



Hemiglobincyanide Standard X* g/dL Hb (total Hemoglobin)

Standard for Calibration, Adjustment and Verification of Hb-Photometers and for Analysis.

Intended Purpose

The Hemiglobincyanide standard (HiCN) is used for calibration, adjustment and verification of photometers for haemoglobin determination and is prepared according to the hemiglobincyanide method.

Principle

This calibration standard contains hemiglobincyanide according to the indicated haemoglobin concentration (Hb) and is directly ready for use with a pre-dilution 1:251.

X* g/dL Hb see label and section Contents/Main Components

Reagents

The storage of the haemoglobin standard must take place under exclusion of light and in the refrigerator at a temperature of +4 ... +8 °C. If stored properly, the calibration standard is stable until the date printed on the label.

The hemiglobincyanide standard is sterile sealed and can be opened easily. No break-off of glass ampoules (risk of injury)!

Once opened, the hemiglobincyanide standard must be used within 2 hours. If stored intermediately at +4 °C, the standard can be used up to maximum 8 hours. After this time, any leftovers must be discarded.

Risks and Safety

Contains material of biological origin.

Please observe the necessary precautions for use of laboratory reagents and body fluids. Applications should be performed by expert personnel only. Follow the national and laboratory internal guidelines for work safety and infection control. Wear suitable protective clothing and disposable gloves while handling.

It is important to ensure effective protection against infection according to laboratory guidelines.



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For additional and general safety information please see details on the label and the corresponding Safety Data Sheet (SDS).

Download by QR code or link: www.sds-id.com/100051-3

Contents/Main Components

Hemiglobincyanide solution (HiCN) according to the indicated hemoglobin concentration (g/dL Hb). The standards are available in two qualities:

1. Hemiglobincyanide standard for usual calibration tasks in clinical chemistry analysis and for spectrophotometric calibration/verification. Made from bovine blood erythrocytes.

004613-... SET Cyanhämglobin-Standard entspr. 10.0 g/dl Hb (1:251)

004614-... SET Cyanhämglobin-Standard entspr. 15.0 g/dl Hb (1:251)

Previous versions have been replaced by the following version:

2. Cyanhemoglobin standard prepared according to ICSH/CLSI specifications and checked for compliance with the ICSH quality criteria. Quality certificate of analysis available. Prepared from human blood erythrocytes of controlled blood donors.

004623-... SET Cyanhämglobin Standard equivalent to 10.0 g/dl Hb (1:251)

004623-0005/5 SET 5x 5 mL

004623-0005/20 SET 20x 5 mL

004624-... SET Cyanhämglobin Standard equivalent to 15.0 g/dl Hb (1:251)

004624-0005/5 SET 5x 5 mL

004624-0005/20 SET 20x 5 mL

CAL Other concentrations Cyan haemoglobin standard available on special order (no single packs).

Additional materials required or recommended

Hämoglobin Reagent • Hb (HiCN Method)

004001-1010 1x 1.0L Suitable for all photometers.

004001-1025 1x 2.5L Suitable for all photometers.

Procedure

Take out of the refrigerator only the amount of vials of hemiglobincyanide standard you need for immediate use.

Let the vial(s) warm up to room temperature (light protected). Otherwise the glass cuvettes can fog over due to temperature differences (induces wrong measurement values).

If present, condensation water inside the vials must be remixed carefully (e.g. roller mixer). Avoid foam of standard solution. Finest air bubbles (optically barely recognizable) can influence the measuring value too.

Examination/Calculation

The calibration value is indicated on the package in g/dL (grams per 100 milliliters). For unit conversion see below.

The indicated calibration value is valid for dilution of 1:251 (according to 20 µL blood + 5.0 mL hemoglobin reagent) and at a wavelength of 546 nm.

For different dilutions conversion of the indicated value is required, e. g. for dilution 1:301 the conversion factor is $301/251 = 1.19$.

Extreme dilutions, from which a conversion factor <0.5 or >2.0 result, should not equalized with this standard.

For spectral line photometers (HQL, mercury vapor lamp), 546 nm wavelength, 10 mm cuvette optical path length (right angled cuvettes) and the hereafter listed factors give the values stated on the label:

Hemoglobin concentration

$$E_{SA} \times 36.77 = c_{Hb} \text{ g/dL}$$

$$E_{SA} \times 367.7 = c_{Hb} \text{ g/L}$$

$$E_{SA} \times 5.704 = c_{Hb} \text{ mmol/L}$$

$$E_{SA} \times 22.82 = c_{Hb(Fe)} \text{ mmol/L}$$

Conversion $M(Hb) = 64458.0 \text{ g/mol}$ (1/1 molar mass)

$$c_{Hb} [\text{g/dL}] \times 0.1551 = c_{Hb} \text{ mmol/L}$$

$$c_{Hb} [\text{g/L}] \times 0.0155 = c_{Hb} \text{ mmol/L}$$

Conversion $M(Hb(Fe)) = 16114.5 \text{ g/mol}$ (1/4 molar mass)

$$c_{Hb} [\text{g/dL}] \times 0.621 = c_{Hb(Fe)} \text{ mmol/L}$$

$$c_{Hb} [\text{g/L}] \times 0.062 = c_{Hb(Fe)} \text{ mmol/L}$$

Nomenclature

SA = Sample
E_{SA} = Extinction/Absorption sample

Hb = Tetrameric form of haemoglobin
Hb_(Fe) = Monomeric form of haemoglobin

Linearity control

For linearity testing of photometer and reagent, dilution series can be prepared with the cyan hemoglobin standards. For this purpose, the hemoglobin reagent 004001-... is required. Other hemoglobin reagents can lead to interferences!

Dilution series

Label 6 new, clean tubes in the order. According to the table below, first pipette the indicated volume of Hb Reagent 004001-... into the tubes. Then add the indicated volumes of HiCN Standard 10 g/dl Hb or 15 g/dl Hb. Mix the tubes carefully.

No.	Reagent 004001-	HiCN- Standard	Factor	Dilution	Std. ≙ Hb 10,0 g/dl	Std. ≙ Hb 15,0 g/dl
1.	5.00 ml	-	0.0	(0:5)	0 g/dl	0 g/dl
2.	4.00 ml	1.0 ml	0.2	(1:5)	2.0 g/dl	3.0 g/dl
3.	3.00 ml	2.0 ml	0.4	(2:5)	4.0 g/dl	6.0 g/dl
4.	2.00 ml	3.0 ml	0.6	(3:5)	6.0 g/dl	9.0 g/dl
5.	1.00 ml	4.0 ml	0.8	(4:5)	8.0 g/dl	12.0 g/dl
6.	-	5.0 ml	1.0	(5:5)	10.0 g/dl	15.0 g/dl

With the above mixtures reagent + HiCN standard the listed dilutions are obtained.
This results in the identical Hb values from 10 g/dl or 15 g/dl for a sample dilution of 1:251.

Notes

For professional use only.

For spectrophotometric hemoglobin determination recording to hemiglobincyanide (HiCN) method (DIN 58931) we recommend the Bioanalytic Hemoglobin reagent (see *ordering information*). This reagent is applicable for all photometers. Product information for hemoglobin (Hb) determination of capillary or EDTA-blood and free hemoglobin (fHb) determination of plasma and plasma or red blood cell (RBC) concentrates on request.

Bioanalytic haemoglobin reagents are free from scattering effects. This always results in accurate results.

Classifications

EU: EDMA: 13 01 20 04 00; IVD Class A (in vitro diagnostic medical device).

AU: Class 1; IVD.

CA: HC: Class I; exempt; for in-vitro diagnostic use.

US: FDA: JCG; Class I; exempt; for in-vitro diagnostic use.

Support/Infoservice

For methodological and technical support, please contact us by E-Mail at support@bioanalytic.de.

Periodically check for updates of this product information on our website.

Feedback

Information from users can be reported to support@bioanalytic.de.

Suggestions for further developments will be considered.

If a serious incident has occurred during or as a result of use, please report it to the manufacturer and/or its authorized representative and to your national authority.

Waste Management

Please observe your national laws and regulations.

Used and expired solutions must be disposed of in accordance with your local regulations.

Inside the EU, national regulations apply that are based on the current, amended version of Council directive 67/548/EEG on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

Decontaminated packaging can be disposed of as household waste or recycled, unless otherwise specified.

Ordering Information

 Other concentrations Cyan haemoglobin standard available on special order (no single packs)

For haemoglobin determination are also available:

004001-1010 Hämoglobin Reagent (HiCN Methode)
1× 1,0L Suitable for all photometers.

004001-1025 Hämoglobin Reagent (HiCN Methode)
1× 2,5L Suitable for all photometers.

Literature & Footnotes

Legends for the graphic symbols and tags used follow relevant norms or are available on our internet pages.

- [1] DIN 58931-HiCN
- [2] ICSH technical report 1-2009: new reference material for haemiglobincyanide for use in standardization of blood haemoglobin measurements.
- [3] CLSI Reference and Selected Procedures for the Quantitative Determination of Hemoglobin in Blood; Approved Standard - Third Edition. H15-A3 03/18/2009.

* see concentration stated on the label of the product.