SPECIFICATION FOR
"IBS & IBSB Advanced" INSULATED BRAIDED POWER CONDUCTORS
or engineering approved equivalent per the specification below

1. SUMMARY

This specification covers the technical requirements of the IBS/IBSB Advanced insulated braided power conductors for use in low-voltage power applications where electrical connections between live parts are required.

2. COMPLIANCE REQUIREMENTS

a. ANSI/UL67 "Panelboards" and ANSI/UL891 "Switchboards" (listed by Underwriters Laboratories under this category)- UL file QEUY2/8
b. ANSI/UL758 "Appliance Wiring" 1000VAC/1500VDC (listed by Underwriters Laboratories under this category and style file 11715) – UL file AVLV2/8
c. CSA® certified as appliance wiring material for a maximum of 1000 volts (per CSA C22.2 No. 210)
d. IEC 61439-1 "Low-voltage switchgear and controlgear assemblies"
e. IEC® 61439.1 Class II (reinforced/double insulation)
f. IEC® 60695-2-11 (Glow Wire Test 960 °C)
g. UL 94V-0 : Flame retardant
h. UL® 2885 (Outline of Investigation for Acid Gas, Acidity and Conductivity of Combusted Materials)
i. IEC® 60754-1 (Test on gases evolved during combustion of materials from cables – Part 1: Determination of the halogen acid gas content)
j. Smoke, Toxicity and Acidity Rating: IEC® 60754-2
k. IEC® 62821-1 (Electric cables - Halogen-free, low smoke, thermoplastic insulated and sheathed cables of rated voltages up to and including 450/750 V)
l. IEC® 61034-2 (Measurement of smoke density of cables burning under defined conditions)
m. EN 45545 obtaining an HL2 classification for chapters R22 and R23
n. RoHS 2002/95/EC Compliant
o. CE marked
p. UV Rating: UL 2556 and UL 854
q. Bureau Veritas (Marine & Offshore)
r. EAC certified for Russian territory
s. ABS American Bureau of Shipping (Marine & Offshore)
t. DNV-GL Short circuit tested as per IEC 61439-1 and Marine & Offshore certified

3. PRODUCT COMPOSITION

a. Braids

The braids must be made with electrolytic copper Cu-ETP according to EN13602 and with purity of minimum 99.9%. The wire diameter must be 0.15mm and may or may be tinned (see section 7.a for details). The maximum resistivity at 20°C shall be 0.017241 $\Omega.mm^2/m$.

b. Terminal

The braids must be manufactured using a process which provides a reliable electrical connection and superior tensile strength by not relying on the addition of a crimped lug or terminal at the end of the braid but rather by providing an integral palm at the end of the braid. A hole should be punched in the terminal. The Terminal must be tin-plated.

The 25mm² braid should have a terminal width of 12mm or 20mm. The 50mm² and 70mm² braid should have a terminal width of 20mm. The 100mm² braid should have a terminal width of 24mm. The 120mm², 185mm² and 240mm² braids should have a terminal width of 32mm.

c. Insulating Sleeve

The insulating sleeve should be made of extruded Thermoplastic Elastomer (TPE). The TPE should have an elongation performance of 500% and a dielectric strength of 20kV for 1mm of insulation.
The TPE should be self-extinguishable and be rated to class V0 according to UL94 and Glow Wire Test 960 °C, according to IEC® 60695-2-12.
The TPE should be Halogen free according to UL 2885, IEC® 60754-1 and IEC® 62821-2.
The TPE should be Low smoke classified according to UL 2885 and IEC® 61034-2.
It should have a thickness of 1.8mm minimum.
The insulating sleeve should be compliant with Chapter 8.4.4 – Protection by total insulation of the IEC 61439-1 standard (Class II conductor)
The insulating sleeve should be marked with a traceability code.

4. PRODUCT CHARACTERISTICS

a. Physical

The braids shall be having a rectangular cross section with pre-punched holes on both ends and an insulating sleeve around the braid, not overlapping the braid terminal.
The thickness of the integral palm shall be less than that of the braid but sufficient enough to meet the size of the cross-section indicated in the supplier datasheet.
The braids shall rely on no crimped lugs, forged lugs or metal tubes to comply with section 2.
Visible red copper (non-tinned) inside the surface of the connecting hole and on the ends of the palm is allowed. The tin plated electrical contact surface is mandatory.
Tolerances for hole position according NF C20-130.

b. Environmental

The minimum working temperature of -50°C and maximum working temperature of 115°C.

c. Performance

The tensile strength and tightening torque of the braid must exceed the requirements of NF C 20-130.

The tensile strength and tightening torque of the braid must exceed the requirements of UL 486A-486B - Wire Connectors (table 27 – Pullout force)

5. MANUFACTURER'S QUALIFICATION AND QUALITY CONTROL

a. Manufacturer shall be ISO9001:2008 certified and manufacturing and quality control be done accordingly.
b. Manufacturer shall be following a health & safety program at least as stringent as the United States Occupational Health & Safety Administration program.