UV Filters

Technical Information

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04_050103e-22/Page 1 of 20
Last change WF-No. 5104

® = Registered trademark of BASF

Soluciones integrales Pochteca

BASF
The Chemical Company

Contents

Chemical Description

The Uvinul®, Tinosorb® and Z-COTE® products are UV filters based on benzophenones, diphenyl cyanoacrylate, cinnamates, triazine, benztriazole, p-aminobenzoic acid derivates and zinc oxide.

BASF UV filter portfolio

	PRD-Nos.	INCI name	CAS-Nos.
Uvinul® MC 80	30055079	Ethylhexyl Methoxycinnamate	5466-77-3
Uvinul® MC 80 N	30055080	Ethylhexyl Methoxycinnamate	5466-77-3
Uvinul® T 150	30035119	Ethylhexyl Triazone	88122-99-0
Uvinul® N 539 T	30055082	Octocrylene	6197-30-4
Uvinul® MS 40	30035116	Benzophenone-4	4065-45-6
Uvinul® A Plus Granular	30338477	Diethylamino Hydroxybenzoyl Hexyl Benzoate	302776-68-7
Uvinul® A Plus B	30221690	Ethylhexyl Methoxycinnamate (and) Diethylamino Hydroxybenzoyl Hexyl Benzoate	5466-77-3 302776-68-7
Uvinul® Easy	30605258	Polyglyceryl-2 Dipolyhydroxystearate (and) Laureth-7 Citrate (and) Ethylhexyl Methoxycinnamate (and) Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine (and) Ethylhexyl Triazone (and) Diethylamino Hydroxybenzoyl Hexyl Benzoate (and) Lauryl Glucoside (and) Triethanolamine (and) Dibutyl Adipate (and) Aqua	144470-58-6 565429-75-6 5466-77-3 187393-00-6 88122-99-0 302776-68-7 110615-47-9 102-71-6 105-99-7 7732-18-5
Tinosorb® M	30482916	Methylene Bis-Benzotriazolyl Tetramethylbutyl-phenol [nano] (and) Aqua (and) Decyl Glucoside (and) Propylene Glycol (and) Xanthan Gum	103597-45-1 7732-18-5 68515-73-1 57-55-6 11138-66-2
Tinosorb® A2B	30478125	Tris-Biphenyl Triazine (and) Aqua [nano] (and) Decyl Glucoside (and) Butylene Glycol (and) Disodium Phosphate (and) Xanthan Gum	31274-51-8 7732-18-5 68515-73-1 107-88-0 7558-79-4 11138-66-2
Tinosorb® S	30481068	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine	187393-00-6
Tinosorb® S Aqua	30480431	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine (and) Polymethyl Methacrylate (and) Sodium Laureth Sulfate (and) Aminomethyl Propanol	187393-00-6 3011-14-7 1335-72-4 124-68-5
Z-COTE®	30083071	Zinc Oxide [nano]	1314-13-2
Z-COTE® HP 1	30083072	Zinc Oxide [nano] (and) Triethoxycaprylylsilane	1314-13-2 2943-75-1
Z-COTE® LSA	30563203	Zinc Oxide [nano] (and) Triethoxycaprylylsilane	1314-13-2 2943-75-1

Applications

The BASF UV filters are used in a large number of cosmetic products to protect the skin or the hair.

Some of the BASF UV filters are typical UVB absorbers, i.e. their absorption maxium lies in the 280 – 320 nm band. Other UV filters, particularly the Tinosorb® are broad-spectrum filters, i.e. they absorb both in the UVA (320 – 400 nm) and the UVB (280 – 320 nm) ranges. One filter absorbs in the UVA range. The metal oxides are micronized pigments with a broad UV attenuation.

As both oil-soluble and water-dispersible types are available, there are products for almost every cosmetic preparation, including emulsion, oil, gels, sticks, etc.

Use of the BASF UV filters in skin protection

UV radiation is responsible for various physiological effects in the skin, as a result of its high energy content. These effects include sunburn, the premature appearance of wrinkles, i.e. accelerated ageing of the skin and, with frequent intensive exposure, an increased risk of skin cancer. UV filters provide vital protection for the skin against these harmful effects of UV radiation. They are now increasingly being used not only in sun preparations but also in other skin cosmetics such as day creams. For the daily care products, where UVA photostability is a key, the modern, latest available UV filters of the Uvinul® and Tinosorb® range, meet those requirements.

The use of UV filters to protect the skin is subject to legislation in many countries. The following table shows the approval status and the permitted concentration worldwide. The concentration of UV filters in sun preparations depends on the desired degree of protection, measured in terms of the Sun Protection Factor (SPF). Commonly, soluble UV filters are combined with micronized UV filters, i.e. Tinosorb® M, Tinosorb® A2B or Z-COTE®, in products with a high SPF. They can also be used together with radical scavengers, e.g. Ascorbyl Monophosphate, Vitamin E or Vitamin E-Acetate which provide additional passive sun protection.

Approval status

All data in %	EU	Switzerland	India	Taiwan	Korea	Japan[2]	China	Australia	ASEAN	USA	Canada	S.America	Mexico
Uvinul® MC 80	10	10	10	10	0.5 – 7.5	20	10	10	10	7.5	8.5	10	10
Uvinul® MC 80 N	10	10	10	10	0.5 – 7.5	20	10	10	10	7.5	8.5	10	10
Uvinul® T 150	5	5	5	5	0.5 – 5	5	5	5	5	-	-	5	5
Uvinul® N 539 T	10	10	10	10	0.5 – 10	10	10	10	10	10	12	10	10
Uvinul® MS 40	5	5	10	5	0.5 – 5	10	5	10	[4]	10	6	10	5
Uvinul® A Plus Granular	10	10	10	10	10	10	10	10	10	-	-	10	10
Uvinul® A Plus B	15.38	15.38	15.38	15.38	11.5	28.5	15.38	15.38	15.38	-	-	15.38	15.38
Uvinul® Easy	50	50	50	50	37.5	50[2]	50	50	50	-	-	50	50
Tinosorb® M	10[5]	10[5]	10[5]	10[5]	10[5]	10[5]	10[5]	10[5]	10[5]	-	-	10[5]	10[5]
Tinosorb® A2B	10[5]	10[5]	-	-	-	-	-	-	-	-	-	-	-
Tinosorb® S	10	10	10	10	10	3	10	10	10	-	-	10	10
Tinosorb® S Aqua	10[5]	10[5]	10[5]	10[5]	10[5]	3[5]	10[5]	10[5]	10[5]	-	-	10[5]	10[5]
Z-COTE®	-[1]	-	25	20	25	No limit	25	25	25	25	25	No limit	25
Z-COTE® HP1	-[1]	-	25	20	(25)[3]	No limit	25	11	25	25	25	No limit	25
Z-COTE® LSA	-[1]	-	25	20	(25)[3]	No limit	25	11	25	25	25	No limit	25

- not approved

[1] Germany: preliminary approval 25%

[2] Japan: limit except for cosmetics coming into contact with mucous membranes

[3] Cosmetic manufacturer may require additional information on coating when make application for functional cosmetics.

[4] ASEAN Cosmetic Directive, Annex VII – part 3. The substance should be allowed for use unless there is a toxicity or unsafety report.

[5] As active ingredients

Specification

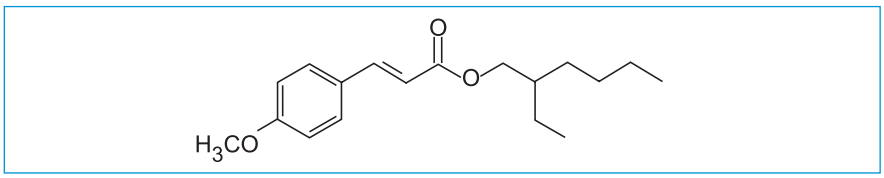
See separate document: “Standard Specification” available via BASF’s WorldAccount: http://worldaccount.basf.com (registered access).

Physicochemical properties of BASF UV filters

	Molecular formula	Molecular weight	Appearance
Uvinul® MC 80	$C_{18}H_{26}O_3$	290	Colorless to light yellow liquid
Uvinul® MC 80 N	$C_{18}H_{26}O_3$	290	Colorless to light yellow liquid
Uvinul® T 150	$C_{48}H_{66}N_6O_6$	823	White to light yellow powder
Uvinul® N 539 T	$C_{24}H_{27}NO_2$	361	Clear yellow viscous liquid
Uvinul® MS 40	$C_{14}H_{12}O_6S$	308	Off white fine to coarse powder
Uvinul® A Plus Granular	$C_{24}H_{31}NO_4$	397	White to slight salmon color granular powder, becoming yellow melt upon heating
Uvinul® A Plus B	$C_{18}H_{26}O_3$ $C_{24}H_{31}NO_4$	290 397	Yellow solution
Uvinul® Easy	Mixture	Mixture	Yellow clear until turbid liquid
Tinosorb® M	$C_{41}H_{50}N_6O_2$	659	White liquid
Tinosorb® A2B	$C_{39}H_{27}N_3$	538	White liquid
Tinosorb® S	$C_{38}H_{49}N_3O_5$	628	Light yellow powder
Tinosorb® S Aqua	$C_{38}H_{49}N_3O_5$	628	Light yellow liquid
Z-COTE®	ZnO	81	White powder
Z-COTE® HP 1	ZnO	81 (for ZnO)	White powder
Z-COTE® LSA	ZnO	81 (for ZnO)	White powder

Uvinul® MC 80

Structural formula



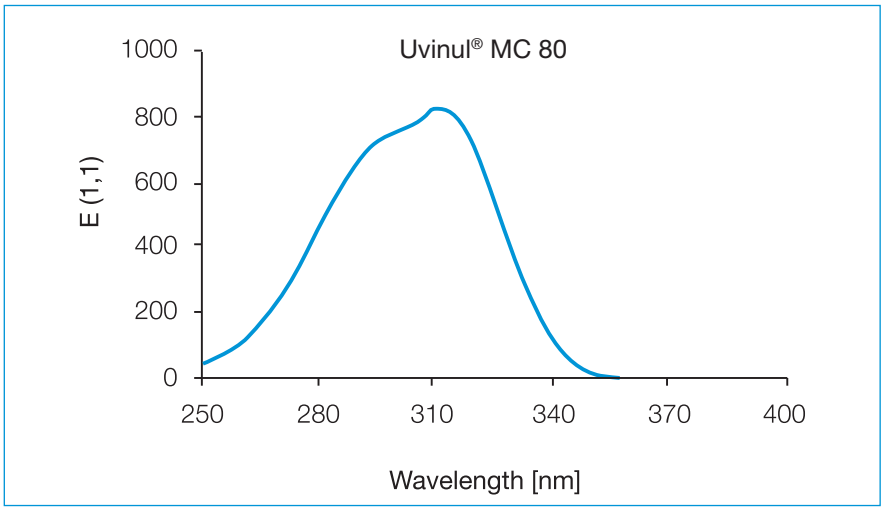
Uvinul® MC 80

Chemical name	p-Methoxycinnamic acid 2-ethylhexylester
INCI name	Ethylhexyl Methoxycinnamate
CAS-No.	5466-77-3
Description	stabilized with 0.07 ± 0.02% BHT

Uvinul® MC 80 N

INCI name	Ethylhexyl Methoxycinnamate
CAS-No.	5466-77-3
Description	unstabilized

UV spectrum



Properties and applications

Uvinul® MC 80 is approved worldwide and is the most frequently used UVB filter. It can readily be incorporated without problem in all the usual cosmetic raw materials.

Uvinul® MC 80 is a good solvent for other ingredients of suncare products, e.g. Uvinul® T 150 and Tinosorb® S.

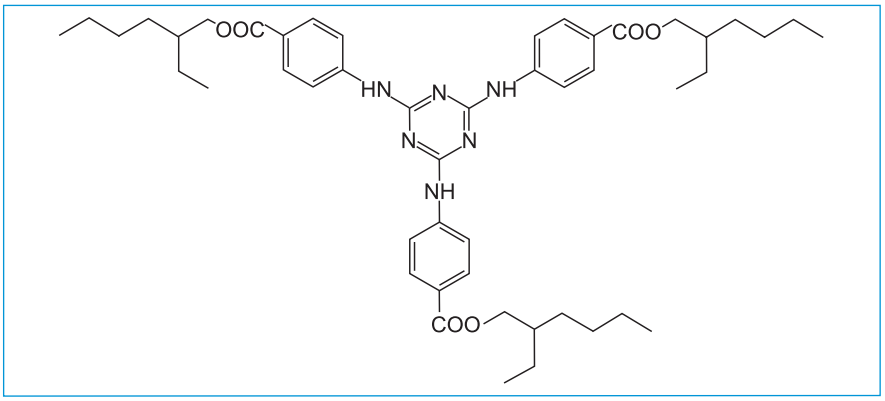
Solubility

Trade name (supplier)	INCI name	Uvinul® MC 80 solubility[1] at 25 °C Wt. (%)
Uvinul® A Plus (BASF)	Diethylamino Hydroxybenzoyl Hexyl Benzoate	39.0
Tinosorb® S (BASF)	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine	17.0
Uvinul® T 150 (BASF)	Ethylhexyl Triazone	14.0

[1] Determination of the solubility of Tinosorb® S, Uvinul® A Plus and Uvinul® T 150

Uvinul® T 150

Structural formula

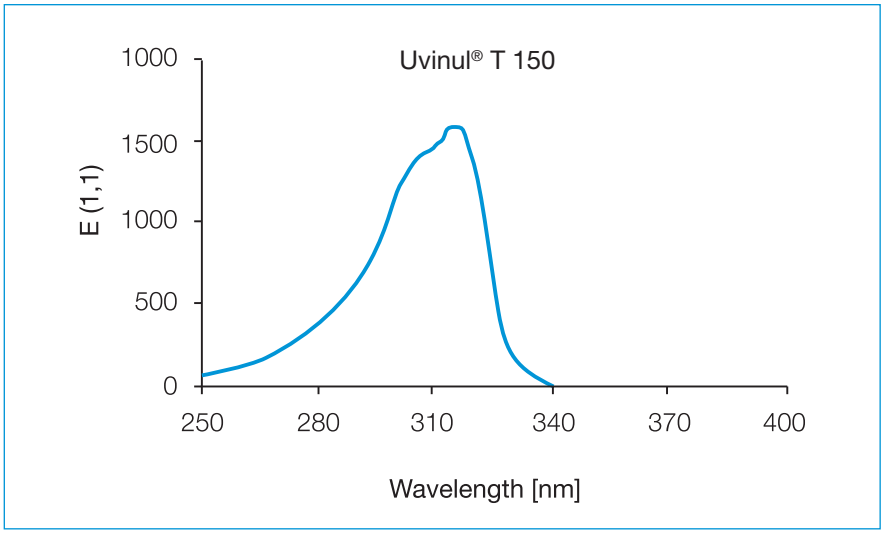


Chemical name 2,4,6-Trianilino-p-(carbo-2'-ethylhexyl-1 '-oxy)-1,3,5-triazin

INCI name Ethylhexyl Triazone

CAS-No. 88122-99-0

UV spectrum



Properties and applications

Uvinul® T 150 is the most effective UVB filter with an exceptionally high absorptivity of over 1,500 at 314 nm. Because of its high E1/1 value, only small concentrations are required in cosmetic sun-care preparations, to achieve a high SPF value.

The polar nature of Uvinul® T 150 gives it good affinity to the keratin in the skin, so that formulations in which it is used are particularly waterresistant. This property is further enhanced by its complete insolubility in water.

Uvinul® T 150 is also very stable towards light. It remains practically unchanged, even when it is exposed to intense radiation.

Uvinul® T 150 is usually dissolved in the oily phase of emulsions by heating.

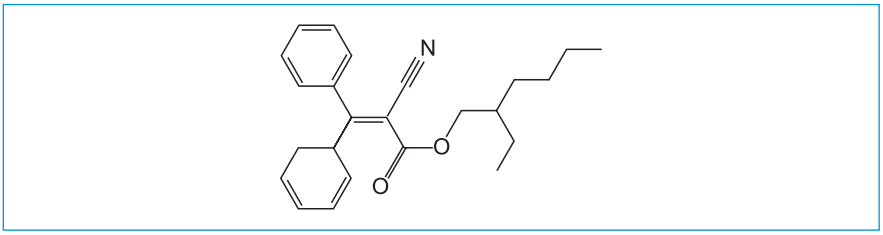
Solubility

Trade name (supplier)	INCI name	Uvinul® T 150 solubility[1] at 25 °C Wt. (%)
Cetiol® B (BASF)	Dibutyl Adipate	16.0
Uvinul® MC 80 (BASF)	Ethylhexyl Methoxycinnamate	14.0
Myritol® 331 (BASF)	Cocoglycerides	9.4
Cetiol RLF (BASF)	Caprylyl-Caprylate/Caprate	6.7
Myritol 318 (BASF)	Caprylic/Capric Triglyceride	6.2
Cetiol C5 (BASF)	Coco Caprylate	6.1
Cetiol CC (BASF)	Dicaprylyl Carbonate	5.9
Cetiol Sensoft (BASF)	Propylheptyl Caprylate	5.7
Cetiol AB (BASF)	C12-15 Alkyl Benzoate	4.4
Uvinul® N 539 T (BASF)	Octocrylene[2]	4.2
Isopropylpalmitate (BASF)	Isopropylpalmitate	3.4
Ethanol (99.8%)	Alcohol	1.6

[1] *Determination of the solubility of Uvinul® T 150*
[2] *Beware of patent restrictions*

Uvinul® N 539 T

Structural formula

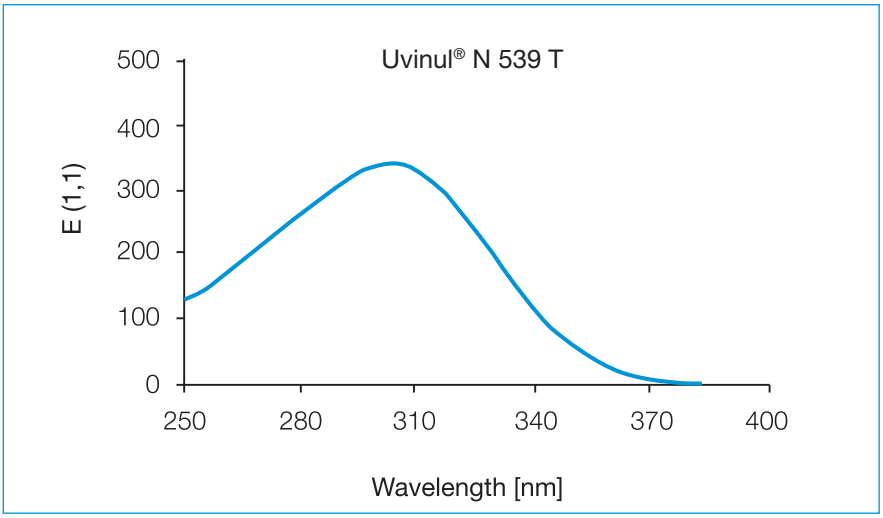


Chemical name 2-Cyano-3,3-diphenylacrylic acid 2'-ethylhexyl ester

INCI name Octocrylene

CAS-No. 6197-30-4

UV spectrum



Properties and applications

Uvinul® N 539 T is an oil-miscible UVB filter that is approved worldwide for the use in suncare preparations. It is particularly recommended to combine Uvinul® N 539 T with other oil-soluble UV filters such as Uvinul® T 150 or Tinosorb® S to obtain high SPF values. A further feature of Uvinul® N 539 T is its excellent photostability, and its ability to stabilize photoinstable UV filters like Butyl Methoxydibenzoylmethane.

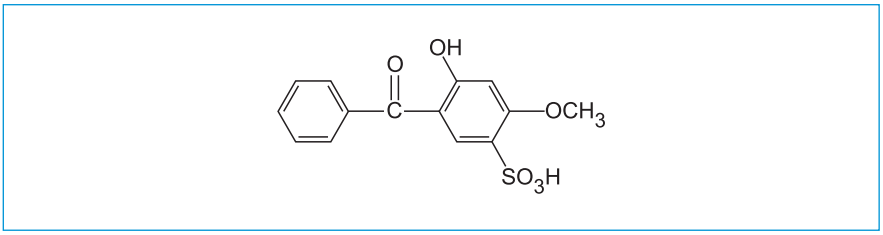
Solubility

Trade name (supplier)	INCI name	Uvinul® N 539 T solubility[1] at 25 °C Wt. (%)
Uvinul® A Plus Granular (BASF)	Diethylamino Hydroxybenzoyl Hexyl Benzoate	39.0
Tinosorb® S (BASF)	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine	7.3
Uvinul® T 150 (BASF)	Ethylhexyl Triazone	4.2

[1] *Determination of the solubility of Tinosorb® S, Uvinul® A Plus Granular and Uvinul® T 150*

Uvinul® MS 40

Structural formula



Chemical name

2-Hydroxy-4-methoxybenzophenone-5-sulfonic acid

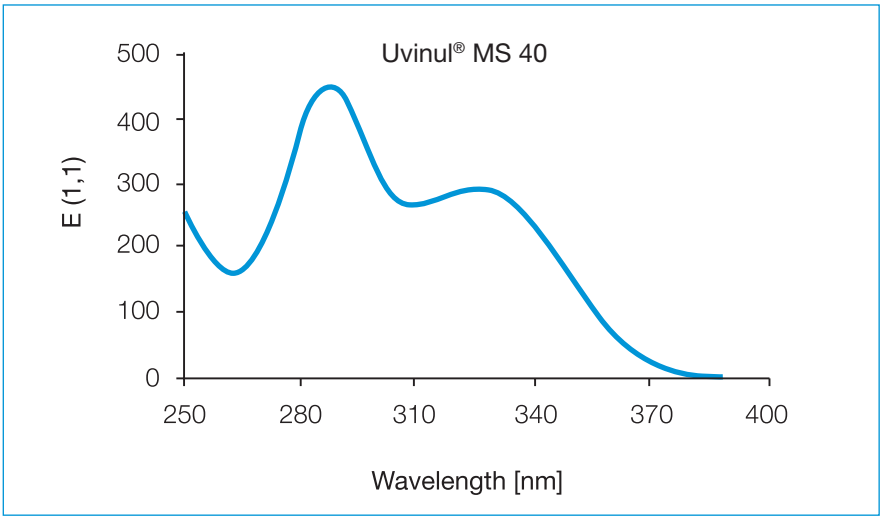
INCI name

Benzophenone-4

CAS-No.

4065-45-6

UV spectrum



Properties and applications

The sulfonic acid group makes Uvinul® MS 40 soluble in water. The acid group must be neutralized with one of the usual neutralizing agents, e.g. triethanolamine, NaOH etc. The neutralizing agent has no effect on the absorption characteristics. However, if the product is over neutralized (pH 9), the absorption curve shifts towards shorter wavelengths.

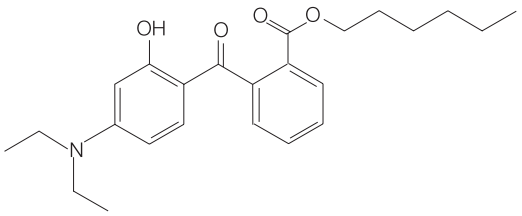
The quantities of neutralizing agent required to completely neutralize 1 g of Uvinul® MS 40 are as follows:

Sodium Hydroxide	approx. 0.13 g
Triethanolamine	approx. 0.53 g
Tromethamine	approx. 0.41 g
Tetrahydroxypropyl Ethylenediamine	approx. 1.00 g

The pH value of the resultant solutions lies between 7.00 and 7.50.

Uvinul® A Plus Granular

Structural formula



Chemical name

2-(4-(Diethylamino)-2-hydroxybenzoyl]- benzoic acid hexylester

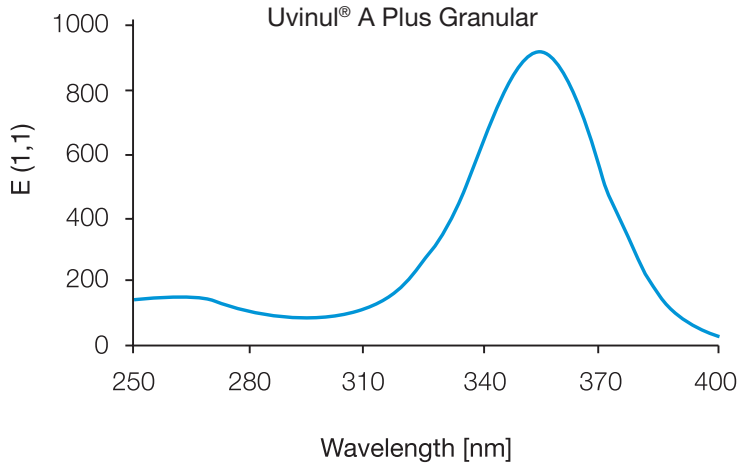
INCI name

Diethylamino Hydroxybenzoyl Hexyl Benzoate

CAS-No.

302776-68-7

UV spectrum



Properties and applications

Uvinul® A Plus Granular is the only photostable organic UVA-I absorber that covers the long wavelengths of the UVA spectrum. The product has a good solubility in cosmetic oils and also a unique solubility in ethanol. It is compatible with inorganic UV filters like Titanium Dioxide or Zinc Oxide. The outstanding photostability of Uvinul® A Plus Granular provides reliable and efficient sun protection for the whole day.

Solubility

Trade name (supplier)	INCI name	Uvinul® A Plus Granular solubility[1] at 25 °C Wt. (%)
Uvinul® MC 80 (BASF)	Ethylhexyl Methoxycinnamate	39.0
Uvinul® N 539 T (BASF)	Octocrylene	39.0
Eusolex HMS (Merck)	Homosalate	36.0
Neoheliopan Type OS (Symrise)	Ethylhexyl Salicylate	30.0
Cetiol B (BASF)	Dibutyl Adipate	31.0
Cetiol AB (BASF)	C12-15 Alkyl Benzoate	23.0
Cetiol CC (BASF)	Dicaprylyl Carbonate	18.0
Myritol 318 (BASF)	Caprylic/Capric Triglyceride	17.0
Myritol 331 (BASF)	Cocoglycerides	14.0
Cetiol C5 (BASF)	Coco Caprylate	13.0
Cetiol RLF (BASF)	Caprylyl-Caprylate/Caprate	13.0
Cetiol Sensoft (BASF)	Propylheptyl Caprylate	12.0
Ethanol (99.8%)	Alcohol	12.0
Isopropylpalmitate (BASF)	Isopropylpalmitate	9.1

[1] *Determination of the solubility of Uvinul® A Plus Granular*

Uvinul® A Plus B

INCI name

Ethyl Hexyl Methoxycinnamate (and) Diethylamino Hydroxybenzoyl Hexyl Benzoate

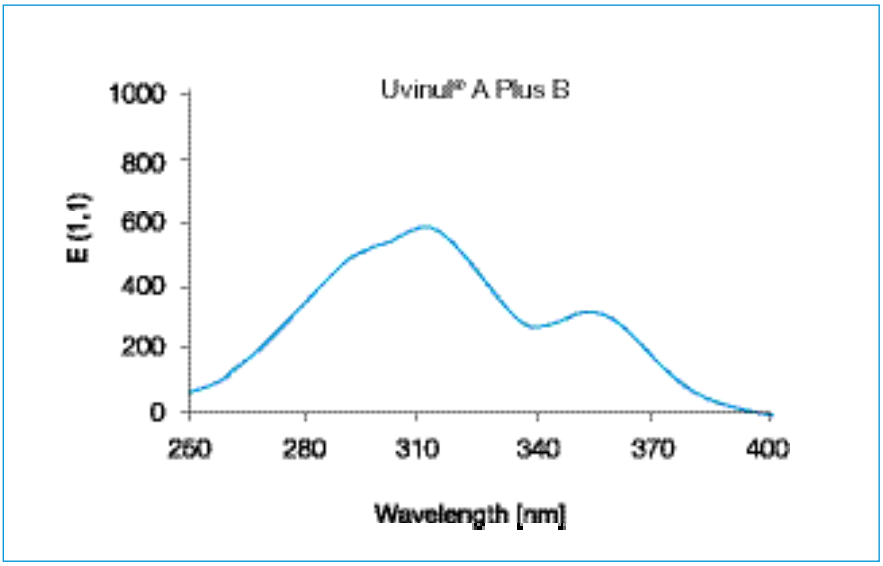
CAS-No.

5466-77-3
302776-68-7

Description

Uvinul® A Plus	35%
Uvinul® MC 80	65%

UV spectrum



Properties and applications

Uvinul® A Plus B is a ready to use solution consisting of Uvinul® A Plus dissolved in Uvinul® MC 80. The solution has a viscosity of 1600 mPa·s at room temperature.

Uvinul® A Plus B is suitable for cold process manufacturing.

Uvinul® Easy

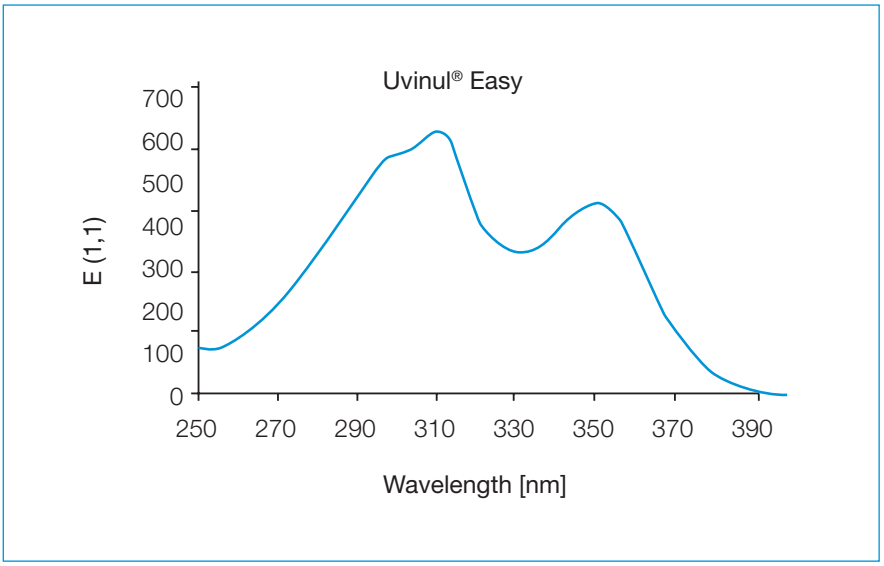
INCI name

Dibutyl Adipate (and) Diethylamino Hydroxybenzoyl Hexyl Benzoate (and) Ethylhexyl Methoxycinnamate (and) Laureth-7 Citrate (and) Polyglyceryl-2 Dipolyhydroxystearate (and) Ethylhexyl Triazone (and) Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine (and) Lauryl Glucoside (and) Triethanolamine (and) Aqua

CAS-No.

144470-58-6
565429-75-6
5466-77-3
187393-00-6
88122-99-0
302776-68-7
110615-47-9
102-71-6
105-99-7
7732-18-5

UV spectrum

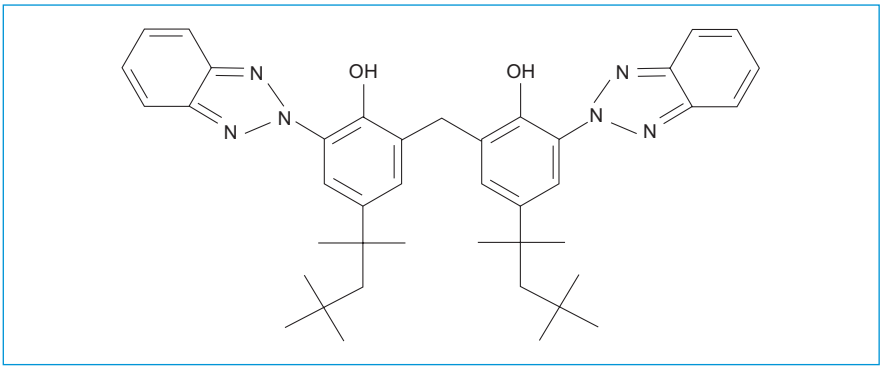


Properties and applications

Uvinul Easy is a ready-made blend of UV filters, emollients and emulsifiers to reach SPF 6 to SPF 50 by simple dilution with water in a cold or hot process. The chosen filter range guarantee that the EC recommendation for UVA protection is met. Uvinul Easy allows to formulation wide variety of cosmetic formulation with SPF claim (Suncare, Daily Care, Decorative Cosmetics).

Tinosorb® M

Structural formula



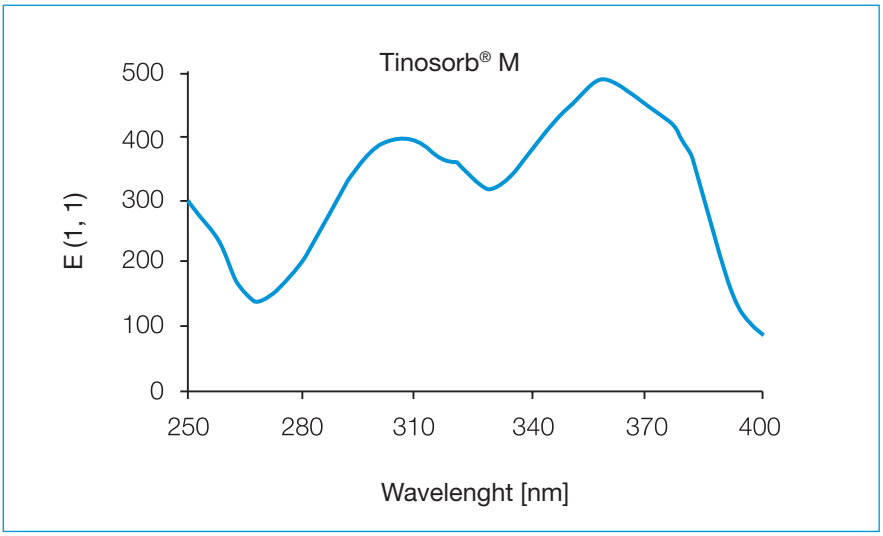
INCI name

Methylene Bis-Benzotriazolyl Tetramethylbutylphenol [nano] (and) Aqua (and) Decyl Glucoside (and) Propylene Glycol (and) Xanthan Gum

CAS-Nos.

103597-45-1
7732-18-5
68515-73-1
57-55-6
11138-66-2

UV spectrum



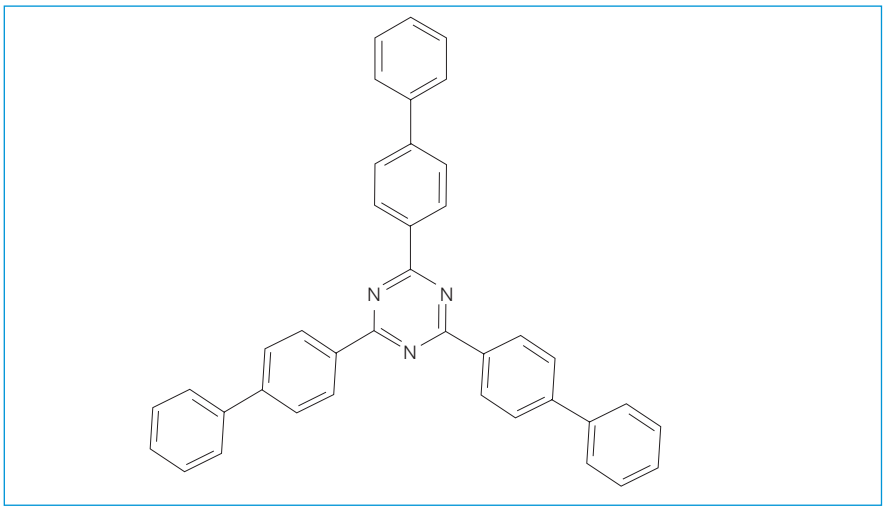
Properties and applications

Tinosorb® M is a broad-spectrum UV-absorber. The microfine dispersion is compatible with most cosmetic ingredients. As a photostable UV-absorber Tinosorb® M increases the photostablility of other UV-absorbers. It can be used in all formulations where UVA protection is necessary. Due to the strong absorbance in the UVA-I Tinosorb® M shows strong contribution to the UVA-PF and therefore efficiently helps to fulfill the EC recommendation for UVA protection.

The Tinosorb® M dispersion can be post-added to emulsions and is therefore suitable for cold process formulations.

Tinosorb® A2B

Structural formula



Chemical Name (active)

1,3,5-Triazine, 2,4,6-tris[1,1'-biphenyl]-4-yl-

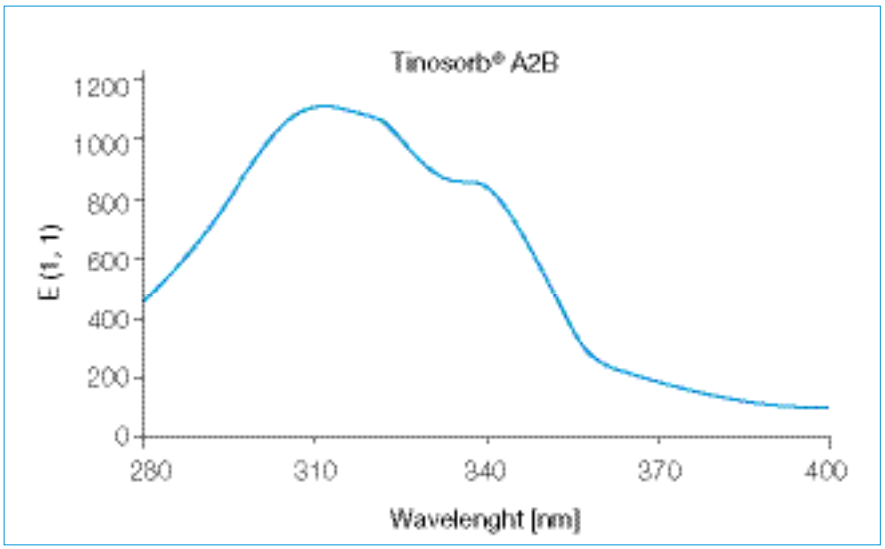
INCI Name

Tris-Biphenyl Triazine [nano] (and) Aqua (and) Decyl Glucoside (and) Disodium Phosphate (and) Butylene Glycol (and) Xanthan Gum

CAS-No.

31274-51-8
7732-18-5
68515-73-1
7558-79-4
107-88-0
11138-66-2

UV spectrum



Properties and application

Tinosorb® A2B is the most efficient filter of BASF's unique "particulate organic UV absorber" technology. The microfine dispersion shows strong contribution to both SPF and UVAPF. With its "UVA-II-shoulder" it also helps bridging the "UVA-II gap".

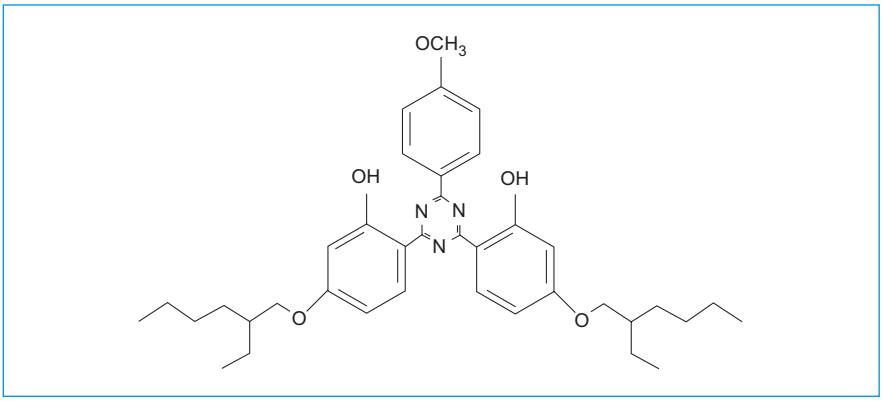
Its absorbance properties and excellent photo-stability makes Tinosorb® A2B the ideal filter for formulating high SPF sunscreen products that fulfil the EC requirements for UVA Protection.

It is compatible with all commonly used UV Filters and cosmetic raw materials.

Tinosorb® A2B can be used in a wide range of emulsifier systems and is suitable for cold manufacturing/post emulsification. As a water-dispersible filter it increases formulation flexibility and added post emulsification especially for high SPF formulations.

Tinosorb® S

Structural formula



Chemical name

2,4-Bis-{[4-(2-ethyl-hexyloxy)-2-hydroxy]-phenyl}-6-(4-methoxyphenyl)-(1,3,5)-triazine

INCI name

Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine

CAS-No.

187393-00-6

Tinosorb® S Aqua

Chemical name

2,4-Bis-{[4-(2-ethyl-hexyloxy)-2-hydroxy]-phenyl}-6-(4-methoxyphenyl)-(1,3,5)-triazine (and) Polymethylmethacrylate (and) Sodium Laureth Sulfate (and) Aminomethyl Propanol

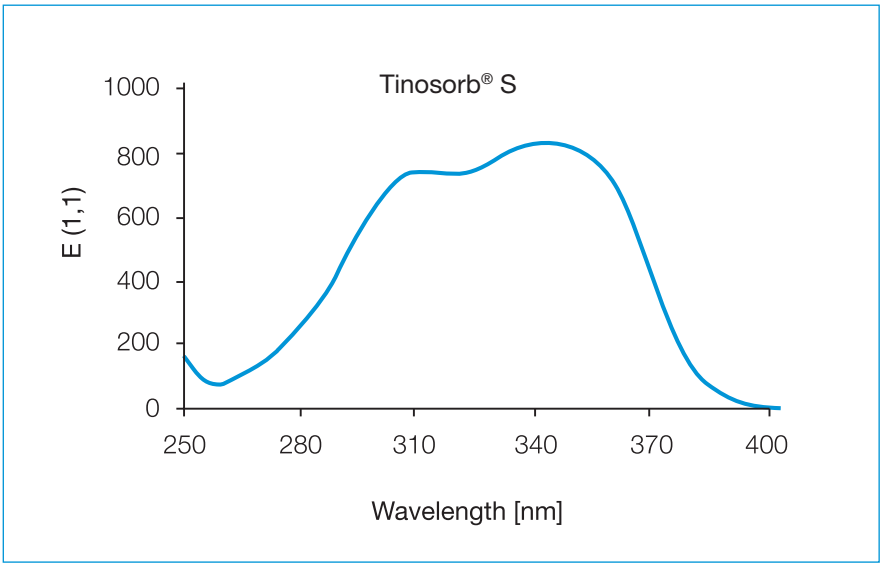
INCI name

Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine (and) Polymethyl Methacrylate

CAS-Nos.

187393-00-6
9011-14-7
1335-72-4
124-68-5

UV spectrum



Properties and applications

Tinosorb® S is the most efficient oil soluble broad-spectrum UV filter. By the incorporation of low concentrations of Tinosorb® S a high contribution to SPF and UVA-PF is achieved. Tinosorb® S is an efficient performance booster with excellent photostability. Tinosorb® S is an outstanding stabilizer for instable UV filters.

Solubility

Trade name (supplier)	INCI name	Tinosorb® S solubility[1] at 25 °C Wt. (%)
Neoheliopan Type OS (Symrise)	Ethylhexyl Salicylate	20.0
Uvinul® MC 80 (BASF)	Ethylhexyl Methoxycinnamate	17.0
Eusolex HMS (Merck)	Homosalate	16.0
Cetiol AB (BASF)	C_{12-15} Alkyl Benzoate	12.0
Cetiol B (BASF)	Dibutyl Adipate	10.0
Cetiol CC (BASF)	Dicaprylyl Carbonate	8.8
Cetiol RLF (BASF)	Caprylyl-Caprylate/Caprate	7.9
Cetiol C5 (BASF)	Coco Caprylate	7.3
Uvinul® N 539 T (BASF)	Octocrylene	7.3
Cetiol Sensoft (BASF)	Propylheptyl Caprylate	6.3
Isopropylpalmitate (BASF)	Isopropylpalmitate	5.0
Myritol 318 (BASF)	Caprylic/Capric Triglyceride	5.0
Myritol 331 (BASF)	Cocoglycerides	5.0
Ethanol (99.8%)	Alcohol	<0.5

[1] *Determination of the solubility of Tinosorb® S*

With Tinosorb® S Aqua the high efficient Tinosorb® S technology is now also available for the incorporation in the water phase of the formulation.

Tinosorb® S Aqua is easy to handle, because no solubilization is necessary and therefore it can be used for cold process formulations.

Z-COTE®

Z-Cote is an inorganic pigment dry powder available in various particle sizes (nano and non-nano). The product line comes in three grades:

Z-COTE®

Chemical name Zinc Oxide

CAS-No. 1314-13-2

Z-COTE® HP1

Chemical name Zinc oxide (and) Triethoxycaprylylsilane

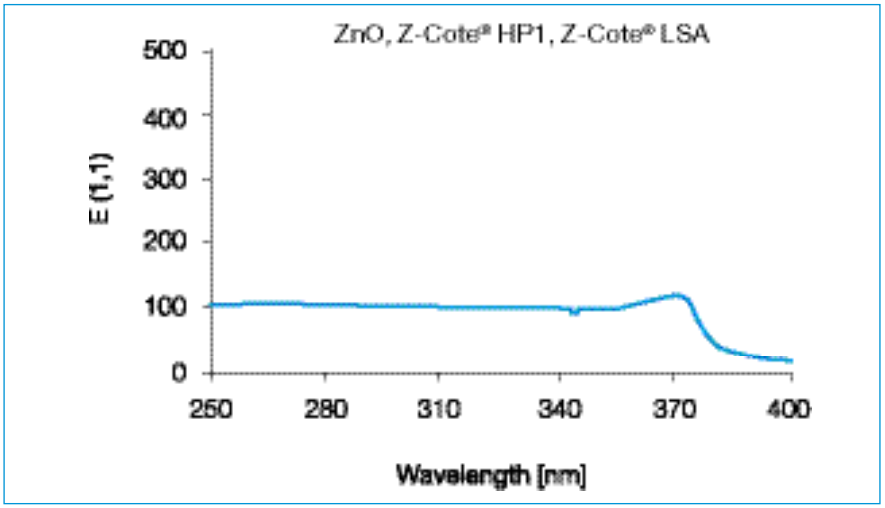
CAS-No. 1314-13-2
2943-75-1

Z-COTE® LSA

Chemical name Zinc Oxide (and) Triethoxycaprylylsilane

CAS-No. 1314-13-2
2943-75-1

UV spectrum



Properties and applications

Zinc oxide is known for its beneficial properties as skin protectant and its antimicrobial activity. All BASF zinc oxide grades provide broad-band light attenuation, which covers almost uniformly nearly the whole UV-Spectrum: from the short UVB up to the long UVA-I (380 nm). It is specifically recommended for daily skin care and the protection of sensitive skin, e.g. children.

Z-COTE® is an uncoated micronized zinc oxide and has an amphiphilic character. It can be incorporated into the water phase or into the oil phase of a formulation.

Z-COTE® HP1 consists of approx. 98% micronized zinc oxide and 2% of a hydrophobic coating. It should be incorporated into the oil phase of a formulation.

Z-COTE® LSA (non-nano) consists of approx. 99% zinc oxide and 1% of a hydrophobic coating. It should be incorporated into the oil phase of a formulation. Because of the large particle size, the incorporation requires less energy, improving the sustainability factor of the potential products overall.

All Z-COTE® grades show synergistic effects with organic UV-filters, and can be used to enhance the UVA and SPF performance of a sunscreen product.

The product quality of the Z-COTE® grades meets or exceeds the current USP requirements.

Stability

The minimum storage times for the different BASF filters in the original sealed containers are as follow:

1 year	2 years	3 years	5 years
Uvinul® MC 80 N	Uvinul® A Plus Granular	Z-COTE®	Tinosorb® S
Tinosorb® S Aqua	Tinosorb® M	Z-COTE® HP 1	
	Tinosorb® A2B	Z-COTE® LSA	
	Uvinul® A Plus B	Uvinul® MC 80	
	Uvinul® Easy	Uvinul® MS 40	
		Uvinul® T 150	
		Uvinul® N 539 T	

Toxicology

The BASF range of UV filters has been toxicologically assessed for their suitability in cosmetic preparations. On the basis of information at our disposal and provided that the recommended concentrations and field of application are adhered to, there is no evidence of any toxicological risk associated with their use.

Safety Data Sheets

Safety Data Sheets are available on request.

Note

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December 2014