



**WHO International Standard
Clostridium sordellii (Gas-gangrene) Antitoxin, Equine, 1st
International Standard
NIBSC code: 09/154
Instructions for use
(Version 3.0, Dated 05/03/2013)**

1. INTENDED USE

Clostridium sordellii is known as an aetiological agent of enteritis and enterotoxaemia in sheep and cattle, of myonecrosis or gas gangrene in humans, and of neonatal toxin omphalitis [1]. The haemorrhagic and lethal toxins produced by C. sordellii are related to Clostridium difficile toxins B and A, respectively, and are responsible for refractory shock observed in some animal and human infections [1]. This material was donated, prepared and characterised by the National Institute of Health, Washington, USA and the Statens Serum Institut (SSI), Copenhagen, Denmark [2, 3, 4]. With effect from 1st July 1997, the National Institute for Biological Standards and Control (NIBSC), Potters Bar, UK became the custodian and distributor of this material. The standard is intended for use in Clostridium sordellii toxin neutralisation studies [2, 3]. Clostridium sordellii antitoxin has also been shown to cross neutralise Clostridium difficile toxin [5].

09/154 is the final liquid preparation of this International Standard antitoxin that will be available having utilised the last of the original freeze-dried material. A candidate replacement is, therefore, urgently needed and scientists are encouraged to donate a suitable antitoxin where possible and collaborate in its calibration.

2. CAUTION

This preparation is not for administration to humans or animals in the human food chain.

The material is not of human or bovine origin. As with all materials of biological origin, this preparation should be regarded as potentially hazardous to health. It should be used and discarded according to your own laboratory's safety procedures. Such safety procedures should include the wearing of protective gloves and avoiding the generation of aerosols. Care should be exercised in opening ampoules or vials, to avoid cuts.

3. UNITAGE

The standard is distributed as a liquid containing 20 International Units per ml in 66% v/v glycerol / PBS (Phosphate Buffered Saline).

4. CONTENTS

Country of origin of biological material: United States of America.
Each vial contains approximately 3ml antitoxin in 66% v/v glycerol / PBS.

The liquid standard is prepared from stock ampoules (coded SO) containing the freeze-dried residue of 1g horse serum with activity of 7,500 International Units (IU) [3].

For further details of this International Standard, please refer to the enclosed package insert from the Statens Serum Institut.

5. STORAGE

Store at -20°C. Do not freeze at temperatures lower than -20°C.
Please note: because of the inherent stability of lyophilized material, NIBSC may ship these materials at ambient temperature.

6. DIRECTIONS FOR OPENING

Vials have a 'flip-up' circular cap. Either on the cap or the collar of the vial, there is an indication of the point at which to lever off the cap. This exposes an area of the stopper through which reconstitution and withdrawal of the preparation can be made using a hypodermic needle and syringe. If use of a pipette is preferred, then fully remove the metal collar using, for example, forceps, taking care to avoid cuts by wearing

appropriate gloves. Remove the stopper for access. Care should be taken to prevent loss of the contents.

7. USE OF MATERIAL

The material is intended for use as the Clostridium sordellii antitoxin International Standard in neutralisation studies [2, 3]. International biological reference materials are intended for use in the calibration of the contents of "effective constituent" in national or working standard preparations and for the expression of these contents in the respective International Units. For routine use in the laboratory, the national or working standards should be used in order to limit the use of the international reference materials as much as possible.

8. STABILITY

Reference materials are held at NIBSC within assured, temperature-controlled storage facilities. Reference Materials should be stored on receipt as indicated on the label.

Users should determine the stability of the material according to their own method of storage and use. Users who have data supporting any changes in the characteristics of this material are encouraged to contact NIBSC.

9. REFERENCES

1. Bitti et al., J Clin Pathol (1997) 50, p259-260.
2. Bull. Health Org. (1938) 7, p698-699.
3. Bull. Health Org. (1939) 8, p856-861.
4. WHO Techn. Rep. Series (1973) No. 530, p11.
5. Ehrich et al., Infection and Immunity (1980) 28, p1041-1043. (WHO/BS documents are available from the WHO)

10. ACKNOWLEDGEMENTS

We would like to thank Dr G.W. McCoy (National Institute of Health, Washington, USA) and the Statens Serum Institut (Copenhagen, Denmark) for donating and characterising the original material.

11. FURTHER INFORMATION

Further information can be obtained as follows;
This material: enquiries@nibsc.org
WHO Biological Standards:
<http://www.who.int/biologicals/en/>
JCTLM Higher order reference materials:
<http://www.bipm.org/en/committees/jc/jctlm/>
Derivation of International Units:
http://www.nibsc.org/standardisation/international_standards.aspx
Ordering standards from NIBSC:
<http://www.nibsc.org/products/ordering.aspx>
NIBSC Terms & Conditions:
http://www.nibsc.org/terms_and_conditions.aspx

12. CUSTOMER FEEDBACK

Customers are encouraged to provide feedback on the suitability or use of the material provided or other aspects of our service. Please send any comments to enquiries@nibsc.org

13. CITATION

In all publications, including data sheets, in which this material is referenced, it is important that the preparation's title, its status, the NIBSC code number, and the name and address of NIBSC are cited and cited correctly.

14. MATERIAL SAFETY SHEET

Classification in accordance with Directive 2000/54/EC, Regulation (EC) No 1272/2008: Not applicable or not classified

Physical and Chemical properties	
Physical appearance: Liquid	Corrosive: No
Stable: Yes	Oxidising: No
Hygroscopic: No	Irritant: No
Flammable: No	Handling: See caution, Section 2
Other (specify): Contains equine serum	
Toxicological properties	
Effects of inhalation:	Not established, avoid inhalation
Effects of ingestion:	Not established, avoid ingestion
Effects of skin absorption:	Not established, avoid contact with skin
Suggested First Aid	
Inhalation:	Seek medical advice
Ingestion:	Seek medical advice
Contact with eyes:	Wash with copious amounts of water. Seek medical advice
Contact with skin:	Wash thoroughly with water.
Action on Spillage and Method of Disposal	
Spillage of contents should be taken up with absorbent material wetted with an appropriate disinfectant. Rinse area with an appropriate disinfectant followed by water. Absorbent materials used to treat spillage should be treated as biological waste.	

15. LIABILITY AND LOSS

In the event that this document is translated into another language, the English language version shall prevail in the event of any inconsistencies between the documents.

Unless expressly stated otherwise by NIBSC, NIBSC's Standard Terms and Conditions for the Supply of Materials (available at http://www.nibsc.org/About_Us/Terms_and_Conditions.aspx or upon request by the Recipient) ("Conditions") apply to the exclusion of all other terms and are hereby incorporated into this document by reference. The Recipient's attention is drawn in particular to the provisions of clause 11 of the Conditions.

16. INFORMATION FOR CUSTOMS USE ONLY

Country of origin for customs purposes*: United Kingdom * Defined as the country where the goods have been produced and/or sufficiently processed to be classed as originating from the country of supply, for example a change of state such as freeze-drying.
Net weight: approx 3g
Toxicity Statement: Non-toxic
Veterinary certificate or other statement if applicable. Attached: No

17. CERTIFICATE OF ANALYSIS

NIBSC does not provide a Certificate of Analysis for WHO Biological Reference Materials because they are internationally recognised primary reference materials fully described in the instructions for use. The reference materials are established according to the WHO Recommendations for the preparation, characterization and establishment of international and other biological reference standards http://www.who.int/bloodproducts/publications/TRS932Annex2_Inter_bi_olefstandardsrev2004.pdf (revised 2004). They are officially endorsed by the WHO Expert Committee on Biological Standardization (ECBS) based on the report of the international collaborative study which established their suitability for the intended use.



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STATENS
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prevention and control
of infectious diseases
and congenital disorders

THE INTERNATIONAL STANDARD
for
GAS-GANGRENE ANTITOXIN (CL. SORDELLII), EQUINE
(3rd international standard preparation)

1. THE STANDARD PREPARATION

The standard preparation was established in 1938^{1,2}. It is prepared from a horse antitoxin obtained from the National Institute of Health, Bethesda, USA (Dr. G.W. McCoy). The standard is kept freeze-dried in stock ampoules each containing about 1 g of dried horse serum. By definition² one International Unit (IU) of Gas-Gangrene Antitoxin (Cl. Sordellii) is contained in 0.1334 mg of the dry material in the stock ampoules. The name of the standard was slightly changed on 1972².

2. AMPOULE CONTENTS

The standard preparation is distributed in a solution which contains 66% v/v of glycerol and 20 IU/ml of Gas-Gangrene Antitoxin (Cl. Sordellii). This solution is stable for years at +4°C.

3. GENERAL REMARKS ABOUT INTERNATIONAL REFERENCE MATERIALS

International biological standards and international biological reference reagents provide a means of ensuring uniformity throughout the world in the designation of the potency or activity of preparations used in the prophylaxis, therapy, or diagnosis of disease, where this cannot be expressed in terms of physical or chemical quantities. The International Units are units of quantities of "effective constituent"¹.

The standard is the material as it exists in the ampoules; the "material" thus includes the effective constituents together with all the other constituents that may be present (moisture, carrier, buffer, salt etc., according to the form in which the standard is available).

International biological reference materials are intended for use in the calibration of the contents of "effective constituent" in national or working standard preparations and for the expression of these contents in the respective International Units. For the routine use in the laboratory the national or working standards should be used in order to save as much as possible the international reference materials. These are only sent to individual laboratories in very limited amounts. The preparations are sent free of charges but sometimes a small charge might be claimed for the air-freighting.

September 1993

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4. REFERENCES

1. Bull. Health Organ. L.o.N. 1938, 7, 698
2. Bull. Health Organ. L.o.N. 1939, 8, 856
3. WHO Techn. Rep. Series No. 530, 1973, 11.
4. The Validity and Meaning of the Results of Biological Assays, Jerne & Wood, *Biometrics* vol. 5, December 1949.

