Glycerox

Glyceroxes are vegetable-based hydrophilic emollient esters. They are nonionic and completely water soluble, but in common with other nonionics its solubility varies inversely with temperature. Glyceroxes are chemically stable within the pH ranges normally employed in cosmetic preparations.

Product name	INCI name	HLB value
Glycerox HE	PEG-7 Glyceryl Cocoate	10.6
Glycerox 767	PEG-6 Capric/Caprylic glycerides	13.2
Glycerox PK70	PEG-45 Palm Kernel Glycerides	15.0

Features

- Emollients
- Superfatting agents
- Alcohol and aqueous alcohol soluble
- Mildness additives
- Solubiliser/emulsifier
- Dispersants
- Wetting agents
- Low colour and odour
- Minimal effect on foaming

Applications

Skin care

- Shower gels and liquid soaps
- Syndat bars
- Facial cleansers and toners
- Aftershaves, colognes and splashes
- Foam baths
- Body sprays
- Antiperspirants and deodorants

Hair care

- Shampoos
- Mild baby shampoos
- Hair tonics and gel
- Hair spritzes
- Curl activators

Glyceroxes are fully compatible with other nonionic, cationic and anionic materials. In detergent systems such as shampoos, facial washes and shower gels, Glyceroxes act as superfatting agents without adversely affecting foam volume.
Possessing good aqueous-alcoholic solubility, Glyceroxes are recommended as ingredients in aftershaves, colognes and splashes where they impart emollience and enhance skin feel. In these applications they will also aid perfume solubilisation.
Glyceroxes will tolerate high levels of electrolytes and may be incorporated in astringent and antiperspirant products, where they can be employed as emollients. However, hydrolysis will occur in extreme acid or alkaline conditions.
Glycerox PK70 is recommended as mildness additives in gentle detergent products due to its counter-irritant property.

Plasticisers for hair gel

Glycerox PK70 is particularly recommended as plasticisers in carbomer-based systems. Evaluation work using a styling gel base has shown that the incorporation of Glycerox PK70, alone or as a partial replacement for glycerine, significantly reduces flaking of the dried film[2]. Tests show that an addition level of 5% Glycerox PK70 in gel bases containing 0.4% Carbomer(w/w) produces optimum results when replacing glycerin completely. In addition, the use of Glycerox PK70 may enhance the moisturising and glossing properties of the styling gel.

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Mildness studies

An Eytex *in vitro* assay was used to evaluate the counter-irritancy of Glycerox PK70 in the following anionic and anionic/amphoteric detergent bases:

Test shampoo	Anionic	Anionic/amphoteric
	% w/w	% w/w
Sodium laureth-3 sulphate	30.0	20.0
Lauramide DEA	3.0	-
Cocoamphoacetate	-	12.5
Additive	qs	qs
Deionised water	to 100	to 100

The counter irritancy of Glycerox PK70 in an anionic/amphoteric system was compared with the base formulation alone and containing an establishment counter-irritant, Polysorbate 20, at 15%w/w. The results show that the incorporation of Glycerox PK 70 significantly reduced the irritancy of the detergent system. Furthermore, Glycerox PK70 was shown to be more effective than Polysorbate 20 as it was able to produce similar reduction in irritation at much lower concentration.

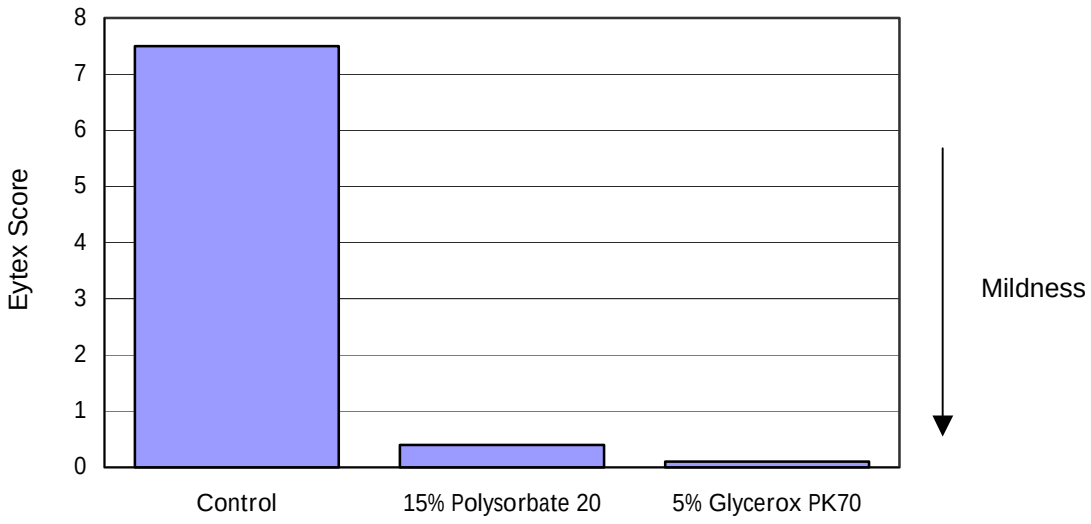

Figure 1 Counter-irritancy of Glycerox PK70 in an anionic/amphoteric detergent system (in vitro screen)

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Solubility

The solubility of Glyceroxes at 10% solution in various solvents at 25ºC is detailed in table 2.

Solvent	Glycerox 767	Glycerox HE	Glycerox PK70
Water	S	S	S
Ethanol	S	S	S
Ethanol:water 50:50	S	S	S
Mineral Oil	I	I	I
Oleyl Alcohol	S	S	S
Glycerin	P	I	P
Isopropyl myristate	P	I	P

Key S - Soluble I – Insoluble P – Part soluble

Table 2 Solubilities of the Glyceroxes range at 25°C

Health and safety

Glyceroxes are considered to be acceptable cosmetic raw materials. However, in common with other surface active agents, they may produce irritation of the skin (detergent action) and eyes, as supplied. A separate material safety data sheet for each product is available on request.

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