1.0 SCOPE / PURPOSE

This specification covers 600 volt, stranded, multi-conductor cable for surface mining application. The multi-conductor cable will consist of the specified number of cores, all black in color, and one green or green / yellow conductor for ground connection.

NOTICE

This material specification is applicable for model 4100XPC-AC machines and all new products, regardless of model; effective October 1, 2014.

2.0 PROCEDURE

2.1 APPLICATION

For use in power circuits up to 600V, phase to phase, for use in accordance with Article 336 and other applicable parts of the National Electrical Code (NEC), ANSI/NFPA 70 in cable trays, in raceways, and where supported in outdoor locations by a messenger wire (catenary).

2.2 MATERIAL PROPERTIES

Table 1

Conductor Material	Conductor material	Copper
	Conductor coating	Bare
Conductor stranding	Size of stranding	30
	Exposed to vibration	Yes
	Stranding	B8, C for 18AWG B174, K for 16AWG and larger
	Cable movement / flexing during operation	No
Insulation Material	Minimum Voltage Rating	600V
	Minimum ambient temperature storage (Deg. C)	-20
	Minimum ambient temperature operation (Deg. C)	-40
	Minimum ambient temperature installation (Deg. C)	-20
	Used in wet location	Exposed to condensation
	Resistance to oil / gas	Yes
	Resistance to flame	Yes
	Resistance to chemicals	No
	Flame rating	CSA FT-4 or UL 1685 or IEEE 1202
	Low smoke / zero halogen	No
	Color, power and signal cores	Black
	Color, ground	Green or green with yellow trace
	Color, power / control	Black
	Material	Polyvinyl Chloride (PVC) / Nylon
	Temperature rise minimum (Deg. C)	90 dry / 60 wet

Table 1 (Continued)

Jacket	Minimum ambient temperature storage (Deg C)	-20
	Minimum ambient temperature operation (Deg C)	-40
	Minimum ambient temperature installation (Deg C)	-20
	Used in wet location	Exposed to condensation
	Resistance to oil / gas	Yes, UL 13, Section 36A
	Resistance to flame	Yes
	Resistance to chemicals	No
	Flame rating	CSA FT-4 or UL 1685 or IEEE 1202
	Low smoke / zero halogen	No
	Material	Copolymer Alloy
	Color	Grey
Miscellaneous	Cable configuration	Multi-core
	Maximum Bend Radius	8 x O.D.
	Regions of use	Global
	Outer diameter	See Table 2
	Branding required	No
	Weight / Unit of measure	See Table 2
	Frequency	50/60Hz
	Jacket identification Interval	Not to exceed NEC 310.11 requirement
	Conductor core identification interval	Less than 4"
	Weight / Unit of measure	See Table 2
	Jacket Marking	c(UL) Type TC # C XX AWG, 600V, sun resistant, oil resistant II, 90C Dry, 60C Wet, FT4, -40C

Table 2

AWG	Number of conductors (includes ground when greater than 2)	Overall Insulation Thickness (Mils)	Overall Jacket Thickness (Mils)	Nominal Outside Diameter (Mils)	Average Weight lbs / 1000ft	Stranding	Purchasing Number
18	6	20	45	385	77	16/30	508780796
16	2	20	45	290	45	26/30	508780150
16	3	20	45	310	62	26/30	508780151
16	4	20	45	340	80	26/30	508780152
16	6	20	45	383	105	26/30	508780154
16	8	20	45	394	118	26/30	508780156
16	10	20	45	476	163	26/30	508780158
16	12	20	45	505	215	26/30	508780159
16	14	20	45	561	236	26/30	508780161
16	20	20	60	645	290	26/30	508780167
16	25	20	60	700	400	26/30	508780171
16	26	20	60	710	418	26/30	508780173
16	30	20	60	754	441	26/30	508780177
16	37	20	60	812	493	26/30	508780184
14	2	20	45	324	58	41/30	508780250
14	3	20	45	345	88	41/30	508780251
14	4	20	45	370	110	41/30	508780252
14	5	20	45	405	122	41/30	508780253
14	6	20	45	420	148	41/30	508780254
14	7	20	45	435	170	41/30	508780255
14	8	20	45	474	193	41/30	508780257
14	9	20	45	530	242	41/30	508780256
14	12	20	60	590	308	41/30	508780260
14	16	20	60	659	330	41/30	508780262
14	24	20	60	793	473	41/30	508780272
14	30	20	60	890	605	41/30	508780265
14	37	20	60	955	726	41/30	508780270
12	2	20	45	334	74	65/30	508780312
12	3	25	45	376	103	65/30	508780313
12	4	25	45	435	150	65/30	508780314
12	5	25	45	480	174	65/30	508780315
12	6	25	45	496	195	65/30	508780316
12	8	25	60	567	260	65/30	508780318
12	9	20	60	620	282	65/30	508780795
12	12	20	60	672	367	65/30	508780322
12	15	20	60	750	445	65/30	508780325
12	16	20	60	765	522	65/30	508780326
12	24	25	60	904	673	65/30	508780334
12	25	25	60	911	708	65/30	508780327
10	3	25	45	428	142	105/30	508780383

10	4	25	45	540	255	105/30	508780384
8	2	35	63	562	267	168/30	508780462
8	3	35	63	645	316	168/30	508780463
8	4	35	83	694	366	168/30	508780464
6	4	35	83	726	526	266/30	508780524

2.3 INSTALLATION

Installation of Power and Control Tray Cable (TC) shall be in accordance with NEC article 336 and Joy Global MPS 378 – Electrical Wiring Practices for Mining Equipment.

2.4 "Y" NUMBER DESCRIPTION ON DRAWING

Example: CABLE, 16AWG, 5 COND, 600V X 180FT
CABLE, 10AWG, 4 COND, 600V X 20FT

2.5 PACKAGING AND LOADING

Material furnished under this specification shall be packaged as agreed upon between supplier and purchaser.

In the absence of such an agreement or specific instructions, the material shall be packaged in accordance with good commercially acceptable practices to prevent loss or damage in handling or transportation.

All shipping notices shall include the Customer's Purchase Order Number.

2.6 IDENTIFICATION

Material shall be tagged or identified as per standard practice. All means of identification must show the following information:

- Manufacturer Name
- Type of Cable - P&H No. 5087
- Gage (AWG Conductor Size)
- Number of conductors
- Length where specified
- Cable part number

2.7 INSPECTION AT PURCHASER'S WORKS

Acceptance of material furnished under this specification may be subject to confirmation by the Customer's Manufacturing Supervision/Quality Control and Electrical Engineering Departments.

The purchaser shall have the option of accepting or rejecting material that fails to meet any of the requirements of this specification.

In the event of rejection, the producer or supplier shall be notified and granted a hearing at his request.

2.8 APPROVED SUPPLIERS

Southwire – 1000V Wind Turbine Tray Cable UL Type WTTC

3.0 REFERENCES

- UL 1277
- UL 13
- NEC Type TFN Conductors (16 & 18 AWG)
- NEC Type THHN/THWN Conductors (14-6 AWG)
- ASTM B-3 and B-172/174
- ANSI/NEMA WC-70; ICEA S-95-658