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**Terms of Reference (ToR)**

Terms of Reference for the Supply of Copper Wires up to 1 kV for the needs of JSC Telasi.

**1. BRIEF DESCRIPTION OF GOODS PURCHASED**

**1.1. Name and volume of purchased goods**

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| **№** | Product Description  | Technical requirements | Q-ty |
| 1 | **Copper wire --- нг-LS 1х10, red** (or analogue) | See S/P №2.2.1 | See Schedule №1 |
| 2 | **Copper wire --- нг-LS 1х10, black** (or analogue) | See S/P №2.2.1 | See Schedule №1 |
| 3 | **Copper wire --- нг-LS 1х10, yellow/green** (or analogue) | See S/P №2.2.1 | See Schedule №1 |
| 4 | **Cable ВВГПнг-LS- 2х10+1х6** (or analogue) | See S/P №2.2.2 | See Schedule №1 |
| 5 | **Wire ВВГнг-LS-1 1х2.5** (or analogue) | See S/P №2.2.3 | See Schedule №1 |
| 6 | **Wire ВВГнг-LS-1 1х1.5 multi-wire** (or analogue) | See S/P №2.2.3 | See Schedule №1 |
| 7 | **Cable ВВГнг-LS-1 14х2.5** (or analogue) | See S/P №2.2.4 | See Schedule №1 |
| 8 | **Cable КВВГнг-LS 7х2.5** (or analogue) | See S/P №2.2.4 | See Schedule №1 |
| 9 | **Cable ВВГнг-LS-1 4х2.5** (or analogue) | See S/P №2.2.3 | See Schedule №1 |
| 10 | **Cable ВВГнг-LS-1 2х2.5 «Гибкий»** (or analogue) | See S/P №2.2.5 | See Schedule №1 |
| 11 | **Cable ВВГПнг-LS- 2х2.5+1х1.5** (or analogue) | See S/P №2.2.6 | See Schedule №1 |
| 12 | **Cable ВВГнг-LS-1 4х10** (or analogue) | See S/P №2.2.7 | See Schedule №1 |

**1.2. Dates of Deliveries**

Delivery – as per Schedule №1.

**1.3. Procurement justification:** AdjustedAnnual Comprehensive Procurement Program-2021. СЗ №0712/982/21.

**1.4. Possibility of supply of similar goods.**

It is allowed to supply similar products according to the definition of "analogue" specified in the note.

**\*\*\* Note:**

Definition of **“Analoque” -** Products that are similar or comparable to the product, having identical functional purpose, weight, size and installation characteristics and conditions of use.

**2. GENERAL REQUIREMENTS**

**2.1. Product application and use point.**

Within the networks of JSC "Telasi".

**2.2. Product Requirements**

The product must be new, put into circulation for the first time, previously unused / brand-new (in new condition) of factory production (commercially prepared/ not counterfeit or handicraft), with production period not more than 12 months (pointed where necessary) (not stale) and comply with all ToR requirements and provisions of the contract.

The product must be new, not being in use, of the latest or advanced model, as well as take into account the latest developments in the field of structures and materials (if necessary).

The wire must comply with the requirements set forth in GOST 6323-79 or similar standards in accordance with the requested type of product.

The cable must comply with the requirements established by IEC 60502-2 and GOST 31996-2012 or equivalent standards in accordance with the requested type of product.

The wire/cable must have the following characteristics:

№2.2.1

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| **№** | **Cable requirements**  | **Required parameters**  |
| 1 | Rated voltage | 300/500 V;  |
| 2 | Core | copper stranded |
| 3 | Core class | 2 |
| 4 | Insulation (sheath) | PVC |
| 5 | Insulation color (sheath) | red; black; yellow-green – as per s/p №1.1 of ToR. |
| 6 | Core diameter  | 10 mm2 |
| 7 | Tagging  | The cable sheath must bear the tagging "TELASI" and the footage in each meter |
|  | Ambient temperature range during operation | from -20oC to +50oC |
| 8 | Cable installation without preheating | Up to -15oC |
| 9 | Operating temperature  | +70oC |
| 10 | Short-term temperature limits in short-circuit mode | +160oC |
| 11 | Service life  | 30 years  |
| 12 | Sheath version  | ng - reduced fire hazard.LS – the cable has low smoke emission during combustion |
| 13 | The wire must comply with SST EN 50575:2014/2016 for fire safety and be labelled with a CE mark. |

№2.2.2

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| **№** | **Cable requirements**  | **Required parameters**  |
| 1 | Rated voltage | 500/660 V |
| 2 | Dimensions  | Flat wire - 17.4Х8.4 mm |
| 3 | Number of cores  | 3 |
| 4 | Core | copper |
| 5 | Core class | 2 |
| 6 | Of the three cores 2X10 mm2 - insulated, the third middle core 6mm2 - bare. |
| 7 | Insulation  | PVC |
| 8 | Casing (sheath) | PVC, grey |
| 9 | Tagging  | The cable sheath must bear the tagging "TELASI" and the footage in each meter |
| 10 | Ambient temperature range during operation | from -20oC to +50oC |
| 11 | Operating temperature | +70oC |
| 12 | Short-term temperature limits in short-circuit mode | +160oC |
| 13 | Service life  | 30 years |
| 14 | Sheath version  | ng - reduced fire hazard.LS – the cable has low smoke emission during combustion |
| 15 | The wire must comply with SST EN 50575:2014/2016 for fire safety and be labelled with a CE mark. |

№2.2.3

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| **№** | **Cable requirements**  | **Required parameters**  |
| 1 | Rated voltage | 1 kV |
| 2 | Core | copper |
| 3 | Number of cores | 1, 2, 3 and 4 as per s/p №1.1 of ToR |
| 4 | Cross section of a copper conductor | 1.5, 2.5 and 4 as per s/p №1.1 |
| 5 | All cores must be of the same cross section | Yes |
| 6 | Insulation | PVC |
| 7 | Casing  | PVC |
| 8 | Core class  | 2 |
| 9 | Core insulation  | by color or numbering  |
| 10 | Tagging  | The cable sheath must bear the tagging "TELASI" and the footage in each meter |
| 11 | Ambient temperature range during operation | from -20oC to +50oC |
| 12 | Operating temperature | +70oC |
| 13 | Short-term temperature limits in short-circuit mode | +160oC |
| 14 | Service life  | 30 years |
| 15 | Sheath version  | ng - reduced fire hazard.LS – the cable has low smoke emission during combustion  |
| 16 | The wire must comply with SST EN 50575:2014/2016 for fire safety and be labelled with a CE mark. |

№2.2.4

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| **№** | **Cable requirements**  | **Required parameters**  |
| 1 | Number of cores | 7 and 14 as per s/p №1.1 of ToR |
| 2 | Conductor cross section (mm/sq) | 2.5 |
| 3 | Core class | 1 |
| 4 | Rated voltage  | 660 V |
| 5 | Core material  | Copper  |
| 6 | Insulation material  | made of PVC-compound - in colors or numbering  |
| 7 | Sheath material | PVC |
| 8 | Permissible bending radius (mm) | 72 |
| 9 | Operating temperature range (°C) | from -50 to +50 |
| 10 | Short-term temperature limits in short-circuit mode | +160 oC |
| 11 | Tagging  | The cable sheath must bear the tagging "TELASI" and the footage in each meter |
| 12 | Service life  | 30 years |
| 13 | Sheath version  | ng - reduced fire hazard.LS – the cable has low smoke emission during combustion  |
| 14 | The wire must comply with SST EN 50575:2014/2016 for fire safety and be labelled with a CE mark. |

№2.2.5

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| **№** | **Cable requirements**  | **Required parameters** |
| 1 | Rated voltage  | 1 kV |
| 2 | Core | Copper |
| 3 | Number of cores  | 1, 2, and 3 as per s/p №1.1 of ToR |
| 4 | Cross section of a copper conductor | 0.75 and 2.5 - as per s/p №1.1 |
| 5 | All cores must be of the same cross section | Yes |
| 6 | Insulation  | PVC |
| 7 | Casing | PVC |
| 8 | Core class  | 4 |
| 9 | Core insulation  | by color or numbering |
| 10 | Tagging  | The cable sheath must bear the tagging "TELASI" and the footage in each meter |
| 11 | Ambient temperature range during operation | from -20oC to +50oC |
| 12 | Operating temperature | +70oC |
| 13 | Short-term temperature limits in short-circuit mode | +160oC |
| 14 | Service life  | 30 years |
| 15 | Sheath version  | ng - reduced fire hazard.LS – the cable has low smoke emission during combustion  |
| 16 | The wire must comply with SST EN 50575:2014/2016 for fire safety and be labelled with a CE mark. |

№2.2.6

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| **№** | **Cable requirements**  | **Required parameters**  |
| 1 | Rated voltage | 300/500 V |
| 2 | Dimensions  | Cable, flat, dimensions 10.1 X 5.4 mm |
| 3 | Core | Copper |
| 4 | Core class  | 1 |
| 5 | Number of cores  | 2 |
| 6 | Of the three cores 2X2.5 mm2 - insulated, the third middle core 1.5mm2 – bare. |
| 7 | Insulation  | PVC |
| 8 | Sheath  | PVC, grey |
| 9 | Tagging  | The cable sheath must bear the tagging "TELASI" and the footage in each meter |
| 10 | Ambient temperature range during operation | from -20oC to +50oC |
| 11 | Operating temperature | +70oC |
| 12 | Short-term temperature limits in short-circuit mode | +160oC |
| 13 | Service life  | 30 years |
| 12 | Sheath version  | ng - reduced fire hazard.LS – the cable has low smoke emission during combustion  |
| 13 | The wire must comply with SST EN 50575:2014/2016 for fire safety and be labelled with a CE mark. |

№2.2.7

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| **№** | **Cable requirements**  | **Required parameters**  |
| 1 | Rated voltage  | 1 kV |
| 2 | Core | copper |
| 3 | Number of cores  | 4  |
| 4 | Cross section of a copper conductor | 10 |
| 5 | All cores must be of the same cross section | Yes |
| 6 | Insulation | PVC |
| 7 | Casing | PVC |
| 8 | Core class | 2 |
| 9 | Core insulation | by color or numbering |
| 10 | Tagging  | The cable sheath must bear the tagging "TELASI" and the footage in each meter  |
| 11 | Ambient temperature range during operation | from -20oC to +50oC |
| 12 | Operating temperature | +70oC |
| 13 | Short-term temperature limits in short-circuit mode | +160oC |
| 14 | Service life  | 30 years |
| 15 | Sheath version  | ng - reduced fire hazard. LS – the cable has low smoke emission during combustion  |
| 16 | The wire must comply with SST EN 50575:2014/2016 for fire safety and be labelled with a CE mark. |

\*\*\* Note: When cables are supplied, test reports must be included in the package.

**2.3. Requirements for materials and equipment used in production**

The materials used must be new, not being in use, date of manufacture not earlier than the previous year, of the latest or advanced model, as well as take into account the latest developments in the field of structures and materials.

**2.4. Requirements for the conformity of the goods with the mandatory requirements of the legislation on technical regulation**

Procurement participants in their proposals must submit certificates of conformity of the proposed goods with the requirements established by GOST 6323-79 - for wires, IEC 60502-2 and GOST 31996-2012, (or similar standards in accordance with the requested type of product.), EN 50575:2014/2016. Certificate ISO IEC 17025:2005 – General requirements for the competence of testing and calibration laboratories (or equivalent); furthermore, the supplier is obliged, under his/her own responsibility, to have and present in his/her documents a customs clearance certificate for imported products.

**2.4.1. Voluntary certification requirements:**

ISO 9001-2015 Quality Management System Certificate; ISO 14001-2015 Environmental Management System Certificate.