WHO International Standard
2nd INTERNATIONAL STANDARD FACTOR VIIa CONCENTRATE
NIBSC code: 07/228
Instructions for use
(Version 4.0, Dated 30/11/2012)

1. INTENDED USE
The 2nd International Standard for Factor VIIa, concentrate, was
established by the Expert Committee on Biological Standardization of the
World Health Organization in October 2008. The preparation consists of
ampoules (coded 07/228) containing 1ml aliquots of Factor VIIa
concentrate, freeze-dried. Details of the collaborative study can be found
in document WHO/BS/08.2090. The standard is primarily intended for the
relative potency estimation of therapeutic concentrates of activated factor
VII.

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
The potency of the standard was determined by one-stage clotting assay
against the 1st IS Factor VIIa Concentrate (89/688), in an international
collaborative study involving 23 laboratories in 12 countries. The overall
mean potency assigned to each ampoule of the 2nd IS is 656 IU.

Uncertainty: the International Unit of 07/228 is assigned without
uncertainty. Where required, the uncertainty of the ampoule content of
07/228 may be considered to be the co-efficient of variation of the fill
volume, which was determined to be 0.17 %.

4. CONTENTS
Country of origin of biological material: United Kingdom.
The International Standard was prepared at the National Institute for
Biological Standards and Control in November 2008.
The liquid Factor VIIa concentrate formulation was kept at 2 - 8 °C
throughout distribution into 10,000 ampoules, then freeze-dried under
conditions used for international biological standards (1). The mean liquid
filling weight was 1.0050g (range 1.0010 - 1.0100 g) with a coefficient of
variation of 0.17%.

5. STORAGE
Unopened ampoules should be stored in the dark at -20 °C or below.
Please note: because of the inherent stability of lyophilized
material, NIBSC may ship these materials at ambient temperature.

6. DIRECTIONS FOR OPENING
DIIN ampoules have an ‘easy-open’ coloured stress point, where the
narrow ampoule stem joins the wider ampoule body.
Tap the ampoule gently to collect the material at the bottom (labelled)
end. Ensure that the disposable ampoule safety breaker provided is
pushed down on the stem of the ampoule and against the shoulder of
the ampoule body. Hold the body of the ampoule in one hand and the
disposable ampoule breaker covering the ampoule stem between the
thumb and first finger of the other hand. Apply a bending force to open
the ampoule at the coloured stress point, primarily using the hand
holding the plastic collar.

Care should be taken to avoid cuts and projectile glass fragments that
might enter the eyes, for example, by the use of suitable gloves and an
eye shield. Take care that no material is lost from the ampoule and no
glass falls into the ampoule. Within the ampoule is dry nitrogen gas at
slightly less than atmospheric pressure. A new disposable ampoule
breaker is provided with each DIIN ampoule.

7. USE OF MATERIAL
No attempt should be made to weigh out any portion of the freeze-dried
material prior to reconstitution.
Reconstitute the total contents of each ampoule of the standard at room
temperature with 1.0ml distilled water using gentle shaking. Transfer
the solution to a plastic tube. Assays should be carried out as soon as possible
after reconstitution. Studies have shown that the reconstituted standard is
stable for 4 hours when stored in a plastic tube on melting ice. It is not
recommended to freeze aliquots after reconstitution for subsequent use.

8. STABILITY
Reference materials are held at NIBSC within assured temperature-
controlled storage facilities and they should be stored on receipt as
indicated on the label. It is the policy of WHO not to assign an expiry
date to their international reference materials. Accelerated degradation
studies have indicated that this material is suitably stable, when stored at
-20 °C or below, for the assigned values to remain valid until the material is
withdrawn or replaced. These studies have also shown that the
material is suitably stable for shipment at ambient temperature without
any effect on the assigned values. Users who have data supporting any
deterioration in the characteristics of any reference preparation are
encouraged to contact NIBSC.

9. REFERENCES
1. Campbell P. J. Procedures used for the production of biological
standards and reference preparations. Journal of Biological Standardization
(1974) 2, 259-267

10. ACKNOWLEDGEMENTS
We are very grateful to Novo Nordisk A/S, Denmark and to the Chemo-Sero-
Therapeutic Research Institute, Kumamoto, Japan for supplying the
candidate materials and to the participants in the collaborative study.

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
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>
<th>Corrosive: No</th>
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</thead>
<tbody>
<tr>
<td>Physical appearance: Freeze dried powder</td>
<td>Oxidising: No</td>
</tr>
<tr>
<td>Stable: Yes</td>
<td>Hygroscopic: Yes</td>
</tr>
<tr>
<td>Hygroscopic: Yes</td>
<td>Irritant: No</td>
</tr>
<tr>
<td>Flammable: No</td>
<td>Handling: See caution, Section 2</td>
</tr>
<tr>
<td>Other (specify):</td>
<td></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
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: 0.030 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.