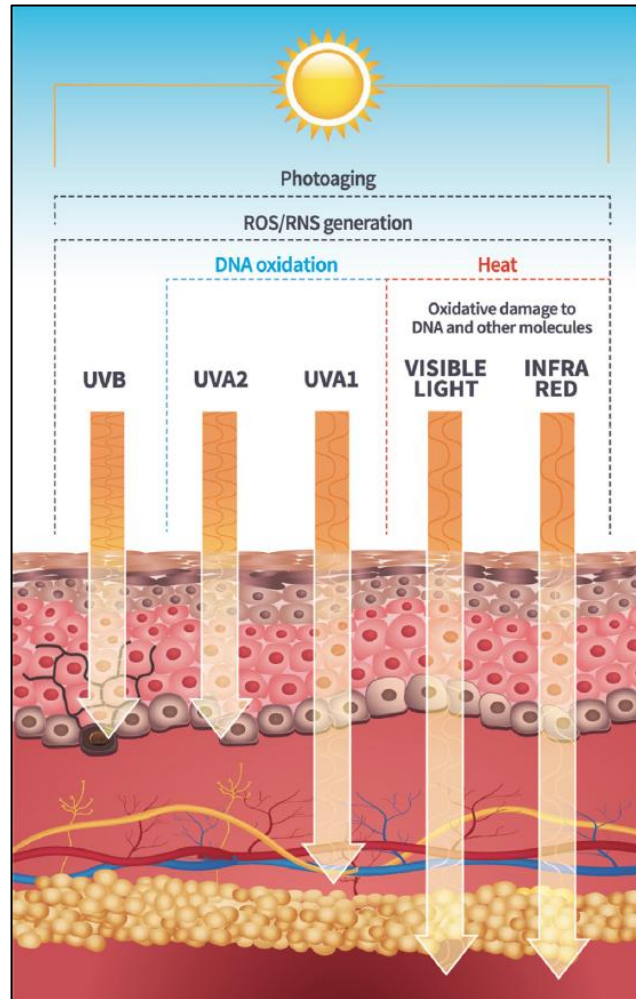
En el punto de mira porque:

- Pueden causar alergias o fotoalergias
- Posibles disruptores endocrinos
- Nano y penetración
- Afectan al medio ambiente



A pesar de tener una mayor regulación en USA el uso de filtros solares (activos) es muy limitado con respecto a otros países. Principalmente se utilizan filtros físicos.

La radiación solar, piel y SPF



Factor de protección solar UVB

¿Qué mide el SPF?

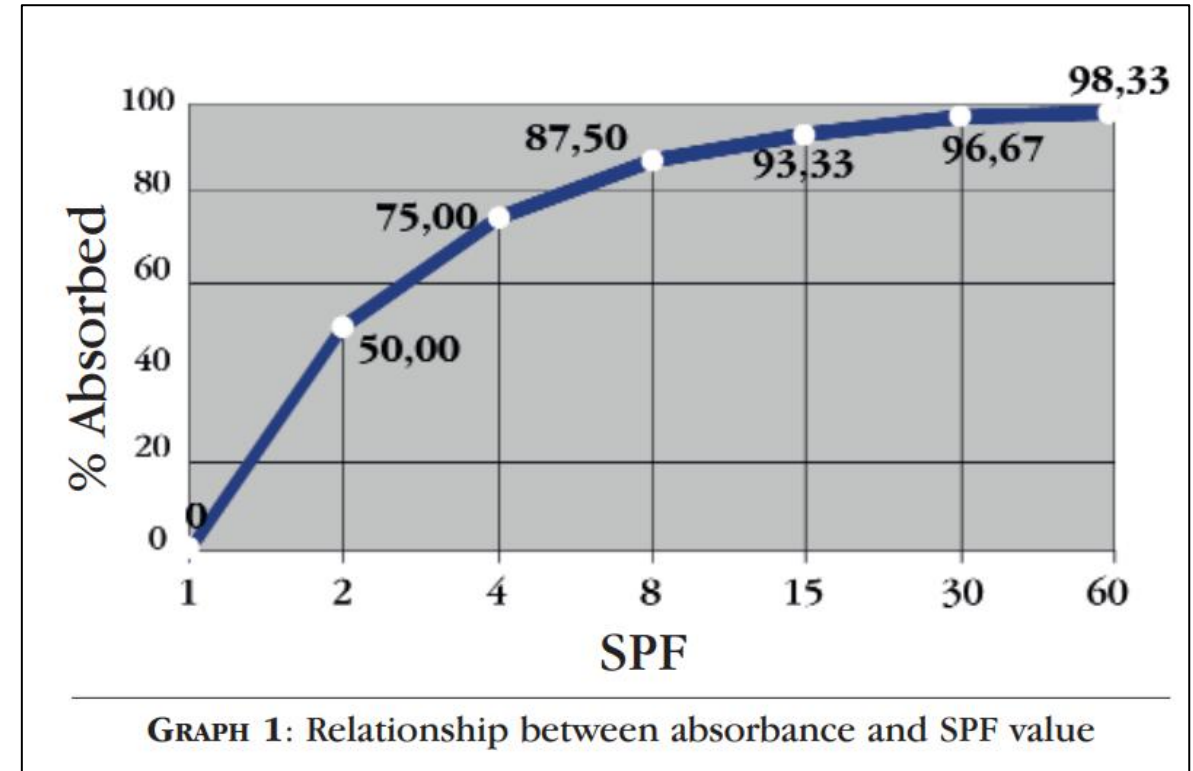
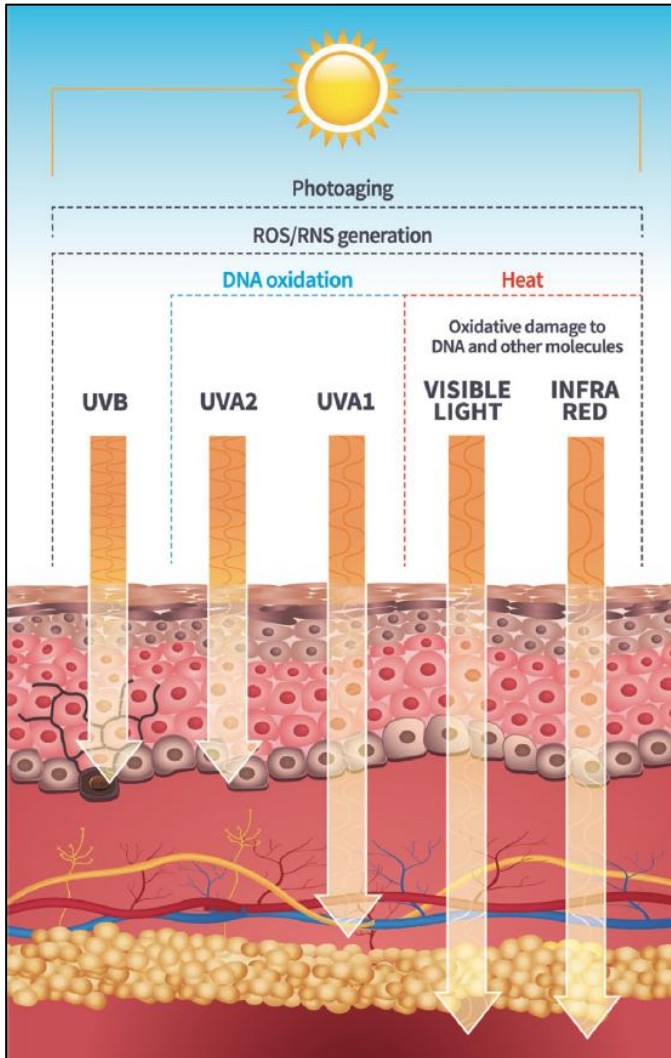
Recomendación en el etiquetado de productos solares:

- Baja: 6 y 10
- Media: 15, 20 y 25
- Alta: 30 y 50
- Muy alta: +50 (mínimo SPF 60)



¿tiene sentido utilizar un factor solar con más graduación?

La radiación solar, piel y SPF



FUENTE: Sun protection factor: meaning and controversies, Sergio Schalka I Vitor Manoel Silva dos Reis



¿tiene sentido utilizar un factor solar con más graduación?

LA FOTOPROTECCIÓN

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