DELPHI
P. O. Box 431 Warren, Ohio 44486

F-3548SPECIAL

ENGINEERING SPECIFICATION NO. M3382

TITLE **CABLE, EXPANDED DUTY FUSIBLE LINK – 150 DEG. C RATED** **CUA N/A**

1. GENERAL

This specification covers heavy wall, insulated cable. It is intended for use as a fusible link at a nominal system voltage of 50 volts or less in surface vehicles.

2. MANUFACTURE

2.1 Conductors - The conductors shall be constructed of bare copper wire (Ref. ASTM B-3 or ASTM B-1 depending on wire size).

2.1.1 See Table I for sizes and dimensions.

2.1.2 Splices - Splices are permitted in the individual strands and the conductor as a whole provided that they do not increase the conductor diameter or decrease the break strength of the conductor by more than 20%. Maximum weld length is 7mm.

2.2 Insulation - The insulation shall be homogeneous in character and rated for 150°C continuous operating temperature.

2.2.1 See Table II for sizes and dimensions.

3. PROPERTIES

3.1 Conductors

3.1.1 0.35mm^2 shall be constructed from hard drawn copper strands (Ref. ASTM B-1).

3.1.2 0.5mm^2 through 8mm^2 shall be constructed from annealed copper strands (Ref. ASTM B-3).

3.2 Insulation

3.2.1 The cable shall meet the requirements of SAE J-1128 Type HTS as specified in SAE J-156..

3.2.2 Physical Properties - The cable shall be tested in accordance with SAE J-1128 Type HTS.

3.2.2.1	Original*	
	Tensile	5.0 MPA
	Elongation	150%
3.2.2. 2	After 168 Hours at 180°C	
	Tensile (% of original test value)	80%
	Elongation (% of original test value)	50%

*Cable may be conditioned at 180°C for 24 hours to obtain tensile and elongation values followed by 168 hours at 180°C for aged physicals.

LR/ae

Date	Change Notice	Change
12/04/06	287522	Add New Code; Make Corrections to Color Rust
12/12/06	287694	Remove “For Ford Application Only” on Code Sheet

3.2.3 Minimum Abrasion Resistance - The cable shall be tested in accordance with SAE J-1128 Type STS. See Table II.

3.2.4 Minimum Wall – The minimum wall shall be measured in accordance with SAE J-1128. See Table II for requirements.

3.2.5 Strip Force – A minimum force of 10N for .35mm^2 and .5mm^2 and 20 N for .8mm^2 and larger shall be required to remove a 50mm section of insulation.

3.3 Color – The color of the finished cable shall be as specified by the code number.

3.4 Legend - Example: 1 SQ. mm Fusible Link …
Frequency: Minimum of 6 times per 305mm
Color: White legend on black or gray insulation
Black legend on rust or blue insulation

4. DIMENSIONS

4.1 Table I

WIRE SIZE	NO. OF STRANDS	MIN. AVERAGE STRAND SIZE	LAY MAX.	NOM. O.D.	REFERENCE MAX. RES. @ 20°C MAX. (mOHMS/m)	REFERENCE COPPER WEIGHT (lbs/1000 ft)
0.35mm^2	7	.248mm	19mm	.75mm	51.0	2.04
0.5mm^2	19	.191mm	30mm	.96mm	31.9	3.09
0.8mm^2	16	.248mm	40mm	1.15mm	22.4	4.61
1mm^2	19	.275mm	40mm	1.38mm	15.4	6.81
2mm^2	19	.353mm	40mm	1.78mm	9.28	11.26
3mm^2	19	.443mm	40mm	2.23mm	5.91	17.70
5mm^2	19	.559mm	55mm	2.81mm	3.72	28.25
8mm^2	37	.500mm	45mm	3.38mm	2.41	44.28

4.2 Table II

WIRE SIZE	MIN. STRIP FORCE	MINIMUM WALL	FINISHED CABLE OD (Avg. 5 readings) MIN.	FINISHED CABLE OD (Avg. 5 readings) MAX	FINISHED CABLE O.D. (1 reading) MIN	FINISHED CABLE O.D. (1 reading) MAX
0.35mm^2	10N	.64mm	2.49mm	2.65mm	2.44mm	2.70mm
0.5mm^2	10N	.63mm	2.69mm	2.85mm	2.64mm	2.90mm
0.8mm^2	20N	.66mm	2.98mm	3.14mm	2.93mm	3.19mm
1mm^2	20N	.72mm	3.36mm	3.52mm	3.31mm	3.57mm
2mm^2	20N	.74mm	3.81mm	3.97mm	3.76mm	4.02mm
3mm^2	20N	.83mm	4.53mm	4.69mm	4.48mm	4.74mm
5mm^2	20N	.86mm	5.18mm	5.34mm	5.13mm	5.39mm
8mm^2	20N	.91mm	5.80mm	6.06mm	5.73mm	6.13mm

5. PACKAGING

Unless otherwise specified on the purchase order, all wire sizes shall be supplied on reels.

6. MARKING

Each reel shall be marked as shown:

Name of Manufacturer
Net Weight of Material - Footage
Lot Number
M3382- Code Number

7. FACTORY ACCEPTANCE

Material as supplied under this specification shall comply with processing and physical requirements so required by Delphi.

8. CERTIFICATION AND TESTING

Delphi may request at any time and receive from the supplier samples of the insulating compound for testing at Delphi. Physical property test data developed by the supplier to assure conformance to this specification will be subject to recall on demand by Delphi.

9. IN-PROCESS TEST

All cable shall be spark tested at 3500 volts at time of extrusion.

10. REJECTION

All material which does not conform to the above requirements shall be rejected.

11. MATERIAL CHANGE

The supplier must notify the Cable Engineer at Delphi, in writing and obtain written approval prior to making any change in the basic formulation, composition and/or manufacturing process of this material originally approved and supplied under this specification.

12. RESTRICTED AND REPORTABLE MATERIALS:

All materials supplied to this specification must comply with Delphi Corporation specification 10949001 “Substances of Concern and Recycled Content”.

SIZE REPLACES	0.35mm^2 22 GA.	0.5mm^2 20 GA.	0.8mm^2 18 GA.	1mm^2 16 GA.	2mm^2 14 GA.	3mm^2 12 GA.	5mm^2 10 GA.	8mm^2 8 GA.
SOLID COLORS								
BLACK				401				801
BLUE			302			602		
GRAY		205			505			
ORANGE (RUST)	109						709	
RED								812
†WHITE								808

†Restricted Use Only