

Matrixyl (palmitoyl pentapeptide-4)

Matrixyl is a cosmetic ingredient, palmitoyl pentapeptide-4 (Pal-KTTKS), consisting of the pentapeptide Lys-Thr-Thr-Lys-Ser linked to palmitic acid. Its research consists mainly of in-vitro collagen synthesis studies and small cosmetic studies of skin appearance.



■ Hydrophobic ■ Acidic ■ Basic ■ Polar ■ Gly, Pro, Cys ■ Non-standard

Length	5 residues
Formula	C ₃₉ H ₇₅ N ₇ O ₁₀
Average mass	802.05 g/mol
Monoisotopic mass	801.5575 Da
Evidence	Preclinical (animal and cell studies)
US status	Cosmetic ingredient; not a drug
WADA	Check the current Prohibited List

Palmitoyl pentapeptide-4 (Pal-KTTKS).

Expected ions (monoisotopic)

[M+H] ⁺	[M+2H] ²⁺	[M+3H] ³⁺	[M+4H] ⁴⁺
802.5648	401.7860	268.1931	201.3967

What the COA should show

A certificate of analysis should confirm identity by mass spectrometry against the expected mass of the palmitoylated conjugate, not of KTTKS alone, and report purity by HPLC with the chromatogram. Because the molecule is amphiphilic, reverse-phase methods need appropriate gradients and may show broad peaks or carryover; unpalmitoylated KTTKS and incompletely or over-acylated species, such as palmitoylation on a lysine side chain, are relevant impurities. When the ingredient is supplied as a dilute solution, the COA should state peptide concentration separately from purity. Matrixyl 3000 is a different material and should not be substituted.

Storage and stability

Store solid palmitoyl pentapeptide-4 sealed at -20 °C or in refrigerated conditions as indicated on its documentation, protected from light and moisture, and let containers reach room temperature before opening. Its amphiphilic character means solubility in plain water can be limited and it may form micelles or aggregates; co-solvents are often used for stock solutions. Mix gently to avoid foaming, aliquot solutions for lab use, store them cold, and avoid repeated freeze-thaw cycles.