KENYA STANDARD

DKS 3015-1:2024

ICS XXXX

First Edition

Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 1: Definitions

TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Ministry of Roads and Transport – Material Testing and Research Directorate

Kenya National Highways Authority

Surtech Limited

Bamburi Special Products Limited(Bamburi Cement PLC)

Kenya Builders and Concrete Company Limited

Kenya Bureau of Standards — Secretariat

REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

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Foreword

This Kenya Standard was prepared by the Concrete Technical Committee under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Kenya Bureau of Standards (KEBS) has established Technical Committees (TCs) mandated to develop Kenya Standards (KS). The Committees are composed of representatives from the public and private sector organizations in Kenya.

Kenya Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft Kenya Standards are circulated to stakeholders through the KEBS website and notifications to World Trade Organization (WTO). The comments received are discussed and incorporated before finalization of the standards, in accordance with the Procedures for Development of Kenya Standards.

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

DKS 3015 consists of the following parts, under the general title *Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity*:

— *Part 1: Definitions*

— *Part 2: Surface protection systems for concrete*

— *Part 3: Structural and non-structural repair.*

— *Part 4: Structural bonding*

— *Part 5: Concrete injection*

— *Part 6: Anchoring of reinforcing steel bars.*

— *Part 7: Reinforcement corrosion protection.*

— *Part 8: Quality control and assessment and verification of the constancy of performance (AVCP).*

— *Part 9: General principles for the use of products and systems.*

— *Part 10: Site application of products and systems and quality control of the works.*

During the preparation of this standard, reference was made to the following document (s):

EN 1504-1:2004, *Products and systems for the protection and repair of concrete structures — Definitions, requirements, quality control and evaluation of conformity — Part 1: Definitions.*

Acknowledgement is hereby made for the assistance derived from this (these) source (s).

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Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 1: Definitions

1 Scope

This Kenyan Standard defines terms relating to products and systems for repair, for use in maintenance and protection, restoration and strengthening of concrete structures

2 Normative references

The following referenced documents referred to in the text in such a way that some or all of their content constitutes requirements 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.

KS EAS 18-1:2017, Cement-Part 1: Composition, specification and conformity criteria for common cements

KS 2168-1:2021, Masonry cement - Specification Part 1: Composition, specification and conformity criteria

KS 1780-1:2010, Building lime - Part 1: Definitions, specifications and conformity criteria

3 Terms and definitions

3.1 General

3.1.1
batch
quantity of material made in a single operation, or in the case of continuous production for a defined quantity (in tonnes) which shall be demonstrated by the producer to have a uniform composition and shall not exceed one day's production.

3.1.2
declared value
value declared and documented by the manufacturer for identification or performance requirements

3.1.3
identification test
test carried out to verify a declared value of the composition or property of the product or system in terms of consistency of the production

NOTE This is to ensure that the product or system being tested corresponds to the product or system subjected to the initial type test, within the permitted tolerances.

3.1.4
performance
ability of a product or system to provide an effective and durable repair or protection without adverse effects on the original structure, other structures, site operatives, users, third parties and environment

3.1.5
performance requirements
required mechanical, physical and chemical properties of products and systems to provide durability and stability of both the repaired concrete and the structure

3.1.6
performance test
test carried out to verify a value for a required property of the product or system in terms of its specified performance during application and use

NOTE This is to ensure that the product or system conforms to its specified performance characteristics.

3.1.7
product
constituents formulated for the repair or protection of concrete structures

3.1.8
systems
two or more products which are used together, or consecutively, to undertake repair or protection of concrete structures

3.1.9
technology
application of a product or system using specific equipment or method (for example crack injection)

3.2 Main categories of products and systems

3.2.1
anchoring products and systems
products and systems which:
- anchor reinforcement into concrete to give adequate structural behaviour;
- fill cavities in order to ensure a continuity between steel and concrete elements.

3.2.2
injection products and systems
products and systems which, when injected into a concrete structure, restore the structural integrity and/or durability

3.2.3
non-structural repair products and systems
products and systems which, when applied on a concrete surface, restore the geometric or aesthetic aspect of the structure

3.2.4
reinforcement protection products and systems
products and systems applied to unprotected reinforcement to provide corrosion protection

3.2.5
structural bonding products and systems
products and systems applied to concrete to provide a durable structural bond to additional applied material

3.2.6
structural repair products and systems
products and systems applied to a concrete structure, to replace defective concrete and to restore structural integrity and durability

3.2.7
surface protection products and systems
products and systems which, when applied, improve the durability of concrete and reinforced concrete structures

3.3 Main chemical types and constituents of protection and repair products and systems

3.3.1
additions
finely divided inorganic materials that may be added to repair products in order to improve certain properties or to achieve special properties

There are two types of additions:
- nearly inert additions (type I); and
- pozzolanic or latent hydraulic additions (type II).

3.3.2
additives for hydraulic binders

products which are added with hydraulic binder to give specific properties and which are not covered by admixtures and additions

3.3.3
additives for reactive polymer
products other than admixtures and additions which give the repair product specific properties

NOTE Typical additives are, for example:
- plasticizers;
- flexibilizers;
- accelerators;
- retarders;
- other materials which regulate the rheology;
- pigments;
- fillers.

3.3.4
admixtures
material added during the mixing process of concrete in a quantity not more than 5 % by mass of the cement content of the concrete, to modify the properties of the mix in the fresh and/ or hardened state

3.3.5
coating
treatment to produce a continuous protective layer on the surface of concrete

NOTE 1 Thickness is typically of 0.1 mm to 5.0 mm. Particular applications may require a thickness greater than 5 mm.
NOTE 2 Binders may be, for example, organic polymers, organic polymers with cement as a filler or hydraulic cement modified with polymer dispersion.

3.3.6
hydraulic binders (H)
inorganic material which reacts with water, undergoing a hydration reaction to produce a solid material

NOTE They are generally cements conforming to KS EAS 18-1:2017 or to KS 2168-1:2021, building limes conforming to KS 1780-1:2010 or in combination with other cements.

3.3.7
hydraulic mortars and hydraulic concretes (CC)
mortars and concretes based on a hydraulic binder which is blended together with graded aggregates and may include admixtures and additions and which, when mixed with water, set by a hydration reaction

3.3.8
hydrophobic impregnation
treatment of concrete to produce a water-repellent surface. The pores and capillaries are internally coated, but they are not filled. There is no film on the surface of the concrete and there is little or no change in its appearance

NOTE Active compounds may be, for example, silanes or siloxanes.

3.3.9
impregnation
treatment of concrete to reduce the surface porosity and to strengthen the surface. The pores and capillaries are partially or totally filled

NOTE 1 This treatment usually leads to a discontinuous, thin film on the concrete surface.
NOTE 2 Binders may be, for example, organic polymers.

3.3.10
polymer hydraulic cement mortars or concretes (PCC)

hydraulic mortars or concretes modified by the addition of polymer additives, which are added in sufficient quantity to give specific properties

NOTE Polymers typically used include:
- acrylic, methacrylate or modified acrylic resins as redispersible powders or aqueous dispersions;
- vinyl mono-, co- and ter-polymers as redispersible powders or aqueous dispersions;
- styrene butadiene co-polymer, generally as aqueous dispersions;
- natural rubber latices;
- epoxies.

3.3.11
polymer mortars and polymer concretes (PC)
blended mixtures of polymer binder and graded aggregates which set by polymerisation reaction

3.3.12
reactive polymer (P) binder
binders which generally consist of two components, a reactive polymer base and a hardener or catalyst, and which cure at ambient temperature. Additives (see 3.3.3) may also be added

NOTE 1 Ambient moisture vapour may act as the hardener/catalyst in some systems. NOTE 2 Typical binders are, for example:

- epoxies;
- unsaturated polyesters;
- cross-linkable acrylics;
- one or two-component polyurethanes.

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