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EAST AFRICAN STANDARD

Air quality — Tolerance limits of emissions discharged to the air by cement factories

EAST AFRICAN COMMUNITY

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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 meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. 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.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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Introduction

Industrial effluents into the air or water bodies can cause environmental pollution when not treated properly prior to exposure. Some of these effluents are toxic and can directly or indirectly endanger the lives of people, as well as destroying the environment. All efforts should focus on waste minimization. However, when some effluents must be discharged, then this should be done within preset tolerances, in cognizance of their eventual impact on the environment and health. Prior treatment may also be necessary.

The three most relevant air-polluting substances released to the air from cement factories are inactive dust, oxides of nitrogen and sulfur dioxide. Tolerance limits for these are given in this East African Standard. The reasons behind the emissions and what may be done to mitigate the same is given in a separate guideline East African Standard, CD/T/65/2007 (see clause 2). There are also other pollutants, which should be considered, as given in the guideline document.

Sampling and test methods are also prescribed in order to have a uniform way of assessment and hence make results comparable. Reference for such methods is given in this East African Standard. Provision for on-line analyzers is also given without mentioning a specific equipment.

During the course of implementation some grace period may be required to adjust to new technology or have the necessary equipment in place. These are administrative procedures, which should be sorted out by consultations between factories and relevant government authority. Some proposals have been given.

In the preparation of this East African Standard, assistance was derived from

Proposal for environmental standards for the cement industry, 2002 published by the East African Cement Producers Association (EACPA).

The EACPA proposal was based on the European IPPC (Integrated Pollution Prevent and Control) Bureau publication together with the East African factories state of the art. The EACPA input is gratefully acknowledged.

In reporting the results of a test or analysis made in accordance with this East African Standard, if the final value, observed or calculated is to be rounded off, it shall be done in accordance with EAS 124:1999 (see clause 2).

Air quality — Tolerance limits of emissions discharged to the air by cement factories

1 Scope

This East African Standard prescribes the tolerance limits of inactive dust, oxides of nitrogen and sulfur dioxide emissions from cement factories into the air.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

For the purpose of this East Africa Standard, the following references shall apply:

ISO 4225:1994, Air *quality - General considerations – Vocabulary*

CD/T/65/2007, *Guidelines on emissions discharged to the air by cement factories*

CD/T/64/2007: 2005, *Sampling of gaseous pollutants*

ISO 9096:2003, *Stationary source emissions – Manual determination of mass concentration of particulate matter*

ISO 11632:1998, *Stationary source emissions - Determination of mass concentration of sulphur dioxide*

ISO 11564:1998, *Stationary source emissions - Determination of the mass concentration of nitrogen oxides -Naphthylethylenediamine photometric method*

EAS 124:1999, *Rounding off numerical values*

3 Terminology

For the purpose of this East African Standard, the following definitions and those given in ISO 4225:1994 (see clause 2) shall apply:

3.1
Dust
Small solid particles, conventionally taken as those particles below 75 µm in diameter, which settle out under their own weight but which may remain suspended for sometime.

3.2
emission
Discharge of substances into the atmosphere. The point or area from which the discharge takes place is called the "source". The term is used to describe the discharge and the rate of discharge. The term can also be used for noise, heat, etc.

4 Tolerance limits

Tolerance limits of emissions from cement factories shall comply with the requirements given in Table 1 below.

Table 1 — Specific tolerance for cement industry

S/N	Characteristic	Limit			Method of Test
		Immediate	Optimal Value	Time (Yrs)	
	DUST – for systems with:				
	Multiclone (MLTC)	2000	50	5	ISO 9096
	Fabric-filter-sheet type/mech.Rapping(FF-sm)	150	50	8	
	Electostatic Precipitator low efficiency (EP-le)	500	50	8	
	Fabric filter sleeve type/jet pulse cleaning(F-jp)	50	50	N/A	
	Electrostatic Precipitator high efficiency (EP-he)	50	50	N/A	
2	NOx	1800	1500	6	ISO 11564
3	SO_2	800	500	8	ISO 11632

NOTE 1 All values are in mg/Nm^3, dry gas basis at 273 K, 101.3 kPa and 10% 0_2 (kiln stack only)

NOTE 2 Limits are the values not to be exceeded during periodic measurement under normal conditions.

NOTE 3 Where continuous monitoring exists, the limit represents the monthly average exclusive of periods under abnormal conditions.

In compound kiln/raw mill systems, operation with either the kiln or the raw mill alone is considered as abnormal condition.

4 Sampling

Sampling shall be done as prescribed in CD/T/64/2007 (see clause 2). Where a method of determination describes a different sampling procedure the latter will prevail.

5 Test methods

Methods of determination shall be done by tests referred to in table 1. Also see clause 2. Where on-line gas analyzer exists, it may be used for the purposes of measurement and monitoring, as long as it is recognized and calibrated. In such cases the other methods are not necessary unless they are used for purposes of calibration or reliance assessment.