SLOVENSKI STANDARD
SIST EN 19694-1:2017

01-julij-2017

Emisije nepremičnih virov - Določevanje emisij toplogrednih plinov (TGP) v energetsko intenzivnih industrijah - 1. del: Splošni vidiki

Stationary source emissions - Determination of greenhouse gas (GHG) emissions in energy-intensive industries - Part 1: General aspects

Emissionen aus stationären Quellen - Bestimmung von Treibhausgasen (THG) aus energieintensiven Industrien - Teil 1: Allgemeine Grundsätze

Émissions de sources fixes - Détermination des émissions des gaz à effet de serre dans les industries à forte intensité énergétique - Partie 1: Aspects généraux

Ta slovenski standard je istoveten z: **EN 19694-1:2016**

ICS:

13.020.40	Onesnaževanje, nadzor nad onesnaževanjem in ohranjanje	Pollution, pollution control and conservation
13.040.40	Emisije nepremičnih virov	Stationary source emissions

SIST EN 19694-1:2017 en,fr,de

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 19694-1

July 2016

ICS 13.040.40

English Version

Stationary source emissions - Determination of greenhouse gas (GHG) emissions in energy-intensive industries - Part 1: General aspects

Émissions de sources fixes - Détermination des émissions de gaz à effet de serre (GES) dans les industries énergo-intensives - Partie 1: Aspects généraux

Emissionen aus stationären Quellen - Bestimmung von Treibhausgasen (THG) aus energieintensiven Industrien - Teil 1: Allgemeine Grundsätze

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SIST EN 19694-1:2017
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EN 19694-1:2016 (E)

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European foreword

This document (EN 19694-1:2016) has been prepared by Technical Committee CEN/TC 264 "Air quality", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2017, and conflicting national standards shall be withdrawn at the latest by January 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate M/478 given to CEN by the European Commission and the European Free Trade Association.

EN 19694, *Stationary source emissions — Determination of greenhouse gas (GHG) emissions in energy-intensive industries* is a series of standards that consists of the following parts:

— *Part 1: General aspects*

— *Part 2: Iron and steel industry*

— *Part 3: Cement industry*

— *Part 4: Aluminium industry*

— *Part 5: Lime industry*

— *Part 6: Ferroalloy industry*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the principles and requirements for the determination of GHG emissions from sector-specific sources as of the steel and iron, cement, aluminium, lime and ferroalloy producing industry.

This European Standard specifies in particular definitions and rules valid to all above enlisted sector-specific standards, provides common methodological issues and defines the details for applying the rules for the harmonized methods, which include:

a) measuring, testing and quantifying methods for greenhouse gas (GHG) emissions of the above mentioned sector-specific sources in the cited standards;

b) assessment of the level of GHG emissions performance of production processes over time, at production sites;

c) establishment and provision of reliable, accurate and quality information for reporting and verification purposes.

The application of this standard to the other sector-specific standards in this series ensures accuracy, precision and reproducibility of the obtained results and is for this reason a normative reference standard, umbrella standard respectively.

2 Normative references

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

EN 14181:2014, *Stationary source emissions — Quality assurance of automated measuring systems*

EN 15259, *Air quality — Measurement of stationary source emissions — Requirements for measurement sections and sites and for the measurement objective, plan and report*

EN 15267-1, *Air quality — Certification of automated measuring systems — Part 1: General principles*

EN 15267-2, *Air quality — Certification of automated measuring systems — Part 2: Initial assessment of the AMS manufacturer's quality management system and post certification surveillance for the manufacturing process*

EN 15267-3:2007, *Air quality — Certification of automated measuring systems — Part 3: Performance criteria and test procedures for automated measuring systems for monitoring emissions from stationary sources*

EN 15440:2011, *Solid recovered fuels — Methods for the determination of biomass content*

EN 19694 (all parts), *Stationary source emissions — Determination of greenhouse gas (GHG) emissions in energy-intensive industries*

EN ISO 13833, *Stationary source emissions — Determination of the ratio of biomass (biogenic) and fossil-derived carbon dioxide — Radiocarbon sampling and determination (ISO 13833)*

EN ISO 14064-1, *Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals (ISO 14064-1)*

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EN ISO 14956, *Air quality — Evaluation of the suitability of a measurement procedure by comparison with a required measurement uncertainty (ISO 14956)*

EN ISO 16911-1:2013, *Stationary source emissions — Manual and automatic determination of velocity and volume flow rate in ducts — Part 1: Manual reference method (ISO 16911-1:2013)*

EN ISO 16911-2, *Stationary source emissions — Manual and automatic determination of velocity and volume flow rate in ducts — Part 2: Automated measuring systems (ISO 16911-2)*

3   Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
absolute emission
absolute GHG emissions are expressed as a mass stream, for example in tonnes of CO_2e per year (t CO_2e/yr)

3.2
alternative fuel
AF
fuel materials or products used as a source of thermal energy and not classified as traditional fuel. In some industry wastes such as plastics, solvents, waste oil, end-of-life tires, etc. and different types of mixed or pure biomass fuels are used

3.3
base year
historical period specified for the purpose of comparing GHG emissions or other GHG–related information over time

Note 1 to entry: Base-year emissions may be quantified based on a specific period (e.g. a year) or averaged from several periods (e.g. several years).

3.4
biogenic CO_2
CO_2 obtained by the oxidation of biogenic carbon

3.5
biogenic carbon
carbon derived from biomass

3.6
biomass
material of biological origin excluding material embedded in geological formations and material transformed to fossilised material and excluding peat

Note 1 to entry: Biomass includes organic material (both living and dead), e.g. trees, crops, grasses, tree litter, algae, animals and waste of biological origin, e.g. manure.

3.7
carbon dioxide equivalent, CO_2e
unit for comparing the radiative forcing of a GHG to carbon dioxide

Note 1 to entry: The carbon dioxide equivalent is calculated using the mass of a given GHG multiplied by its global warming potential.

6

3.8
direct greenhouse gas emission
emission from greenhouse gas sources that are owned or controlled by the reporting organization

3.9
greenhouse gas emission factor
factor relating activity data to GHG emissions

3.10
energy indirect greenhouse gas emission
GHG emission from the generation of imported electricity, heat or steam consumed by the organization

3.11
equity share
percentage of economic interest in, or benefit derived from, a facility

Note 1 to entry: Under this approach, an organization (corporation, group) or a company consolidates its GHG emissions according to the *(pro rata)* equity share it holds in each operation, i.e. according to ownership. As an exception, no emissions are consolidated for so-called fixed asset investments where a company owns only a small part of the total shares of an operation and exerts neither significant influence nor financial control; other possible exceptions relate to the *economic substance* of a relationship [12].

3.12
facility
single local installation, set of installations or production processes (stationary or mobile), which can be defined within a single geographical boundary, organizational unit or production process

3.13
financial control
the ability of an organization to direct the financial and operating policies of an operation with a view to gaining economic benefits from its activities.

Note 1 to entry: The financial control usually exists if the organization has the right to the majority benefits of the operation, or if it retains the majority risks and rewards of ownership of the operation's assets. Under this approach, companies consolidate 100 % of the emissions of those operations over which they have financial control; as an exception, consolidation according to equity share is required for joint ventures where partners have joint financial control.

3.14
fossil carbon
carbon derived from fossil fuel or other fossil source

3.15
greenhouse gas
GHG
gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths   within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere and clouds

Note 1 to entry: GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6).

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3.16
global warming potential
GWP
factor describing the radiative forcing impact of one mass-based unit of a given GHG relative to an equivalent unit of carbon dioxide over a given period of time

3.17
higher heat value
HHV
(= gross calorific value, GCV), often in GJ per tonne of fuel: The higher heat value includes the latent heat contained in water vapour, which is released when condensing water vapour so that all water is in liquid state.

Note 1 to entry: Compare 2006 IPCC Guideline, Vol. II, Section 1.4.1.2 [10].

3.18
greenhouse gas activity data
quantative measure of activity that results in greenhouse gas emission"

Note 1 to entry: Examples of greenhouse gas activity data include the amount of energy, fuels or electricity consumed or material produced.

Note 2 to entry: Also referred to in the set of standards as "activity data".

3.19
greenhouse gas inventory
an organization's GHG sources and GHG emissions

3.20
greenhouse gas source
physical unit or process that releases a GHG into the atmosphere

3.21
key performance indicator
KPI
an industry used term for a type of measure of performance; KPIs are commonly used by organizations to evaluate its success or the success of a particular activity in which it is engaged

3.22
lower heat value
LHV
(= net calorific value, NCV), often in GJ per ton of fuel: the lower heat value excludes the latent heat contained in water vapour

3.23
loss on ignition
LOI
test used in inorganic analytical chemistry, particularly in the analysis of minerals. It consists of strongly heating ("igniting") a sample of the material at a specified temperature, allowing volatile substances to escape, until its mass ceases to change

3.24
mass balance
a relationship between input and output of a specific substance in a defined system, taking into account the formation or decomposition of that substance in the system

3.25
mixed fuels
term used in this Standard for referring to fuels that are a mix of biomass and fossil fuel, i.e. fuel with a certain biogenic carbon content

3.26
m_N^3
normal cubic meter (at 1 013,25 hPa and 273,15 K)

3.27
operational control
an organization's full authority to introduce and implement its operating policies at an operation

Note 1 to entry: This criterion is usually fulfilled if an organization is the operator of a facility, i.e. if it holds the operating license; under this approach, companies consolidate 100 % of the emissions of those operations over which they have operational control; as an exception, consolidation according to equity share is required for joint ventures where partners have joint operational control.

3.28
organization
company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration

3.29
other indirect greenhouse gas emissions
GHG emission, other than energy indirect GHG emissions, which are a consequence of an organization's activities, but arises from greenhouse gas sources that are owned or controlled by other organizations

3.30
plant
technical entity for production of a specific product.

Note 1 to entry: A plant consists of various tools necessary to the operation of a process.

3.31
process
single or multiple operations delivering a specific product or set of products

Note 1 to entry: Also referred to as activity but the term activity is more largely used in activity data which are the basis of GHG estimate.

3.32
process emission
emission from industrial processes including chemical and mineralogical transformations other than combustion

3.33
source stream
means any of the following:

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(a) a specific fuel type, raw material or product giving rise to emissions of relevant greenhouse gases at one or more emission sources as a result of its consumption or production;

(b) a specific fuel type, raw material or product containing carbon and included in the calculation of greenhouse gas emissions using a mass balance methodology

3.34
specific emission
emission expressed on a per unit output basis, for instance in kg of CO_2e per tonne of product

3.35
TC
total carbon, the sum of TOC and TIC

3.36
TIC
total inorganic carbon: carbon, mostly bound in the mineral matter of materials (e.g. carbonates in fuel ashes)

3.37
TOC
total organic carbon

3.38
traditional fuel
fossil fuel defined by the International Panel on Climate Change (IPCC) guidelines, including mainly coal, petroleum coke, lignite, shale, petroleum products and natural gas

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d2b2db56fb88/sist-en-19694-1-2017

3.39
uncertainty
parameter associated with the result of quantification which characterizes the dispersion of the values that could be reasonably attributed to the quantified amount

Note 1 to entry: Uncertainty information typically specifies quantitative estimates of the likely dispersion of values and a qualitative description of the likely causes of the dispersion.

4   Symbols and abbreviations

AMS   Automated Measuring System

GHG   Greenhouse Gas

5   Introduction

The European Commission is of the opinion that with a view to international developments like sectoral agreements, and subject to existing legislation, the work for developing a methodology for assessing direct and indirect greenhouse gas (GHG) emissions from energy intensive industry and/or products is best achieved within the European Standardisation system which offers a suitable structure and gathers the necessary high level of competence and expertise.

The present standardization work is based on the results of the EC/EFTA programming Mandate M/431 to establish a programme of standards for assessing the GHG emissions in energy-intensive industries, which is a true dissemination result of the preparatory work for Mandate M/478 in terms of gap analysis of EN and ISO standards as well as existing protocols. Following this gap analysis the

European Commission sent in December 2010 the standardization mandate M/478 to CEN, CENELEC and ETSI for the development of European Standards in the field of greenhouse gas emissions.

The standardization work is coherent with EU policies, especially with the Energy and Climate package of January 2008, and the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan COM(2008) 397.

Section II of Mandate M/478 mandates the establishment of a set of EN standards, which contain harmonized and verified methods for measuring, testing and quantifying GHG emissions from five sector-specific industry sectors, and one standard on general aspects.

In particular, the standards contain harmonized methods for:

a)   measuring, testing and quantifying GHG emissions from sector-specific sources;

b)   assessing the level of GHG emissions performance of production processes over time, at production sites;

c)   establishing and providing reliable, accurate and quality information for reporting and verification purposes.

This standard deals with the general aspects and is a generic "umbrella standard" which defines common methodological issues and overall requirements, which are applicable to all sectors covered.

The basic vision of this framework standard of GHG emissions for energy intensive industries is to develop by experts of energy intensive industries under the umbrella of CEN and EC (Mandate M 478) a tool establishing common verified rules for the participating industries. This standard shall enable industry to manage the GHG emissions output of the production processes and to allow performance assessment between plants and over time. The objective is to improve continuously the reduction potential of the production processes by acting on the emission performance over time. Therefore the standard contributes to competitiveness of industry and is a tool formalizing business' contribution in providing emission reductions in their operations and in developing low carbon technology solutions to the market.

Accounting and performance assessment of GHG shall be based on the principles as described in the following paragraphs.

For high **accuracy** it has to be ensured that the quantification of GHG emissions is systematically neither over nor below actual emissions, as far as may be judged, and that uncertainties are reduced as far as practicable (see also Chapter 9). Sufficient accuracy should be achieved to enable users to make decisions with reasonable assurance as to the integrity of the reported information.

All relevant issues should be addressed in a factual and coherent manner, based on a clear audit trail, to aim at **transparency**. Any relevant assumptions should be disclosed and appropriate references should be made to the accounting and mass balance methodologies and data sources used.

Consistent methodologies should be used to allow for meaningful comparison of emissions over time. Any changes to the data, inventory boundary, methods, or any other relevant factors in the time series should be documented transparently.

It should be ensured that the GHG inventory appropriately reflects the **relevant** GHG emissions of the reporting entity and serves the decision-making needs of users – both internal and external to the organization.

The operator should account for and report on all GHG emission sources and activities within the chosen inventory boundary. To reach **completeness** any gaps should be avoided and any specific exclusion shall be disclosed and justified.

The standard aims to meet the following additional rules. Double counting at plant, organization, group, national, and international levels should be avoided. Different drivers of emissions (technological