

## Product Information

### Hemocyanin from *Megathura crenulata* (keyhole limpet)

Catalog Number **H7017**  
Storage Temperature 2–8 °C

Synonyms: KLH, Keyhole Limpet Hemocyanin

#### Product Description

Hemocyanins are multimeric, high molecular mass, oxygen transport metalloproteins. Keyhole Limpet Hemocyanin (KLH), from the hemolymph of the marine mollusc *Megathura crenulata*, is expressed as two subunit isoforms (KLH1 and KLH2) of 350–400 kDa. The KLH monomers each contain 7 or 8 functional unit domains, each functional unit containing an oxygen binding site carrying two copper atoms. Both KLH isoforms can assemble into multimeric forms containing native decamers of  $4-8 \times 10^6$  Da. Higher multimeric forms have also been described.

KLH is often used as a carrier protein due to its highly immunogenic properties and the large number of lysine residues available for modification. KLH is suitable for the preparation of immunogens for injection, or as a control protein for ELISA and dot blot immunoassay, because of its high solubility in water and aqueous buffers. Haptens such as short peptides can be coupled to KLH by means of various conjugation methods.<sup>1-3</sup> Immunization with these peptide-KLH conjugates can then elicit specific antibodies against the native protein.

KLH can exist in different aggregation states depending on pH and divalent ion concentration.<sup>4,5</sup> Above pH 9.5, the protein will completely dissociate into subunits, whereas at pH 7.4 and in the presence of Ca<sup>2+</sup> and Mg<sup>2+</sup> ions, higher-order assemblies of the protein are stabilized.

This preparation of KLH is a lyophilized, **water-soluble** form of the protein. It is prepared by lyophilization of KLH from 31 mM sodium phosphate buffer, pH 7.4, containing 0.46 M NaCl, 2% PVP, and 41 mM sucrose. No preservatives are added. Each vial contains KLH at a ratio of ~1 part KLH to 5 parts total lyophilized powder.

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

#### Preparation Instructions

Reconstitution with deionized water to a KLH concentration of 10 mg/mL yields a solution in 31 mM sodium phosphate buffer, pH 7.4, containing 0.46 M NaCl, 2% PVP, and 41 mM sucrose.

Reconstituted protein solution may be stored up to 2 months at –20 °C.

#### Storage/Stability

Hemocyanin is stable as a dry solid at 2–8 °C for at least two years.

After reconstitution, store aliquots at –20 °C for no longer than two months. The reconstituted solution may be stored for no longer than two weeks at 2–8 °C if preserved with 0.1% sodium azide.

#### References

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2. Shuler, K.R., *et al.*, *J. Immunol. Methods*, **156(2)**, 137 (1992).
3. Van Regenmortel, M., *et al.*, in *Laboratory Techniques in Biochemistry and Molecular Biology - Synthetic Polypeptides as Antigens*, Burdon, R., and Van Knippenberg, P. (eds.), Elsevier (Amsterdam), pp. 95-130 (1988).
4. Markl, J., *et al.*, *Naturwissenschaften*, **78(1)**, 530 (1991).
5. Herskovits, T.T., *Comp. Biochem. Physiol. B*, **91(4)**, 597-611 (1988).

DS,KAA,JWM,DAA,GCY,MAM 01/16-1