WHO International Standard
1st International Standard for Human Papillomavirus (HPV)
Type 52 DNA
NIBSC code: 14/262
Instructions for use
(Version 1.01, Dated 25/11/2019)

1. INTENDED USE
The 1st International Standard for HPV Type 52 (HPV52) DNA for use in
nucleic acid-based assays consists of a freeze-dried preparation of
recombinant plasmid pUC19 containing full-length HPV52 DNA cloned via
EcoRI at nt 7559 (located downstream of the L1 gene) (Shimoda et al.,
1988). 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. UNTAGE
The 1st International Standard for HPV52 DNA (NIBSC code 14/262) 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 HPV52
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 HPV52 DNA contains high copy
number template. There is a high risk of HPV52 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 HPV52 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 14/262 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 14/262 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
Shimoda K, Lottincz AT, Temple GF, Lancaster WD. Human papillomavirus
Mattiuzzo G, Onyekwuluje J, Eklund C, Bentley E, Unger ER, Dillner J,
Papillomavirus (HPV) DNA for Low-Risk Types HPV6 & HPV11 and High-
Risk Types HPV31, HPV33, HPV45, HPV52 & HPV58. Expert Committee
Eklund C, Forslund O, Wallin KL, Dillner J. Continuing global improvement in
human papillomavirus DNA genotyping services: The 2013 and 2014 HPV

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/jc/ctlm/
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>
</tr>
</thead>
<tbody>
<tr>
<td>Physical appearance: Lyophilized powder</td>
</tr>
<tr>
<td>Corrosive: No</td>
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<tr>
<td>Stable: Yes</td>
</tr>
<tr>
<td>Oxidising: No</td>
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<tr>
<td>Hygroscopic: No</td>
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<tr>
<td>Irritant: No</td>
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<tr>
<td>Flammable: No</td>
</tr>
<tr>
<td>Handling: See caution, Section 2</td>
</tr>
<tr>
<td>Other (specify):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Toxicological properties</th>
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</thead>
<tbody>
<tr>
<td>Effects of inhalation: Not established, avoid inhalation</td>
</tr>
<tr>
<td>Effects of ingestion: Not established, avoid ingestion</td>
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<tr>
<td>Effects of skin absorption: Not established, avoid contact with skin</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Suggested First Aid</th>
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</thead>
<tbody>
<tr>
<td>Inhalation: Seek medical advice</td>
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<tr>
<td>Ingestion: Seek medical advice</td>
</tr>
<tr>
<td>Contact with eyes: Wash with copious amounts of water. Seek medical advice</td>
</tr>
<tr>
<td>Contact with skin: Wash thoroughly with water.</td>
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<tr>
<th>Action on Spillage and Method of Disposal</th>
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</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

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 |
| Net weight: 0.5 g |
| 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 esfstandardsrev2004.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.