3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone (800) 325-5832 (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

# ProductInformation

**Haptoglobin, Phenotype 1-1**
**from human plasma**

Catalog Number **H0138**
Storage Temperature 2–8 °C

## Product Description

Haptoglobin is an $\alpha_2$–globulin found in normal plasma at a concentration of 82-236 mg/dl and accounts for 0.4-2.6% of the total plasma proteins. The monomeric form of this acute phase plasma protein is composed of four polypeptide chains: two α chains and two β chains. Some conditions such as cancer and coronary artery disease can raise this level, while diseases such as jaundice and cirrhosis can significantly lower the amount of haptoglobin in plasma.

Human haptoglobin occurs naturally as 3 major phenotypes: Type 1-1, Type 2-1, and Type 2-2. The population distribution of phenotypes among Americans and Canadians is as follows:[1,3,4]

Haptoglobin Type 1-1 - 17.4%
Haptoglobin Type 2-1 - 48.7%
Haptoglobin Type 2-2 - 33.9%

Mean values (g/L) for each phenotype in normal sera are:

Haptoglobin Type 1-1 - 1.77
Haptoglobin Type 2-1 - 1.40
Haptoglobin Type 2-2 - 1.06

Haptoglobin binds irreversibly with free native hemoglobin that has been released during hemolysis. This binding prevents iron loss and also prevents renal damage from the hemoglobin. The entire hemoglobin/haptoglobin complex (Hp-Hb) is then metabolized by the body.[4] The hemoglobin binding capacity of haptoglobin has been reported to be 1 mg hemoglobin bound for every 1.3 mg of haptoglobin.[1,4] The complex also exhibits a peroxidase activity which can be used to monitor the binding, although the activity is not thought to be biologically significant.[3]

Haptoglobin's three common phenotypes, Type 1-1, Type 2-1, and Type 2-2 can be distinguished using linear gradient polyacrylamide gel electrophoresis (2.5–27%). Type 1-1 is a single band farthest from the origin and is estimated to have a molecular mass of 100 kDa.[3] Haptoglobin Types 2-1 and 2-2 appear as a series of bands closer to the origin. Types 2-1 and 2-2 have increasing molecular masses with some polymers being reported to be as high as 900 kDa.[2] Haptoglobin has also been reported to display other phenotypes that are thought to be significant in population studies.[2]

Haptoglobin is a glycoprotein containing the following carbohydrates:[5]

| | |
|---|---|
| Hexose (Galactose/mannose approx. 2:1) | 7.8% |
| Acetylhexosamine | 5.3% |
| Sialic acid | 5.3% |
| Fucose | 0.2% |
| Total carbohydrate | 19.3% |

Haptoglobin phenotypes are prepared from human plasma by a modification a published procedure.[6] Each individual plasma unit is typed for haptoglobin phenotype and pooled with similar units before purification.

The product is supplied as an essentially salt-free, lyophilized powder in serum vials containing 1 mg of haptoglobin per vial.

Purity: ≥98% (agarose gel electrophoresis)

Binding capcity: ≥0.5 mg hemogloblin/mg haptoglobin

**Precautions and Disclaimer**
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices. POTENTIAL BIOHAZARD. Handle as if capable of transmitting infectious agents. Prepared from plasma shown to be negative for HbsAG, anti-HCV, and anti-HIV-1 & 2 by FDA approved testing.

**Preparation Instructions**
Vials may be reconstituted with deionized water. Store reconstituted vials below –20 °C.

**Storage/Stability**
Store the product at 2–8 °C.

**References**

1. Jayle and Morretti, Progress in Hematology, **3,** 342-359 (1962).
2. Laurell and Gronvall, Advances in Clinical Chemistry, **5,** 135-172 (1962).
3. Putnam, in *The Plasma Proteins*, Vol. II, 1-46 (1975).
4. Pintera, in *Series Haematologica*, Vol. IV, 2, 1-17 (1971).
5. Schultze and Heremans, in *Molecular Biology of Human Proteins*, Vol I, 200 (1966).
6. Javid, J., and Liang, J.C., J. Lab. Clin. Med., **82,** 991-1002 (1973).


MPB,RBG,MAM 07/06-1