Incineration plant for the destruction of hospital waste — Specification
Compliance with this standard does not, of itself confer immunity from legal obligations

A Uganda Standard does not purport to include all necessary provisions of a contract. Users are responsible for its correct application

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(c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

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Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.


This standard was developed by the Building and civil engineering Standards Technical Committee (UNBS/TC 3).

Wherever the words, “East African Standard” appear, they should be replaced by "Uganda Standard."
EAST AFRICAN STANDARD

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EAST AFRICAN COMMUNITY
Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Partner States in the Community through their National Bureaux of Standards, have established an East African Standards Committee.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

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Introduction

This East African Standard specifies the performance requirements which have to be met by an incinerator, and which can be verified by testing the incinerator in accordance with the methods of test and calculation given in EAS 492:2008. Hospital waste varies considerably in density between hospitals and throughout each day. The designer of the incinerator has to take that variability into account. If and when research takes place which provides useful figures on build density, these will be incorporated into the standard.

The testing of incineration plant, after the completion of installation and settling to work, essential in order to establish that the specified performance criteria are achieved in any given installation.

This standard is part of a four-series standards as listed below:

**EAS 491:2008, Incineration plant for the destruction of hospital waste — Specification**


EAS 493:2008, *Incineration plant for the destruction of hospital waste — Method for specifying purchaser’s requirements*

Incineration plant for the destruction of hospital waste — Specification

1 Scope

This East African standard specifies the performance requirements for incineration plant, assisted by auxiliary fuel if required, suitable for the destruction of hospital waste.

Devices which utilize intensities of combustion exceeding an average heat release rate of 350 W/m³ are not included. This standard does not specify materials or methods of construction.

2 Definitions

For the purpose of this standard, the following definitions shall apply.

2.1 auxiliary fuel consumption
the quotient of the total quantity of fuel used during the incineration of a specified quantity of waste and the total mass of the quantity of waste (in kJ/kg)

2.2 charge
the quantity of waste (in kg) loaded into the incinerator during one charging operation

2.3 charging period
the specified period (in h) over which the incinerator is to be charged with hospital waste

2.4 charging frequency
the quotient of the incinerator capacity and the charge (in charges per hour)

2.5 charging or loading
the process of transferring a charge into the primary combustion chamber

2.6 combustible matter in residue
the amount of unburnt combustible material, remaining in the residue after incineration, expressed as a percentage by mass of the total dry ash residue.

2.7 design temperature
the temperature in the gas zone at which destruction of waste occurs.

2.8 hospital Waste
material that is generated within a hospital and that has to be incinerated.

2.9 incineration capacity
the quotient of the amount of hospital waste which is to be incinerated and the charging period (in kg/h)
2.10 primary burner
an auxiliary fuel burner installation the primary combustion chamber to dry out and/or ignite the material to be burned

2.11 primary combustion zone
the volume in which solid phase reactions occur (in m³)

2.12 secondary burner
an auxiliary fuel burner installed in a secondary combustion chamber

2.13 secondary combustion chamber
the chamber where unburned combustibles from the primary combustion chamber are completely burned

NOTE This chamber can be either part of the incinerator itself or a separate chamber.

2.14 secondary combustion zone
the volume in which gas phase reactions occur (in m³)

3 Requirements

3.1 Surface temperature
When tested as described in 3.1 of EAS 492:2008, no part of the incinerator that has to be touched during normal operation shall have a surface temperature in excess of 50 °C (corrected to 20 °C ambient temperature). No other external part of the incinerator that can be touched during normal operation shall have a temperature in excess of 80 °C (corrected to 20 °C ambient temperature).

3.2 Combustible matter in residues from incineration
When tested as described in clause 3.2 of EAS 492:2008, unburnt combustibles in the residue from incineration shall not exceed 5% by mass.

3.3 Noise
When tested as described in clause 3.3 of EAS 492:2008, the maximum level of noise at 1.0m from the prime source of sound shall not exceed 85 dB (A) sound pressure level.

3.4 Emission of smoke
When tested as described in clause 3.4 of EAS 492:2008, the emissions shall not exceed the limits given in table 1.

<table>
<thead>
<tr>
<th>POLLUTANT</th>
<th>LIMIT LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphur dioxide (SO₂)</td>
<td>1700mg/m³</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>250mg/Nm³</td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>20mg/Nm³</td>
</tr>
</tbody>
</table>
3.5 Emission of grit and dust

When tested as described in clause 3.5 of EAS 492:2008 the emission of grit and dust shall not exceed the figures given in table 2.

<p>| Calculated heat release (see 3.6 of EAS 492:2008) | Maximum emission of grit and dust |</p>
<table>
<thead>
<tr>
<th>kW</th>
<th>g/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>450</td>
</tr>
<tr>
<td>600</td>
<td>900</td>
</tr>
<tr>
<td>900</td>
<td>1350</td>
</tr>
<tr>
<td>1200</td>
<td>1600</td>
</tr>
<tr>
<td>1500</td>
<td>1800</td>
</tr>
<tr>
<td>3000</td>
<td>3000</td>
</tr>
<tr>
<td>4500</td>
<td>4000</td>
</tr>
</tbody>
</table>

3.6 Volumetric heat release rate

When calculated as described in clause 3.6 of EAS 492:2008, the volumetric heat release rate shall not exceed 350 kW/m³.

3.7 Gas residence time

When calculated as described in 3.7.1 of EAS 492:2008, a minimum gas residue time of 0.5s at 800 °C shall be provided within the combustion zone in which oxidising conditions prevail (see 3.7.3 of EAS 492:2008).

For an incinerator designed to operate with temperatures in excess of 800 °C, the criteria of time and temperature shall be adjusted by calculating the equivalent gas volume and residue time at 800 °C.

3.8 Carbon monoxide concentration

When measured as described in 3.7.2 of EAS 492:2008, the carbon monoxide concentration at the outlet of the final combustion zone, and before dilution or cooling, shall be not more than 0.5% by volume (dry basis). The gas temperature shall not be less than 800 °C when the incineration is operated at design capacity.

3.9 Oxygen concentration

When measured as described in 3.7.3 of EAS 492:2008, the oxygen concentration at the outlet of the final combustion zone, and before dilution or cooling, shall be not less than 10.0% by volume (dry basis).