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BHUTAN STANDARD

Draft Bhutan Standard on Ecolabel Criteria for Cement

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FOREWORD

This Bhutan Standard for ecolabel criteria for cement was adopted by Bhutan Standards Bureau after the draft finalized by the Environment and Sustainability Technical Committee TC 10 and approved by the Bhutan Standards Bureau Board (BSB Board) on …….

This standard is subjected to systematic review after five years to keep pace with the market trends, industrial and technological developments. Any suggestions and further information may be directed to the concerned Technical Committee.

Introduction

Cement is one of the top 10 commodities exported by Bhutan (Bhutan Trade Statistics, 2022). The extraction and manufacturing processes contribute to CO_2 and greenhouse gas emissions and environmental degradation, underscoring the need to monitor and reduce the environmental impacts to uphold environmental preservation efforts.

Based on the feasibility study carried out by Öko-Institut, Germany based on parameters like environmental impact, procurement, market feasibility and cost saving potential of Bhutan, the construction materials among the 20 products and services were identified by a working committee. Cement and TMT rebars were considered for ecolabeling as it is one of the most procured construction materials by the government.

Bhutan ecolabel criteria for cement have been developed on the principal of ISO 14020 Environmental Labels and Declarations — General Principles and ISO 14024 Environmental Labels and Declarations — Type 1 Environmental Labelling – Principles and Procedures in line with the project "SCP Outreach in Asia - The Next Five" in reducing greenhouse gas emissions through environmental labels and sustainable public procurement. The project is initiated by Competition and Consumer Affairs Authority (CCAA) under the Ministry of Industry, Commerce and Employment (MoICE), Bhutan with financial support from the Federal Ministry of the Environment, Nature Conservation, Nuclear Safety. and Consumer Protection, Germany.

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1 Scope

This Bhutan Standard prescribes ecolabel criteria for Ordinary Portland Cement (OPC), fly ash-based Portland Pozzolana Cement (PPC), and Portland Slag Cement (PSC).

2 Normative References

The following 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 amendments) applies.

BTS 317 IS 269: 2015 *Ordinary Portland Cement - Specification*

BTS 318 IS 455: 2015 *Portland Slag Cement - Specification*

BTS 319 (part 1) IS 1489 (part 1): 2015 *Portland Pozzolana Cement - Part 1 fly-ash based – Specification*

3 Terms and Definitions

For the purpose of this standard, the following terms and definitions shall apply;

3.1 Community Engagement

Building relationships with community stakeholders to achieve sustainable dialogue and discourse to enhance social cohesion and environmental stewardship.

3.2 Ecolabel or Environmental label

Claim which indicates the environmental aspects of a product or service based on life cycle consideration. An ecolabel identifies products or services proven to be environmentally preferable within a specific category.

Note: An environmental label or declaration may take the form of a statement, symbol or graphic on a product or package label, in product literature, in technical bulletins, in advertising or other mediums.

3.3 Eco-vision

A strategic approach or a set of principles to integrate ecological consideration to promote sustainability and minimize impacts on the environment.

3.4 Energy Efficiency

Optimisation of energy use by adopting energy-efficient technologies or measures.

3.5 Environmental Aspect

Element of an organization’s activities or products that interacts or can interact with the environment.

3.6 Environmental Impact

Change to the environment, wholly or partially resulting from an organization’s environmental aspects.

3.7 Environmental Sustainability Plan

A comprehensive strategy designed to identify and manage environmental sustainability issues. It outlines goals, objectives, and time bound set of actions to reduce the negative impacts of an organizations' activities on the environment.

3.8 Granulated Slag

Slag in granulated form is used for the manufacture of hydraulic cement. Slag is a non-metallic product consisting essentially of glass containing silicates and alumino-silicates of lime and other bases, as in the case of blastfurnace slag, which is developed simultaneously with iron in blast furnaces or electric pig iron furnaces. Granulated slag is obtained by further processing the molten slag by rapidly chilling or quenching it with water or steam and air.

3.9 Greenhouse Gas (GHGs)

Gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation. Greenhouse gasses include, but are not limited to, water vapor, carbon dioxide (CO_2), methane (CH4), nitrous oxide (N2O), hydrochlorofluorocarbons (HCFCs), ozone (O3), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).

3.10 Life Cycle

Consecutive and interlinked stages of a product system, from raw material acquisition or generation of natural resources to the final disposal.

3.11 Overburden Management

Management of overburden with a view to restore the land to its approximate original shape post mining activities. Overburden consists of rock or soil layer that needs to be removed in order to access the mineral being mined.

3.12 Ordinary Portland Cement (OPC)

A cement obtained by grinding portland cement clinker with possible addition of a small quantity of gypsum, water or both, and not more than one percent of air entraining agents or other agents which have proved not to be harmful.

3.13 Portland Pozzolana Cement (PPC)

An intimately interground mixture of portland cement clinker/ordinary portland cement and pozzolana with the possible addition of gypsum (natural or chemical) or an intimate and uniform blending ordinary portland cement and fine pozzolana with addition of ground gypsum, if required.

3.14 Portland Slag Cement (PSC)

An intimately interground mixture of Portland cement clinker and granulated slag with addition of gypsum and permitted additives or an intimate and uniform blend of ordinary Portland cement and finely ground granulated slag with addition of ground gypsum, if required.

3.15 Product Environmental Criteria

Environmental requirements that the product shall meet in order to be awarded an ecolabel.

3.16 Top Soil Conservation

Topsoil conservation entails conservation and use of top soil from the mining/quarrying site to enhance the final site stabilization with vegetative cover.

3.17 Type 1 Environmental Labelling Programme

Voluntary, multiple-criteria-based third party programme that awards a licence which authorizes the use of environmental labels on products indicating overall environmental preferability of a product within a particular product category based on life cycle considerations.

3.18 Water Efficiency

Optimisation of potable water use by adopting water-efficient technologies or measures.

4 Product General Criteria

4.1 The product shall be certified with Bhutan Standard;

a) BTS 317 IS 269: 2015 for Ordinary Portland Cement

b) BTS 319 (part 1) IS 1489 (part 1): 2015 for Portland Pozzolana Cement – Fly ash based.

c) BTS 318 IS 455: 2015 for Portland Slag Cement.

4.1.1 Verification Methods

The applicant shall submit valid product certificate for

a) BTS 317: 2020 IS 269: 2015 for Ordinary Portland Cement

b) BTS 319 (part 1): 2020 IS 1489(part 1): 2015 for Portland Pozzolana Cement

c) BTS 318: 2020 IS 455: 2015 for Portland Slag Cement.

4.2 The manufacturer shall comply with the applicable national laws and regulations or the manufacturer shall be certified with ISO 14001. It shall also include captive mines, if any.

4.2.1 Verification Method

The applicant shall submit valid;

a) Mining lease agreement from the Department of Geology and Mines (DGM), Ministry of Energy and Natural Resources (MoENR)

b) Environmental clearance from Department of Environment and Climate Change (DECC), MoENR

(OR)

c) ISO 14001 certificate from the competent authority.

4.3 The manufacturer shall have a well-defined eco-vision in place to promote sustainable practices and consumer awareness.

4.3.1 Verification Method

They shall submit;

a) Eco-vision statement.

b) Environmental sustainability plan

5 Product Environmental Criteria

5.1 Greenhouse Gas (GHG) Emission

The manufacturers shall be encouraged reduction in greenhouse gas emissions.

5.1.1 Verification Method

5.1.1.1 The manufacturer shall have action plan or measures for reduction in energy and water consumption.

5.1.1.2 They shall keep the following records monthly;

a) List of raw materials for clinker and cement production.

b) Quantity of raw materials for clinker and cement production in tonnes.

c) Records of clinker production in tonnes.

d) Records of cement production in tonnes.

e) Records of fuel consumption in KWh/Tonnes for electrical and Kcal/Tonnes for thermal consumption.

f) Records of potable water consumption and total water consumption in litres.

g) Records of CO_2 emissions from clinker in Kg CO_2/MT.

h) Records of categories of waste and its quantity in tonnes.

5.2 Reduce Environmental Impact Due to Quarrying

5.2.1 In order to minimize the environmental impact during quarrying of minerals and initiate implementation of measures for restoration of the land after the life of the quarry, the applicant shall carry out;

a) Enhancement of mines life

b) Top soil conservation

c) Overburden management

d) Restoration of spent mine

e) Demonstrate community engagement on addressing environment impact, if applicable

f) Measures taken to minimize the environment impact due to transportation.

5.2.2 Verification Method

The applicant shall submit;

a) Annual compliance monitoring report from DGM, MoENR

b) Details of the actions implemented for enhancement of mines life, top soil conservation and overburden management.

c) Documentary evidences such as strategic and action plan, study reports, photographs for restoration of spent mines.

d) Evidences of community engagement.

e) Provide the details of the projects implemented or the measures taken to minimize emission reduction due to transportation.

5.3 Additives

5.3.1 The minimum quantity of additives to be added in the final product shall be as per given below;

S/N	Additives	Limit *(Min)*
1	Fly Ash	20%
2	Slag	33%

5.3.2 There shall be initiatives from the manufacturer's side to increase the quantity of additives to a maximum specified in BTS 318 IS 455: 2015 for Portland Slag Cement – Specification and BTS 319 (part 1) IS 1489 (part 1): 2015 for Portland Pozzolana Cement – Part 1 fly-ash based - Specification, to reduce the natural resource consumption.

5.3.3 Verification Method

The applicant shall submit

a) Details of quantity of cement production and the quantity of additives used.

b) Measures or study reports to increase the quantity of additives.

5.4 Energy Efficiency

5.4.1 A system shall be in place to enhance energy efficiency in the manufacturing process of the product, to reduce environmental impacts.

5.4.2 Verification Method

The applicant shall submit;

a) Records of annual production, energy consumption & specific energy consumption for the past 2 consecutive years.

b) Details of implementation of energy efficiency improvement measures.

5.5 Water Efficiency

5.5.1 Incorporate water efficiency measures in the manufacturing process to reduce the potable water consumption.

5.5.2 Verification Method

The applicant shall submit;

a) records of annual water consumption and potable water consumption for the past 2 consecutive years.

b) Details of implementation of water efficiency improvement measures.

5.6 Education and Awareness

5.6.1 The manufacturers shall educate internal and external interested party so as to reap the intended environmental benefits of the product fully.

5.6.2 Verification Method

The applicant shall submit;

a) Details of internal and external interested party

b) Details of the stake holder's specific awareness or information dissemination programs about the products, its features and their roles to reap the intended benefits.

5.7 Quality Management System after Dispatch of the Product

5.7.1 The manufacturers shall institute a system to reduce rejection and waste during dispatch and storage

5.7.2 Verification Method

The applicant shall submit;

a) Details in place to oversee the quality of the product during distribution up to the user end.

b) Records of product take back, if any.

5.8 Information

5.8.1 Instructions for proper handling and disposal shall be displayed on the cement bags.

5.8.2 Verification Method

The applicant shall submit evidence of instructions or photographs for proper handling and disposal of the cement bags.

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