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DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

NO. 5523 **7 November 2024**

NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008)

AMENDMENTS TO THE NATIONAL NORMS AND STANDARDS FOR DISPOSAL OF WASTE TO LANDFILL, 2013

I, Dr Dion Travers George, Minister of Forestry, Fisheries and the Environment, hereby, in terms of section 7(1)(c), of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), amend the National Norms and Standards for Disposal of Waste to Landfill, 2013, published under Government Notice R. 636, in Government *Gazette* No. 36784 on 23 August 2013, as set out in the Schedule hereto.

DR DION TRAVERS GEORGE
MINISTER OF FORESTRY, FISHERIES AND THE ENVIRONMENT

SCHEDULE

Definitions

1. In this Schedule, unless the context indicates otherwise, **"the Norms and Standards"** means the National Norms and Standards for Disposal of Waste to Landfill, 2013, published under Government Notice R. 636, in Government *Gazette* No. 36784 on 23 August 2013.

Amendment of paragraph 1 of the Norms and Standards

2. Paragraph 1 of the Norms and Standards is hereby amended by the insertion before the definition of "**the Act**" of the following definition:

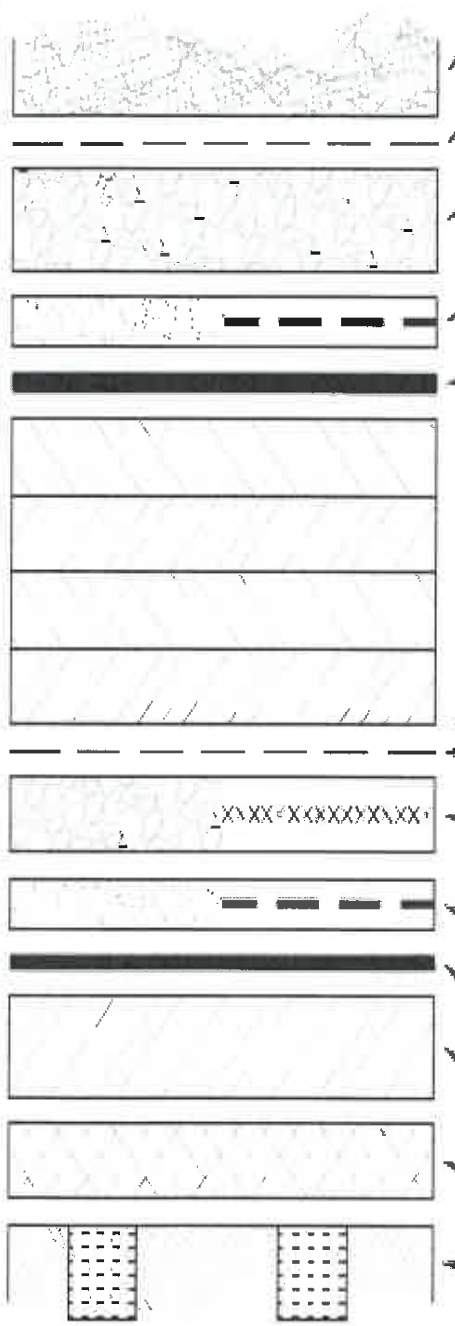
"'**GHS**' means the latest version of the Globally Harmonised System of Classification and Labelling of Chemicals published by the United Nations, as may be updated from time to time, and commonly referred to as the UN Purple Book, which can be accessed at (https://unece.org/about-ghs);."

Amendment of paragraph 3 of the Norms and Standards

3. Paragraph 3 of the Norms and Standards is hereby amended by —

(a) by the substitution for paragraph 3(1) of the following subparagraph:
"3(1) The containment barrier of landfills for the disposal of waste in terms of paragraph 4 of these Norms and Standards must comply with the following minimum engineering design requirements:

CLASS A BARRIER SYSTEM



WASTE BODY [1]

FILTER LAYER OF GEOTEXTILE OR GRANULAR MATERIAL OR COMBINATIONS THEREOF [2]

200mm THICK AGGREGATE (STONE) LEACHATE COLLECTION SYSTEM [3]

AT LEAST 100mm THICK PROTECTION LAYER OF SILTY SAND OR A GEOTEXTILE OF EQUIVALENT PERFORMANCE [4]

2mm THICK HDPE GEOMEMBRANE [5]

600mm THICK COMPACTED CLAY LINER (IN 4 x 150mm LAYERS) [6]

FILTER LAYER [2]

150mm THICK LEAKAGE DETECTION SYSTEM OF GRANULAR MATERIAL OR GEOSYNTHETIC EQUIVALENT [7]

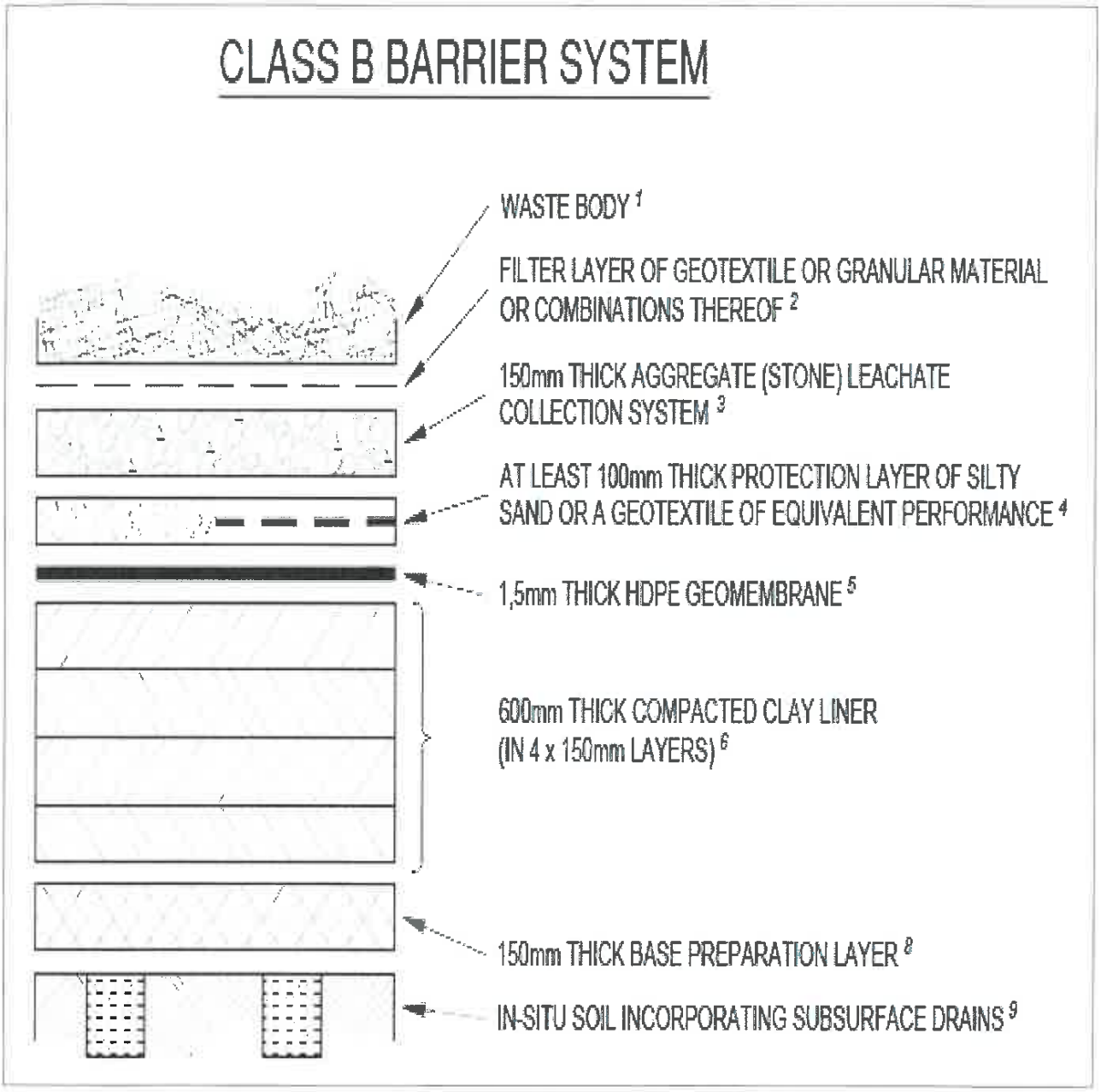
AT LEAST 100mm THICK PROTECTION LAYER OF SILTY SAND OR A GEOTEXTILE OF EQUIVALENT PERFORMANCE [4]

1,5mm THICK HDPE GEOMEMBRANE [5]

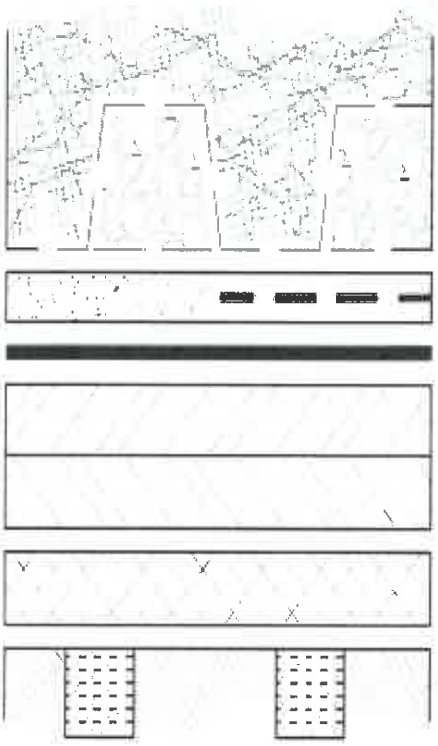
200mm THICK COMPACTED CLAY LINER [6]

150mm THICK BASE PREPARATION LAYER [8]

IN-SITU SOIL INCORPORATING SUBSURFACE DRAINS [9]


CLASS B BARRIER SYSTEM
WASTE BODY 1
FILTER LAYER OF GEOTEXTILE OR GRANULAR MATERIAL OR COMBINATIONS THEREOF 2
150mm THICK AGGREGATE (STONE) LEACHATE COLLECTION SYSTEM 3
AT LEAST 100mm THICK PROTECTION LAYER OF SILTY SAND OR A GEOTEXTILE OF EQUIVALENT PERFORMANCE 4
1,5mm THICK HDPE GEOMEMBRANE 5
600mm THICK COMPACTED CLAY LINER (IN 4 x 150mm LAYERS) 6
150mm THICK BASE PREPARATION LAYER 8
IN-SITU SOIL INCORPORATING SUBSURFACE DRAINS 9

CLASS C BARRIER SYSTEM



WASTE BODY [1]

FILTER LAYER OF GEOTEXTILE OR GRANULAR MATERIAL OR COMBINATIONS THEREOF COVERING A FINGER DRAIN OR A HERRINGBONE DRAINAGE SYSTEM [2]

300mm THICK AGGREGATE (STONE) LEACHATE COLLECTION SYSTEM IN A FINGER DRAIN OR HERRINGBONE LAYOUT [3]

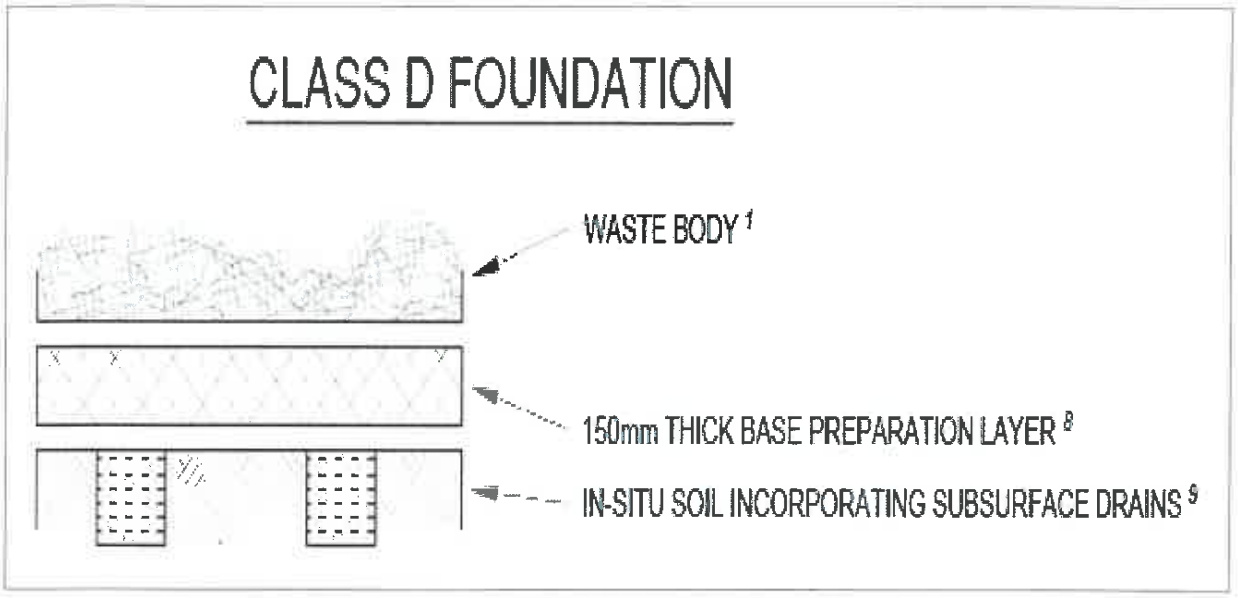
AT LEAST 100mm THICK PROTECTION LAYER OF SILTY SAND OR A GEOTEXTILE OF EQUIVALENT PERFORMANCE [4]

1,5mm THICK HDPE GEOMEMBRANE [5]

300mm THICK COMPACTED CLAY LINER (IN 2 x 150mm LAYERS) [6]

150mm THICK BASE PREPARATION LAYER [8]

IN-SITU SOIL INCORPORATING SUBSURFACE DRAINS [9]



Notes:

1. The waste body – represents the Type of waste to be disposed of including a selected layer or pioneering layer and is above the filter layer. It is good practice to provide a selected soil or waste pioneering layer of the order of 300mm thickness or more above the filter layer to protect it and underlying layers from damage post construction and prior to covering with waste.

2. The filter layer – is usually a geotextile filter selected to retain the site-specific waste material while allowing the leachate to pass through it and is to be able to withstand damage from the underlying aggregate of the leachate collection system and overlying waste placement for the site-specific loads to be accommodated. In some designs the filter layer may be a granular material which is compatible with adjacent materials and permeant.

3. The stone or aggregate layer – represents the leachate collection system which typically includes drainage pipes to facilitate maintaining the leachate pressure above the geomembrane to a maximum value used in total solute seepage determination. The aggregate nominal size for municipal solid waste (MSW) is typically 53mm to 38mm well-rounded stone to provide for adequate pore spaces to accommodate biological clogging and chemical precipitate while simultaneously providing adequate drainage capacity in the layer thickness for the particular floor slope.

4. The protection layer - is to provide a cushion between the aggregate of the Leachate Collection System or Leakage Detection System and the HDPE geomembrane to:
   (a) limit contributions to the total tensile strain in the geomembrane,
   (b) provide protection against physical and similar damage, or ultraviolet (UV) degradation of the geomembrane in exposed conditions, and
   (c) contribute to the confining stress required for direct contact between the geomembrane and compacted clay liner or GCL, of a composite liner system.

5. The nature and thickness of the protection layer required is a function of the short- and long-term stress conditions such as vehicular traffic during construction and operation, as well as the foundation material properties.

6. The geomembrane - shall be of High-Density Polyethylene (HDPE) in accordance with the most recent revision of the SANS1526 standard specification.

7. The compacted clay liner (CCL) - shall be selected material from the geotechnical investigation identification of a suitable borrow pit(s) and shall have a low permeability, plasticity, linear shrinkage and a particle size distribution which is incorporated in the performance assessment of the design and associated construction quality assurance plan. The CCL shall be compacted to a minimum of 98% Standard Proctor Maximum Dry Density (MDD) at optimum moisture content to +2% OMC unless otherwise justified. In some cases, the CCL may be partially or totally replaced by a geosynthetic clay liner (GCL) provided equivalent performance to the CCL for the specific waste stream and barrier system is demonstrated, taking into consideration inter alia chemical compatibility with adjacent materials and permeants, short- and long-term stability, and moisture absorption and retention characteristics.

8. The leakage detection system (LDS) - is typically a granular material sized to accommodate permeant flow without inducing excess pressure head, including due to precipitate. In the event of a geosynthetic drainage layer being used as an alternative of equivalent performance the design shall demonstrate that the alternative has adequate drainage capacity in the short and long term, adequate compressive strength including compressive creep collapse resistance, adequate service life of the constituent materials, and not induce barrier performance detractors due to undesirable slip planes through internal or interface shear, nor excessive tensile strain in adjacent materials.

9. The base preparation layer - is the in-situ reworked material devoid of vegetative material such as plants and roots, and similar abnormalities which may affect the containment and drainage performance of the barrier system.

10. The in-situ soil foundation - shall incorporate a subsurface drainage system to avoid uplift pressures by groundwater vacillation and maintain a 2m unsaturated zone between the base of the liner system and the wet season high groundwater level. The foundation material properties shall be included in the design assessment of stability.

(b) The substitution of subparagraph 3(2)(c) for the following subparagraph:

"(c) total solute seepage (inorganic and organic) that must be calculated in determining acceptable leakage rates and action leakage rates (the transport mechanism through geomembranes includes seepage through discontinuities and diffusion through intact areas, the latter not being significant when the volatile organic compound (VOC) content of the leachate is less than 0,03M/l).";

(c) the deletion of the "and" at the end of subparagraph 3(2)(h);

(d) the substitution of the full stop ".", at the end of subparagraph 3(2)(i) with a comma ";"; and

(e) the insertion after subparagraph 3(2)(i) of the following subparagraph:

"(j) The Guideline for Pollution Control Barrier System Design can be accessed on http://sawic@environment.gov.za.

Amendment of paragraph 4 of the Norms and Standards

4. Paragraph 4 of the Norms and Standards is hereby amended by—

(a) The substitution of paragraph 4(2) for the following subparagraph:

Listed Waste	Landfill Disposal Requirements
(a) **(i) Domestic waste.** **(ii) Business waste not containing hazardous waste or hazardous chemicals.** **(iii) Non-infectious animal carcasses.** **(iv) Garden waste.** **(v) Waste packaging not containing hazardous waste or hazardous chemicals** **(vi) Expired, spoilt or unusable consumer products.**	Disposal only allowed at a **Class B** landfill designed in accordance with section 3(1) and (2) of these Norms and Standards, or, subject to section 3(4) of these Norm and Standards, at a landfill site designed in accordance with the requirements for a GLB+ landfill as specified in the Minimum Requirements for Waste Disposal by Landfill (2nd Ed., DWAF, 1998).
(b) **(i) Post-consumer packaging** **(ii) Waste tyres.**	Disposal only allowed at a **Class C** landfill designed in accordance with section 3(1) and (2) of these Norms and Standards, or, subject to section 3(4) of these Norms and Standards, at a landfill site designed in accordance with the requirements for a GLB+ landfill as specified in the Minimum Requirements for Waste Disposal by Landfill (2nd Ed., DWAF, 1998).
(c) **(i) Building and demolition waste not containing hazardous waste or hazardous chemicals.** **(ii) Excavated earth material not containing hazardous waste or hazardous chemicals.**	Disposal allowed at a **Class D** landfill designed in accordance with section 3(1) and (2) of these Norms and Standards, or, subject to section 3(4) of these Norms and Standards, at a landfill site designed in accordance with the requirements for a GLB- landfill as specified in the Minimum Requirements for Waste Disposal by Landfill (2nd Ed., DWAF, 1998).

(b) The substitution of paragraph 4(3) for the following subparagraph:

Listed Waste	Landfill Disposal Requirements

(a) **(i) Asbestos waste**	Disposal allowed at a Class A or **Class B** landfill designed in accordance with section 3(1) and (2) of these Norms and Standards or, subject to section 3(4) of these Norms and Standards, at a landfill site designed in accordance with the requirements for a GLB+ landfill as specified in the Minimum Requirements for Waste Disposal by Landfill (2nd Ed., DWAF, 1998). Disposal at Class B landfill will require specific approval by the relevant Competent Authority (National or Province) based on considerations on how the site is managed.
(b) **(i) Expired, spoilt or unusable hazardous products.** **(ii) PCBs (or rather PCB containing waste (>50pp))** **(iii) General waste, excluding domestic waste, which contains hazardous waste or hazardous chemicals.** **(iv) Mixed, hazardous chemical waste from analytical laboratories and laboratories from academic institutions in containers less than 100 litres.**	Disposal only allowed at a **Class A** landfill designed in accordance with section 3(1) and (2) of these Norms and Standards, or, subject to section 3(4) of these Norms and Standards, at a landfill site designed in accordance with the requirements for **Hh / HH landfill** as specified in the Minimum Requirements for Waste Disposal by Landfill (2nd Ed., DWAF, 1998).

Amendment of paragraph 5 of the Norms and Standards

5. Paragraph 5 of the Norms and Standards is hereby amended by—

(a) the substitution of subparagraph (1)(a) for the following subparagraph:

Waste Prohibited or Restricted in terms of Disposal	Compliance Timeframe
(a) Waste which, in the conditions of a landfill, is explosive, corrosive, oxidizing (according to GHS)	Immediate

(b) the substitution of subparagraph (1)(e) for the following subparagraph:

Waste Prohibited or Restricted in terms of Disposal	Compliance Timeframe
(e) Waste compressed gases (according to GHS)	Immediate

(c) the substitution of subparagraph (1)(q) for the following subparagraph:

Waste Prohibited or Restricted in terms of Disposal	Compliance Timeframe
(q) Liquid waste-	Six (6) years

"Waste which has an angle of repose of < 5 degrees and has a moisture content of >40%"	

(d) the substitution of subparagraph (1)(r) for the following subparagraph:

Waste Prohibited or Restricted in terms of Disposal	**Compliance Timeframe**
(r) Hazardous waste with a calorific value of: (i) > 25MJ/kg. (ii) > 20MJ/kg. (iii) > 10 MJ/kg. (iv) > 6% TOC. *CV determination be undertaken on the waste as received.*	 Four (4) years Six (6) years Twelve (12) years Twenty-Five (25)

(e) the insertion after subparagraph 5(1)(u) of the following subparagraphs:

Waste Prohibited or Restricted in terms of Disposal	Compliance **Timeframe**
(v) Mercury and mercury containing waste: (i) must undergo treatment and conversion prior to being disposed of (ii) where intended to be disposed of in above-ground facilities, must undergo treatment and conversion and solidification prior to being disposed of	 Two (2) years

Waste Prohibited or Restricted in terms of Disposal	**Compliance Timeframe**
(w) Co-disposal of flue gas desulphurization waste with dry wall/ gypsum waste	Immediate

Waste Prohibited or Restricted in terms of Disposal	**Compliance Timeframe**
(x) General waste with a calorific value of: (i) > 25MJ/kg. (ii) > 20MJ/kg. (iii) > 10 MJ/kg. (iv) > 6% TOC.	 Four (4) years Six (6) years Twelve (12) years Fifteen (15) years

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