

Polymer Products for Personal Care



derypol

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“We make polymers, we care for the environment“

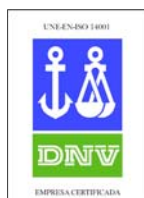
This means that at **Derypol** we work to establish the market needs, investigate and develop products and look after these needs under a strict quality control.

Our concern for the natural setting has been incorporated into our main objective; using processes and products that respect the environment. This is our way of contributing to the care of the **environment**.

Our **cosmetic range** polymers are faithful to our objective of innovation and technological advancements in the development of specialized and sophisticated products. They are the result of extensive investigation and are manufactured following the most demanding criterias of excellence and quality. And because of this, we can provide effective ingredients for the cosmetic world, whilst at the same time complying with all the security requirements and at all times having the maximum respect for the environment.

Our cosmetic range is aimed towards *personal care* and the health needs of skin and hair.

**Dr. Guillem Solé
General Manager**



**Range of
personal care
products**

Opacifiers *OPM Series*
(page 3 – 4)

- OPM504
- OPM544

Conditioners *DER Series*
(page. 5 – 8)

- DER K227
- DER K227PF
- DER K327
- DER BCA42
- DER BCA35
- DER K2
- DER K6
- DER K11
- DER P1

**Rheology Modifiers
*Himosap & Hygel Series***
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- HIMOSAP AES730
- HIMOSAP GAS100
- HYGEL CL1700
- HYGEL LE766
- HYGEL LE585
- HYGEL LE755
- HYGEL LE375C
- HYGEL E900
- HYGEL E100FD

Styling Agent *HYfix Series*
(page. 16 – 17)

- HYfix CX414
- HYfix CX419

Biocides *Derycide Series*
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- DERYCIDE CD23PL
- DERYCIDE CD100BR
- DERYCIDE CD42

OPACIFIERS

OPM Series

Properties:

The objective of an opacifier is to improve the appearance of the product, even if colouring compounds are used in its formulation. An opacifier must have two main qualities:

1. Opacifying:

It depends on the uniqueness of the opacifier. Polymer composition and particle size are therefore important.

2. Stability:

This refers to the stability within the formulation. Here the opacifier and the formula are the main factors. Stability is a consequence of their mutual compatibility.

Our OPM series guarantees a good opacifying capacity and good stability in a wide range of products formulations; however it is mandatory to check this compatibility at laboratory scale prior to progressing to industrial scale. Derypol has an equipped laboratory and expert staff for this testing in order to check formulation stabilities.

These are the conditions to which the opacified formulations are submitted:

- ✓ One week of incubation 45 °C.
- ✓ Centrifugation (special cases).

Specifications:

	OPM 504	OPM 544
Appearance	White milky	White milky
Solids	40%	40%
pH	2,0 – 3,5	2.0 – 3.5
Viscosity	<100 cps	< 100 cps
Density	1.04 gr/cc aprox	1.04 gr/cc aprox
Surfactants	Anionic Nonylphenol free	Anionic Nonylphenol free
Particle Size	150 - 350 nm	150 - 350 nm
INCI	Styrene / Acrylates copolymer	

Storage: keep the product within the temperature range of: 5°C - 35°C

Shelf life: 12 months

Preparation and dosage

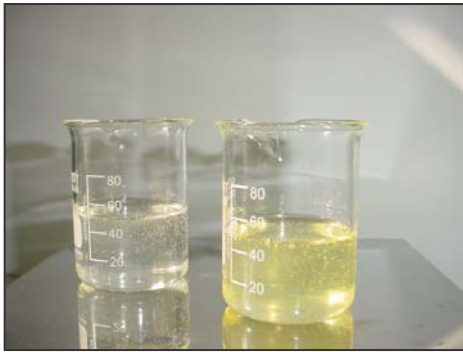
To get the most effective blend of the opacifier we recommend a previous dilution of the OPM product with water in a proportion of 1:5 or 1:10, and to dilute with between 10 and 20% in an intermediary phase of the addition of the products.

The recommended doses are usually within the range of 0.2 – 1% depending on each particular case.

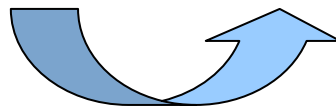
Applications

Opacifiers from our OPM series are used in a wide range of products in cosmetics and detergency as Sunlight protection products, bath gels, hand soaps, face cleaning creams, shampoos, hair treatment creams and others

Bath gel without opacifier



Bath gel with our OPM544.



CONDITIONERS

DER Series

The introduction of “homo” and “copolymers based on **dimethyl-dialyl ammonium chloride** (DADMAC), especially cationic and amphoteric polymers has increased in a spectacular progression, and this progression shows tendency to increase.

The analysis of this development, demonstrates that the above mentioned compounds have excellent properties. Making the products formulated with them to perform much better than being manufactured with other classic components. Not only has this but, innovation been possible in a greater number of applications within them.

To be able to cover the different necessities, our company has different types of polymers available, of varying cationic character including **DER Family** polymers.



Properties

DER K227, DER K 227PF & DER K327 (Polyquaternium - 7)

- ✓ Compatible with most components of cosmetic formulations, as well as with most cationic, no ionic, anionic and amphoteric surfactants.
- ✓ Substantively properties to skin and hair.
- ✓ The new DER K227PF does not contain parabens. The preservative used as an alternative is sodium benzoate.

DER BCA42 & DER BCA35 (Polyquaternium - 22)

- ✓ Compatible with most components of cosmetic formulations, as well as with most cationic, no ionic, anionic and amphoteric surfactants.
- ✓ Substantively properties to skin and hair

DER K2 & DER K6: (Polyquaternium-6)

- ✓ High substantive power.
- ✓ Full compatibility with non-ionic and amphoteric ingredients.
- ✓ It imparts a smooth and velvety touch on the skin contributing greatly to maintain a maximum degree of hydration.
- ✓ Easy to dosage due to its solubility in water.

DER K11 (Polyquaternium-11)

- ✓ Easy incorporation in formulations due to complete water solubility.
- ✓ Compatible with a wide range of surfactants, including anionic and amphoteric ones.
- ✓ Compatibility with ethanol for hair formulations (musses and sprays).

DER P1

- ✓ Clear and colourless cosmetic formulations.
- ✓ Easy incorporation in formulations due to complete water solubility.
- ✓ Compatible with non-ionic and cationic ingredients, with anionic compounds (surfactants and thickeners) with restrictions.

Specifications:

	pH	Viscosity	Solids	Components	INCI
DER K 227	6 – 7.5	7.500 – 15.000	8.5 – 10%	AAM DADMAC	Polyquaternium - 7
DER K 227PF	3 – 4.5	7.500 – 15.000	8 – 10%		
DER K 327	6 - 7.5	7.500 – 15.000	18.5 – 20%		
DER BCA42	4 - 6	3.000 – 6.000	39 – 43%	AAC DADMAC	Polyquaternium - 22
DER BCA35	≤ 2.5	4.000 – 15.000	39 – 43%		
DER K2	5 - 7	5.000 – 12.000	39 – 41%	DADMAC	Polyquaternium - 6
DER K6	4 - 7	2.000 – 15.000	19 – 21%		
DER K11	5 -7	10.000 - 50000	19 – 22%	DMAEMA	Polyquaternium - 11
DER P1	4.5	140 (Solution at 1%)	> 88%	AAM / APTC	Acrylamidopropyltrimonium Chloride / Acrylamide Copolymer

AAM: Acrylamide

AAC: Acrylic Acid

DADMAC: dimethyl-dialyl ammonium chloride

APTC: Acrylamidopropyltrimonium Chloride

DMAEMA: Quaternized copolymer of vinylpyrrolidone (VP) and dimethylaminoethylmethacrylate

Storage: keep the product within the temperature range of: 5°C - 35°C

Shelf life: 12 months

Applications:

DER K227, DER K227PF & DER K327

- ✓ Transparent and colourless cosmetic products.
- ✓ Bath gels, shampoos and liquid soaps.
- ✓ In Skin Care gives a soft, velvety and non greasy after feel.
- ✓ In Hair Products; reduce static and flyaway. Increase Shine, softness and body.
- ✓ Improve wet and dry compatibility in dry hair.

DER BCA42 & DER BCA35

- ✓ In Skin Care products:
 - Imparts a smooth, velvety feel and reduces tightness after drying skin.
 - Improves foam for liquid cleansing and liquid soaps.
 - Provides an excellent moisturization.
- ✓ In Hair Care products:
 - Provides a luster and a soft silky feel.
 - Excellent lubricity and sang-free wet compatibility.
 - Imparts excellent dry compatibility when the hair is dried.
 - Helps hold curl without flaking.

DER K2 y DER K6

- ✓ In Skin Care products:
 - Provides a luster and a soft silky feel.
 - Give to the skin a soft, velvety and non greasy after feel.
 - Improves the spreadability and the application of the final product.
- ✓ In Hair Care products:
 - Conditioning shampoos, blow-dry lotions, leave on or rinse off conditioners, hair relaxer creams.
 - Provides a luster and a soft silky feel.
 - Reduce Static and flyaway effect.
 - Increase Shine, softness and body.
 - Improving wet and dry compatibility.
 - Improves the spread ability and the application of the final product.
 - Strong conditioning effect, both products are mainly used in Afro-American products, damaged hair products and tightly curly hair.



DER K11

- ✓ Conditioner for styling gels.
- ✓ Hair Care; It can be formulated into styling mousses, lotions and gels, conditioners, transparent shampoos and treatment products.
- ✓ Improve wet and dry compatibility. Increase Shine, softness and body.
- ✓ Good curl retention.
- ✓ Form a non-tacky and continuous film
- ✓ Suitable for Skin care products; liquid soaps, shower gels, body lotions and shaving products

DER P1

- ✓ In Hair care products reduces flyway and static.
- ✓ Improve wet and dry compatibility.
- ✓ Increase Shine, softness and body.
- ✓ Improve damage hair.
- ✓ Hair treatment to smooth down, straightening the hair.
- ✓ In Skin care products improves the application and the spread ability of the product.
- ✓ It provides to the skin a soft, velvety and non-greasy effect.



REHOLOGY MODIFIERS

CLASSIFICATION

Aqueous presentation form	Himosap AES730
	Himosap GAS100
Emulsion	HYgel LE585
	HYgel LE755
	HYgel LE766
	HYgel LE375C
Aqueous emulsion	HYgel CL1700
Powder	HYgel E900
	HYgelE100FD

Himosap Series

(Exclusive Derypol Technology!)

Are well known polymers but in aqueous presentation form. Water dispersion polymers are not known in the cosmetic market thereby Himosap are special products and they work in a different way than others solids, emulsions or latex products.

Advantages of Himosap products:

- ✓ Aqueous presentation polymers that permits a very easy preparation.
- ✓ Aqueous dispersion free of oils, solvents and surfactants.
- ✓ Immediately dissolutions.
- ✓ Excellent salt tolerant, even better than other products in the market.
- ✓ Provides aqueous transparent solutions.
- ✓ Viscosity recovered after boiling it.
- ✓ Stable with polar solvents (glycolic acid, sorbitol, glycerine, propylenglicol...).

Himosap Series Properties

AES730

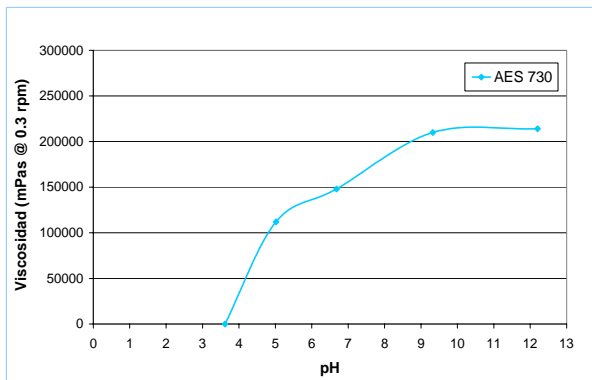
- ✓ Acrylamide copolymer with high anionic content.
- ✓ pH dependent reology modifier.
- ✓ Viscosity of the product < 3.000 cps, so it is very easy to manage.
- ✓ High suspending ability powder.

GAS100

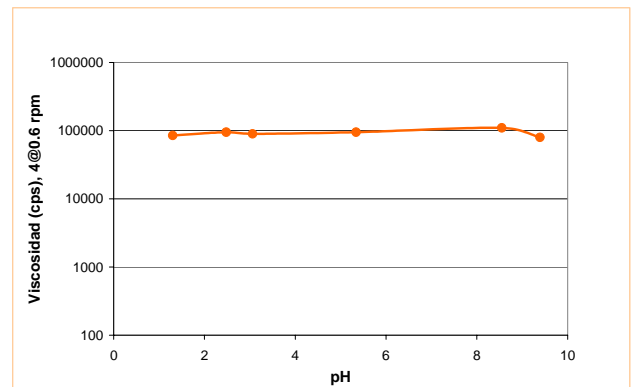
- ✓ Crosslinked copolymer with anionic content at 20% of actives.
- ✓ pH independent. Doesn't need neutralization before using it.
- ✓ High molecular weight.
- ✓ The polymer thickens in all the pH range, even acid pH.
- ✓ Suspending ability powder.

Thickening ability of different concentrations of NaCl

AES 730



GAS 100



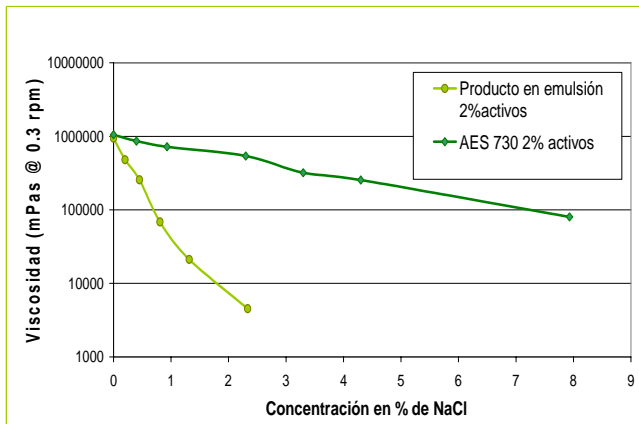
Himosap Series Specifications

	AES 730	GAS 100
Appearance	White milky	White milky
Actives	22%	20%
Density	1.2	1.2
Product Viscosity	< 3.000 cps	< 3.000 cps
Ionic character	Anionic	Anionic
INCI	2-propenamide / Acrylic	Copolymer of acrylic acid, 2-propenamide and sodium acryloyldimethyltaurate in aqueous dispersion with ammonium and sodium sulfate.

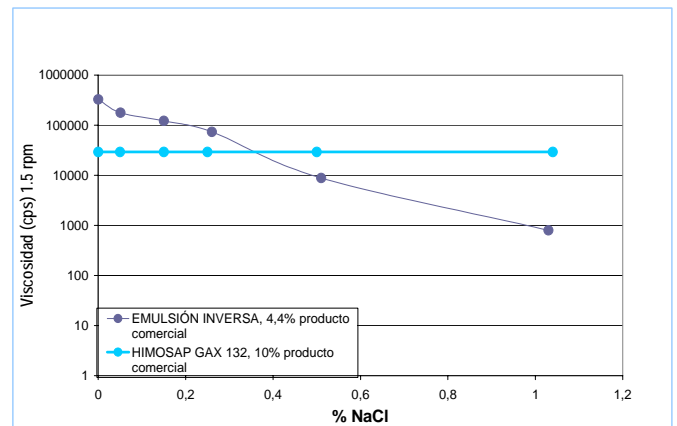
Storage: keep the product within the temperature the range of: 5°C - 35°C

**Thickening ability at different concentrations of NaCl.
Comparison with an emulsion product existing in the market**

AES730



GAS100



Himosap Series Applications

AES730 & GAS100

- ✓ These polymers are excellent thickeners for transparent gel formulations as: Aloe Vera, anti-cellulites, hot and cold effect, depilatories, peelings, water hairstyle, etc...
- ✓ AES730 is specially recommended for the formulations which have particles in suspension (Body and face peeling).

Serie Hygel

Emulsion - Latex

HYgel Series Properties

HYgel CL1700

- ✓ Polymer of acrylic monomers in aqueous emulsion.
- ✓ Anionic rheology modifier for personal care applications especially when they contain salts and surfactants.
- ✓ High suspending ability powder.
- ✓ Solutions are pseudoplastic and non thixotropic.
- ✓ Wide pH range.
- ✓ It is compatible with most of the more common surfactants used in personal care:

- Sodium Lauryl Sulfate
- Sodium Laureth Sulfate
- Cocamidopropyl Betaine
- Sodium lauroyl sarcosinate
- Disodium Laureth Sulfosuccinate



CL1700 at pH 2.5 CL1700 at pH 7

HYgel LE585 y HYgel LE755

- √ Anionic acrylic copolymer dispersed in medicinal grade white oil.
- √ The polymers swell immediately in water without any neutralisation, and at room temperature.
- √ Solutions are pseudoplastic and non thixotropic.
- √ Suspension of solid particles (only the LE585)
- √ Compatible with surfactants.

HYgel LE766

- √ It contains synthetic oil (Hydrogenated Polydecene) as an alternative to mineral oil, and does not contain acrylamide.
- √ It is normally used to thicken aqueous solutions and to **stabilize O/W emulsions**.
- √ It is pseudoplastic and non thixotropic.
- √ Its solutions do not show significant changes in viscosity and stability at high temperature.
- √ LE766 helps to stabilise suspensions.
- √ It is supplied in ready to use form, so it is no necessary neutralization. The addition can be made at any stage of the manufacturing process (at room temperature).
- √ Compatible with surfactants.

HYgel LE375C

- √ It is a cationic acrylic copolymer dispersed in medicinal grade white oil.
- √ Normally used to thicken cationic aqueous solutions and to stabilize O/W emulsions.
- √ It is supplied in ready to use form, so it is no necessary neutralization. It swells immediately in water at room temperature.
- √ Solutions are pseudoplastic and non thixotropic.
- √ LE375C helps to stabilise suspensions.

HYgel E900

- √ Acrylic-based polymer in powder form.
- √ Thickenig agent for aqueous solutions.
- √ Solutions are pseudoplastic and non thixotropic.
- √ The polymer does not show significant changes in viscosity and stability at high temperature.
- √ It has a high yield value. So it is an effective agent for emulsion stabilization and stable suspension of solid particles.

HYgel E100FD (Fast Dispersion)

- √ Acrylic-based polymer in powder form.
- √ Thickenig agent for aqueous solutions.
- √ Solutions are pseudoplastic and non thixotropic.
- √ The new Hygel E100FD it is an improved version, due to the dispersion is faster than Hygel E900 and it gives better transparency.
- √ The polymer does not show significant changes in viscosity and stability at high temperature.

Specifications

	HYgel E900	Hygel E100 FD
Nature	White granulated powder	White granulated powder
Odor	Slightly acetic	Slightly acetic
Size of particle	5 µm	5 µm
Water content	5 % max	5 % max
Viscosity (in solution) Brookfield at 20 rpm (cps)	0.2%: 20000-30000 cps 0.5%: 45000-65000 cps	0.2%: 20000-30000 cps 0.5%: 45000-65000 cps
Solvent residue	1000 ppm max	1000 ppm max
Shelf life	24 months	24 months
pH	2,7 – 3,7 (0,5% solution)	2,7 – 3,7 (0,5% solution)
INCI	Carbomer	Carbomer

HYgel Series Applications

HYgel CL 1700

- ✓ It has been developed to function with surfactants and surfactant blends to provide significant suspending and stabilizing properties to formulations.
- ✓ It is usually used on clear shampoos, bath gels and 2 in 1 conditioning shampoos.
- ✓ Antidandruff shampoos.
- ✓ Baby shampoos.
- ✓ Facial Cleanesers.
- ✓ Conditioning body washes

HYgel LE 766, HYgel LE 585 and HYgel LE 755

- ✓ They are recommended for cosmetics, personal care and hair care formulations.
- ✓ Make up and sun screen formulations with a non greasy and non sticky after feel.
- ✓ Rub-in and spreadability of highly thick and compact creams are easier and more uniform.
- ✓ Cream-like gels (light textures white glossy products)
- ✓ Serums.
- ✓ Sensitive creams and baby care.
- ✓ Cleansing lotions and creams (compatibility with surfactants)
- ✓ Nail varnish remover.
- ✓ High pH formulations: depilatory creams, perm lotions...
- ✓ Hydroalcoholic gels.

HYgel LE375C

- ✓ Formulations that contain cationic ingredients.
- ✓ Make up and sun screen formulations with a non greasy and non sticky after feel.
- ✓ Self-tanning emulsions.
- ✓ Sunscreen.
- ✓ Skin care with AHA, acid fruits, DHA...
- ✓ Hair care: after-shampoos (conditioning effect)

HYgel E900 & HYgel E100FD

- ✓ Has a very high yield value, so it is an effective agent for emulsion stabilization and stable
- ✓ It used in hair care and skin care products, for gel, lotion and cream formulation.
- ✓ Hidro-alcoholic gels.



STYLING AGENTS

HYfix Series

HYfix Series Properties

HYfix CX 414 & CX 419

- ✓ Anionic copolymers in aqueous solution. 70% M Methacrylic acid / 30% M AMPS Sodium Salt (AMPS = acrylamidomethyl propane).
- ✓ Easy incorporation into formulations.

HYfix Series specifications

	HYfix CX414	HYfix CX419
Appearance	Liquid, viscous, colorless, hazy	Clear viscous liquid
Odor	Without scent	Without scent
Colour, APHA	≤ 50	≤ 50
Ionic character	Anionic	Anionic
Solids %	10.5 – 13.1	14 - 16
pH	5 - 7	5 - 7
Viscosity	5000 – 15.000 cps	10.000 – 20.000 cps
Intrinsec Viscosity	3,5 – 4,5	1,5 – 3,5
INCI	Methacrylic Acid/Sodium Acrylamidomethyl Propane Sulfonate Copolymer	Methacrylic Acid Aminomethyl Propanol / Potassium Acrylamidomethyl Propane Sulfonate Copolymer



HYfix Series Applications

HYfix CX 414

- √ Adapted for styling gels.
- √ Helps to provide high curl retention in a high humidity environment
- √ Contributes to a silky, dry hair feel.
- √ Washes out easily.
- √ Curl retention.
- √ Make-up fixation.
- √ Eye-liner fixation.
- √ Transparent formulations.

HYfix CX 419

- √ High compatibility with Carbomers.
- √ Adapted for styling gels.
- √ Helps to provide high curl retention in a high humidity environment
- √ Contributes to a a silky, dry hair feel.
- √ Gives wet effect and a good gloss effect.
- √ Non- flaking.
- √ Transparent formulations.
- √ Make-up fixation.
- √ Curl retention.



BIOCIDES

Derycide Series

Properties

Derycide CD 23PL

- ✓ It is a biocide resulting from the blend of an organic organobromide compound with isothiazolones (chloride and methyl isothiazolones – CMI/MI) in aqueous solution.
- ✓ It possesses a high activity against gram-positive and gram-negative bacteria, fungi and yeast.

Derycide CD 100BR

- ✓ It is a biocide resulting from the active brominated in solid form.
- ✓ It possesses a high activity against gram-positive and gram-negative bacteria, fungi and yeast.

Derycide CD 42

- ✓ Blend of chloride and methyl isothiazolones (CMI/MI) stabilised in aqueous solution.
- ✓ It possesses a high activity against gram-positive and gram-negative bacteria, fungi and yeast.



Specifications

	Derycide CD23PL	Derycide CD100BR	Derycide CD42
Appearance	Transparent liquid – slightly hazy	Powder	Transparent liquid
Colour	Yellowish	White	Slightly Yellowish
Actives (% p/p)	6.2	99 mín.	1.5
Moisture (% p/p)	-	0.5 max.	-
Density (20°C)	1.04 – 1.08 gr/cc	Aprox. 1.2 gr/cc	1.07 – 1.11 gr/cc
pH (20°C)	2 - 4	5.7 (sol.1%)	2 – 4
Ashes (sulphates) (% p/p)	n.a.	0.5 max.	n.a.
Solubility	Soluble in water and glycol	Soluble in water	Soluble in water and glycol at 20 °C
Odor	Smooth, slightly spicy	Characteristic	Smooth, slightly spicy
Viscosity (20°C)	Lower than 100cPs	n.a.	Lower than 150cPs
Freezing point	Lower than -5°C	n.a.	Lower than -5°C
Boiling point	98°C Aprox.	n.a.	98°C Aprox.
Flash point	Above its boiling point	n.a.	Not inflammable
INCI	2-Bromo-2-Nitropropane-1,3-Diol Methylchloroisothiazolinone Methylisothiazolinone	2-Bromo-2-Nitropropane-1,3-Diol	Methylchloroisothiazolinone Methylisothiazolinone

n.a.: non aplicable



Preparation and dosage

Derycide CD23PL

It may be added at any time during the manufacturing process. A high level of agitation and mixing is required to allow the product to homogenise within the composition. The pH of the formulation should not be higher than 8,0.

Typically the required dosage ranges between 0.05 and 0.3%, based on the total weight of the formulation. As this is a figure that may vary depending on the particular application and the expected results, we recommend testing the product in the laboratory before progressing to industrial scale.

Derycide CD100BR

It may be used as it is or previously diluted in water. The dosage will vary depending on the characteristics and requirements of the composition to preserve. Usually, though, it is within the range 0.01 – 0.02%. Once again we recommend conducting testing in the lab with this biocide and the composition to determine the most adequate dosage and prove that both are compatible.

Derycide CD42

It may be added at any time during the manufacturing process. A high level of agitation and mixing is required to allow the product to homogenise within the composition. The pH of the formulation should not be higher than 8,0.

Typically the required dosage ranges between 0.05 and 0.3%, based on the total weight of the formulation. Previous testing in the lab is advisable.

Applications

Used mainly as a preserving agent in formulations of liquid detergents, softeners and cosmetic products. In general it may be useful in almost any kind of aqueous emulsion.

PRODUCT APPLICATIONS / INCI NAME

Product Type	Product Name	INCI
Opacifier	OPM504	Styrene / Acrylates Copolymer
Opacifier	OPM544	
Conditioner	DER K227	Polyquaternium - 7
Conditioner	DER K227PF (Parabens Free)	
Conditioner	DER K327	
Conditioner	DER BCA42	Polyquaternium - 22
Conditioner	DER BCA35	
Conditioner	DER K2	Polyquaternium - 6
Conditioner	DER K6	
Conditioner	DER K11	Polyquaternium - 11
Conditioner	DER P1	Acrylamidopropyltrimonium Chloride / 2-propenamide Copolymer
Rheology modifier	AES730	2-propenamide / Sodium Acrylate Copolymer
Rheology modifier	GAS100	Copolymer of acrylic acid, 2-propenamide and sodium acryloyldimethyltaurate in aqueous dispersion with ammonium and sodium sulfate.
Rheology modifier	HYgel CL1700	Acrylates Copolymer
Rheology modifier	HYgel LE766	Sodium Polyacrylate, Hydrogenated Polydecene, Trideceth - 6
Rheology modifier	HYgel LE585	2-propenamide /Sodium Acrylate Copolymer /Mineral Oil (Paraffinum Liquidum), Trideceth - 6
Rheology modifier	HYgel LE755	Sodium Polyacrylate /Mineral Oil (Paraffinum Liquidum), Trideceth - 6
Rheology modifier	HYgel LE375C	Polyquaternium 37/ Mineral Oil (Paraffinum Liquidum), Trideceth - 6
Rheology modifier	HYgel E900	Carbomer
Rheology modifier	HYgel E100FD	Carbomer
Styling Agent	HYfix CX414	Methacrylic Acid/Sodium Acrylamidomethyl Propane Sulfonate Copolymer.
Styling Agent	HYfix CX419	Methacrylic Acid Aminomethyl Propanol / Potassium Acrylamidomethyl Propane Sulfonate Copolymer
Biocide	Derycide CD23PL	2-Bromo-2-Nitropropane- 1,3-Diol Methylchloroisothiazolinone Methylisothiazolinone
Biocide	Derycide CD100BR	2-Bromo-2-Nitropropane- 1,3-Diol
Biocide	Derycide CD42	Methylchloroisothiazolinone Methylisothiazolinone

Derypol, S.A.

Offices:

Via Augusta, 48-54, Entlo. 4º- 5º

Tel. +34 93 238 90 90, Fax +34 93238 90 91

08006 Barcelona (Spain)

mail: info@derypol.com

Factory and Laboratories:

C/de Cal Gabatx, s/n.

Tel. +34 93 849 61 88 – Fax +34 93 846 41 93

08520 Les Franqueses del Vallès

Barcelona (Spain)

www.derypol.com

derypol