



**WHO Reference Panel
First WHO International Reference Panel for anti-SARS-CoV-2
immunoglobulin
NIBSC code: 20/268
Instructions for use
(Version 3.0, Dated 17/12/2020)**

1. INTENDED USE

The first WHO International Reference Panel of anti-SARS-CoV-2 immunoglobulin consists of the equivalent of 0.25 mL of pooled plasma samples obtained from individuals recovered from Coronavirus Disease 2019 (COVID-19) and a negative control plasma obtained from healthy blood donors before 2019.

The panel was evaluated in a WHO international collaborative study (1). Individual panel members are NIBSC code 20/150 (high), 20/148 (mid), 20/144 (low anti-S, high anti-N), 20/140 (low), 20/142 (negative human plasma). It is intended that the panel is used in the assessment and development of assays used in the detection and quantitation of anti-SARS-CoV-2 antibodies. The preparation has been solvent-detergent treated to minimise the risk of the presence of enveloped viruses (2).

2. CAUTION

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

The preparation contains material of human origin, and either the final product or the source materials, from which it is derived, have been tested and found negative for HBsAg, anti-HIV and HCV RNA. 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

No unitage has been assigned to the panel members. Representative anti-SARS-CoV-2 antibody titres have been provided in section 7 calculated from the Collaborative study data.

4. CONTENTS

Country of origin of biological material: United Kingdom and Norway. Each ampoule contains the freeze-dried equivalent of 0.25 mL human plasma.

5. STORAGE

20/268 should be stored at -20°C or below upon receipt.

Please note: because of the inherent stability of lyophilized material, NIBSC may ship these materials at ambient temperature.

6. DIRECTIONS FOR OPENING

DIN ampoules have an 'easy-open' coloured stress point, where the narrow ampoule stem joins the wider ampoule body. Various types of ampoule breaker are available commercially. To open the ampoule, tap the ampoule gently to collect material at the bottom (labelled) end and follow manufacturer's instructions provided with the ampoule breaker.

7. USE OF MATERIAL

No attempt should be made to weigh out any portion of the freeze-dried material prior to reconstitution

This material should be reconstituted in 0.25 mL distilled water. Following addition of water, the ampoules should be left at ambient temperature for approximately 30 minutes until dissolved and then mixed thoroughly, avoiding the generation of excessive foam.

Anti-SARS-CoV-2 antibody titres were calculated as geometric mean of the potencies obtained from the collaborative study participants calibrated against the WHO International Standard for anti-SARS-CoV-2 immunoglobulin (NIBSC code 20/136). IU: International Units; BAU: binding antibody units.

	High 20/150	Mid 20/148	low S, high N 20/144	Low 20/140	
Neut Ab	1473	210	95	44	IU/mL
anti-RBD IgG	817	205	66	45	BAU/mL
anti-S1 IgG	766	246	50	46	BAU/mL
anti-Spike IgG	832	241	86	53	BAU/mL
anti-N IgG	713	295	146	12	BAU/mL

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.

NIBSC follows the policy of WHO with respect to its reference materials.

9. REFERENCES

- (1) Mattiuzzo et al. Establishment of the WHO International Standard and Reference Panel for anti-SARS-CoV-2 antibody. 2020, WHO Expert Committee on Biological Standardization. WHO/BS/2020.2403
- (2) Dichtelmüller et al. Robustness of solvent/detergent treatment of plasma derivatives: a data collection from Plasma Protein Therapeutics Association member companies. *Transfusion*. 2009;49:1931-43.

10. ACKNOWLEDGEMENTS

We would like to wholeheartedly thank the anonymous donors of the plasma samples for their consent which has allowed this material to be prepared; we would like to express our gratitude to those groups and individuals who have coordinated the collection of the convalescent plasma: Malcom Semple (University of Liverpool, UK), Lance Turtle (University of Liverpool, UK), Peter Openshaw (Imperial College London, UK) and Kenneth Baillie (University of Edinburgh) on behalf of the ISARIC4C Investigators; Heli Harvala Simmonds and David Roberts (National Health Service Blood and Transplant, UK); Lise Sofie Haug Nissen-Meyer and Arne Broch Brantsæter (Oslo University Hospital, Norway). We would also like to thank NIBSC Standards Production and Development staff for the formulation and distribution of materials. We would like to acknowledge Ivana Knezevic and Tiequn Zhou (Norms and Standards for Biologicals, WHO), Gopa Raychaudhuri (CBER, FDA), Miao Xu (NIFDC), Kwangmoon Lee (MFDS), Michael Rosu-Myles and Sean Li (BRDD, Health Canada) for helping enlist participants to the Collaborative Study.

The WHO International Reference Panel for anti-SARS-CoV-2 antibody wouldn't have been possible without the Coalition for Epidemic Preparedness Innovations (CEPI) which sponsored the sourcing and formulation of the 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: Freeze dried	Corrosive: No
Stable: Yes	Oxidising: No
Hygroscopic: No	Irritant: No
Flammable: No	Handling: See caution, Section 2
Other (specify): N/A	
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 ampoule 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: 0.25g
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_biol_efstandardsrev2004.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.