MEDMULS LE

INCI NAME:	LAURYL/MYRYSTIL ALCOHOL, CETEARETH-50, STEARYL ALCOHOL
CAS NUMBER:	80206-82-2, 68439-49-6, 113-92-5

Medmuls LE is an excellent globally compliant, non-ionic, easy to use, high performing and cost- effective emulsifier for hair care products.

Medmuls LE promotes the formation of liquid crystals, which offer several benefits such as prolonged hydration, controlled release of actives, high stability of emulsions and a light, pleasant feel on scalp and skin. Furthermore, the liquid crystals network improves the resistance of emulsions to oxidation and to enzymatic degradation and ensures consistency in the molecular structure and purity, indispensable requirements for the constant quality of finished products.

SPECIFICATIONS	
Appearance (25°C)	waxy solid
Colour	white
Acid value (mg KOH/g)	2,0 max.
Saponification value (mg KOH/g)	2,0 max.
pH (5% w.s.)	5,0 - 7,0
Water	0,5% max.

APPLICATIONS

Medmuls LE is an emulsifier specifically developed for hair dyes and for products with a high peroxide content, giving stable, uniform emulsions.

Medmuls LE is 100% active, is substantive to hair and can be used in permanent, semi-permanent and temporary hair dyes.

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Hair dyes with MEDMULS LE - Technology overview

Oxidative hair dyes are by far the largest category and include permanent and demi-permanent dyes.

A permanent hair dye is a two-part system consisting of a color base (the tint) and an oxidiser (the developer). When mixed, the two react each other and produce the color.

The tint is a high pH system (pH 9,5-11,5) and contains colorless precursors (i.e. primary intermediates and couplers) in a blend of emulsifiers, solvents, moisturizers and conditioners.

The developer is formulated at pH 3,0 and contains the oxidant, usually H_2O_2. Once the tint is mixed with the developer, the mixture thickens and dyeing begins.

Medmuls LE can be used in hair dyes, no matter if they are based on the action of ammonia or amine derivatives.

Medmuls LE can be used in hair dyes based on both paraphenylenediamine and paratoluenediamine.

A simple guideline formulation is useful to evaluate the versatility and the efficacy of Medmuls LE in oxidative hair dyes.

Base cream formulation

Ingredients	Wt. %
Toluene-2.5-diamine sulphate	q.s
Developer (eg Resorcinol)	q.s
Ammonia solution, 25%	10,00
Sodium Hydrosulfite	0,20
MEDMULS LE	**22,00**
Disodium EDTA	0,10
Water demineralized	To 100,00

With a high content of Toluene-2.5-diamine sulphate, a rheological modifier, such as Hydroxypropyl Guar, at a 0,5 % concentration, can be added to improve emulsion.

Medmuls LE is recommended in formulations containing highly aggressive ingredients as hair results less damaged and easier to comb after dyeing.

In oxidant emulsions, Medmuls LE provides high stability and maintains the assay of H_2O_2 over time.

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Due to its high reactivity, hydrogen peroxide is difficult to be stabilized so that, in order to guarantee the physical and chemical stability of a product containing H_2O_2, it is necessary to choose the emulsifier and the other ingredients of the formulation very carefully. The same care should be paid to the materials and to the kit used for the production.

The loss of the initial assay of H_2O_2 does not limit the efficacy of the product only, that causes obvious poor performances, but determines a dangerous bulking of the container too, that in extreme cases may even explode. As **Medmuls LE** has an outstanding emulsification ability and a very good compatibility with H_2O_2, the above issues are avoided.

Base cream formulation			
INGREDIENTS	**40 VOL O_2**	**20 VOL O_2**	**12 VOL O_2**
MEDMULS LE	**3,50%**	**3,00%**	**2,50%**
Cetrimonium chloride	4,00%	3,00%	3,00%
PVP	1,00%	1,00%	1,00%
Disodium pyrophosphate	0,30%	0,30%	0,30%
Hydrogen peroxide 36%	34,00%	18,00%	10,00%
Water demineralized	q.s	q.s	q.s

Cetrimonium Chloride is used in the formulations to obtain a thickening, stabilizing and conditioning function. Quantities, though modest, of a cationic substance increase the viscosity of emulsions, which acquire softness, body and much more brightness. Furthermore, the presence of a little cationic charge makes the product less aggressive on scalp, so hair becomes more shiny, soft and less static.

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