WHO International Standard
1st International Standard for Human Papillomavirus (HPV)
Type 58 DNA
NIBSC code: 14/264
Instructions for use
(Version 1.01, Dated 25/11/2019)

1. INTENDED USE
The 1st International Standard for HPV Type 58 (HPV58) DNA for use in nucleic acid-based assays consists of a freeze-dried preparation of recombinant plasmid pGEM4Z containing full-length HPV58 DNA cloned via SphI at nt 1158 (located in the E1 gene) (Matsukura & Sugase, 1990; Eklund et al., 2010). The standard has been formulated in a background of purified human genomic DNA, lyophilized in 0.5 ml aliquots and stored at -20 °C. The material was characterised in an international collaborative study involving 15 laboratories (WHO/BS/2019:2360).

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

The material contains DNA from human placenta (Sigma, D7011). 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 1st International Standard for HPV58 DNA (NIBSC code 14/264) has an assigned unitage of 7.9 x 10^6 International Units (IU) per ampoule.

4. CONTENTS
Country of origin of biological material: United Kingdom.
Each ampoule contains the lyophilized equivalent of 0.5 mL HPV58 plasmid DNA diluted in 10mM Tris buffer pH7.4 containing 1mM EDTA, 5 mg/mL trehalose and human DNA (~1 x 10^6 GEq/mL) derived from placenta.

5. STORAGE
The ampoule should be stored at -20 °C or below on 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 manufactures 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.

The 1st International Standard for HPV58 DNA contains high copy number template. There is a high risk of HPV58 plasmid DNA contamination via aerosolization upon opening of the glass ampoule. The material must be opened and handled in a separate laboratory environment, away from other pre-amplification components such as reagents, labware and samples.

The material is supplied lyophilized and, before use, should be reconstituted in 0.5 ml sterile nuclease-free water. Ensure that the inside surface of the ampoule is wetted with the added water so that any particles of freeze-dried material adhering to the glass are reconstituted. The reconstituted material has a final concentration of 1.6 x 10^7 IU/mL.

The reconstituted material is suitable for calibration of in-house or working standards for the amplification and detection of HPV58 DNA (WHO/BS/2019:2360). The material should NOT be used to calibrate or assess extraction, precipitation or centrifugation procedures. NIBSC can provide guidance for the use of 14/264 in assays where the extraction step cannot be separated from the amplification step (e.g. sample-in, answer-out platforms). This material has NOT been calibrated for human DNA nucleic acid amplification techniques.

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. Degradation studies on 14/264 indicate that the freeze-dried material is extremely stable and suitable for long-term storage (WHO/BS/2019:2360). Users should determine the stability of the reconstituted material according to their own method of preparation, storage and use.

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

9. REFERENCES

10. ACKNOWLEDGEMENTS
We gratefully acknowledge the important contributions of the collaborative study participants and external reference laboratories. This project was funded in part by the World Health Organization.

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/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

<table>
<thead>
<tr>
<th>Physical and Chemical properties</th>
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</thead>
<tbody>
<tr>
<td>Physical appearance: Lyophilized powder</td>
</tr>
<tr>
<td>Corrosive: No</td>
</tr>
<tr>
<td>Stable: Yes Oxidising: No</td>
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<tr>
<td>Hygroscopic: No Iritant: No</td>
</tr>
<tr>
<td>Flammable: No Handling: See caution, Section 2</td>
</tr>
<tr>
<td>Other (specify):</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Country of origin for customs purposes*: United Kingdom</th>
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</thead>
<tbody>
<tr>
<td>Net weight: 0.5 g</td>
</tr>
<tr>
<td>Toxicity Statement: Non-toxic</td>
</tr>
<tr>
<td>Veterinary certificate or other statement if applicable: No</td>
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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 standardsrev2004.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.