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Technical specification:

Covered conductors for overhead lines not exceeding 24 kV

Revision History
Changes include, but is not limited to, the revision history in the table below.

Ver. No.	Modifications (short description)	Updated by	Date
1	New document ID. New document template Shall-requirements clarified with identification numbers. *2 Content extent and Target Group* Removed *3 Roles and Responsibilities* Removed *4 Information Classification* Removed *3 Terms and definitions* New chapter *4 Types & design* Text clarified *Design* New section *5 Standards* *General* Text clarified *"Or equivalent"* New section *5 General* *Warrantee* New section *Acceptance* New section *7 Testing* *Initial sample inspection* New section *13 Changes* New chapter	David Söderberg Erdal	2020-04-15

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1 Purpose

The purpose of this document is to be used as technical specification for 12 and 24 kV cables within Vattenfall Eldistribution AB.

2 Introduction

This technical specification is based on the SS-EN 50397-series and SS-EN 50182. The specification can be made binding by the purchaser and will then specify the requirements which together with applicable standards are valid for design, construction and testing.

This document has been approved as suitable support for purchase within framework agreements and for prequalification of covered conductors.

3 Terms and definitions

Vattenfall Vattenfall Eldistribution AB

Supplier Supplier of covered conductors

Prequalification
Process to become prequalified supplier for covered conductors.

4 Types & design

Types

Conductors shall (S4.1) be designed according to the following standard codes[1]:

Code	Old Code
CCST 54-AL1 / 9-ST1A W 24kV	FeAl 63 (Raven)
CCST 85-AL1 / 14-ST1A W 24kV	FeAl 99 (Pigeon)
CCST 159-AL7 W 24kV	AlMgSi - 159
CCST 241-AL7 W 24kV	AlMgSi – 241

Design

Covered conductors hall (S4.2) be triple extruded in one operation.

The supplier shall (S4.3) describe the water blocking system..

[1] Code designations according to SS-EN 50397-1:
CC Covered conductor
S Semi-conductive conductor screen
T Thermoplastic polyethylene (PE) cover
W Watertight
…kV Rated voltage in kV.

Code designations according to SS-EN 50182:
AL1 Hard drawn Aluminium as per EN 60889
AL7 Aluminium alloy as per EN 50183
ST1A Zinc coated steel wire as per EN 50189

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5 Standards

All covered conductors shall (S5.1) be designed, constructed and tested based on the following standards or equivalent (latest versions including amendments applies).

General	SS-EN 50397-1 *Covered conductors for overhead lines and the related accessories for rated voltages above 1 kV a.c. and not exceeding 36 kV a.c. – Part 1: Covered conductors* SS-EN 50397-2 *Covered conductors for overhead lines and the related accessories for rated voltages above 1 kV a.c. and not exceeding 36 kV a.c. – Part 2: Accessories for covered conductors – Tests and acceptance criteria* SS-EN 50397-3 *Covered conductors for overhead lines and the related accessories for rated voltages above 1 kV a.c. and not exceeding 36 kV a.c. – Part 3: Guide to use*
Conductors	SS-EN 50182 *Conductors for overhead lines –* *Round wire concentric lay stranded conductors*
"Or equivalent"	Public procurement regulations require that references to a national standard implementing a European standard must be followed by the words "or equivalent". The Supplier shall (S5.2) confirm however the referenced standards are followed or if other equivalent standards are followed.

6 General

Installation temperature	Minimum installation temperature shall (S6.1) not exceed: -10°C under normal conditions of care. -20°C with special care in handling and with only moderate bending radius.
Drums and logistics	The Supplier shall (S6.2) provide information of type of drums and logistics solution.
Heat treatment of wooden packaging	Wooden packaging, such as drums, shall (S6.3) be approved and marked according to the ISPM 15 standard[2] if the cable and/or packaging are imported from outside the European Union.

[2] International Standards For Phytosanitary Measures No. 15 (ISPM 15) issued by the International Plant Protection Convention (IPPC)

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European directives and regulations	Cables shall (S6.4) fulfill all applicable European directives and regulations. This includes, but are not limited to: - Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)[3]
Warrantee	The demanded warrantee time is specified separately.
Acceptance	Acceptance of test protocol, other technical documents and changes shall (S6.5) be in written form.

7 Testing

Initial sample inspection	The initial sample inspection aims to gain general understanding of the Supplier's product quality. The initial sample inspection is part of the prequalification process. The Supplier shall (S7.1) deliver the following free of charge: - One sample cut into a 1 meter long section for each type. - Display samples (exhibition samples), i.e. samples with the cover and conductor sheet opened. - Data sheet for actual covered conductor including: a) Dimensions of conductor and insulating materials. b) Electrical data.
Routine, sample and type test	Routine, sample and type tests shall (S7.2) be according to SS-EN 50397-1 (or equivalent). Test protocols should not be older than 5 years. Sample tests shall (S7.3) be conducted on every 20th drum or 10 km.

[3] REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

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8 Documentation

Language

All documentation shall (S8.1) be in Swedish or English.

Data sheets

Data sheets for each covered conductor type shall (S8.2) be included in tender.

The data sheet shall (S8.3) include information on:

- Three dimensional drawing of the covered conductor
- Voltage
- Conductor type
- Conductor screen
- Insulation
- Outer diameter
- Weight
- Minimum bending radius
- Maximum pulling force
- Resistance
- Maximum short circuit current (1 s)
- Minimum temperature for installation
- Maximum continuous temperature
- Standard drum type
- Length per drum

Test protocols

Test protocols from type- and sample tests shall (S8.4) be delivered as part of the Prequalification.

Material safety data sheet

A material safety data sheet shall (S8.5) be submitted as part of the Prequalification for each cable type.

The data sheet shall (S8.6) be structured according to REACH (16 sections).

Additional documentation

Additional documentation can be requested during Pre-qualification and/or tendering.

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9 Changes

Continuous improvements are usually beneficial for all parties. However, changes include risks and Vattenfall seeks close cooperation related to all types of changes

The supplier's duty to provide information on changes	Prequalified Suppliers shall (S9.1) inform Vattenfall of changes affecting shall-requirements in this document. Changes affecting shall-requirements in this document affects prequalification status and shall (S9.2) be evaluated and approved by Vattenfall before deliveries are allowed for installation in Vattenfall's distribution network.
Renewed type testing	Type test shall (9.3) be renewed for all changes that will affect the results of previous type test. The renewed type test shall (S9.4) be carried out free of charge to Vattenfall.

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