

Report No. TC.19.10.006871

Date of Issue 11/15/2019

Applicant: Caledonian Cables Limited

Applicant address: 1/F., CMA Building, 64-66 Connaught Road Central, Hong Kong

Description of the test subject:

Sample	Description	Photo
001	<p>Sample Description: Fire Resistant Electric Cables</p> <p>Style No.: FFX400 1mZZ1-R (NHXH FE180/E90)</p> <p>Size: 5×120mm²</p> <p>Brand name: CALEDONIAN</p>	

Receipt Date of Sample: 10/22/2019

Date of Testing: From 10/22/2019 to 11/15/2019

Sample submitted: The sample(s) was (were) submitted by applicant and identified.

Conclusion:

Test Items			Conclusion
No.	Items	Standard	
1	Determination of the halogen acid gas content	IEC 60754-1:2011	See test results
2	Determination of acidity (by PH measurement) and conductivity	IEC 60754-2:2011	Pass
3	Smoke density testing	IEC 61034-2:2013	Pass
4	Method for assessment of fire integrity of large diameter power cables for use as components for smoke and heat control systems and certain other active fire safety systems	BS 8491:2008(R2015)	Pass

Note: (1) General Terms & Conditions as mentioned overleaf, (2) The results relate only to the items tested, (3) The test report shall not be reproduced except in full without the written approval of the company. (4) Samples are tested as received.



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Test Results

1. IEC 60754-1:2011 Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content

1.1 Sample details

Weight	Sheath(outer): S1: 1.0005 g; S2: 1.0003 g
	Sheath(inner): S1: 1.0006 g; S2: 1.0005 g
	Insulation: S1: 1.0004 g; S2: 1.0004 g

Precondition	Temperature (°C)	Humidity (%)	Duration(h)
	23±2	50±5	16

1.2 Test Result

Gas (mg/g)		1	2	Average
HCl	Sheath(outer)	ND	ND	ND
	Sheath(inner)	ND	ND	ND
	Insulation	ND	ND	ND

Remark: 1) Halogen acids evolved, except hydrofluoric acid, was expressed as hydrochloric acid(HCl).
2) ND-Not Detected

2. IEC 60754-2:2011 Test on gases evolved during combustion of materials from cables – part 2: Determination of acidity (by PH measurement) and conductivity

2.1 Sample details

Weight	Sheath(outer): S1: 1.0001 g; S2: 1.0003 g; S3: 1.0005 g
	Sheath(inner): S1: 1.0004 g; S2: 1.0002 g; S3: 1.0001 g
	Insulation: S1: 1.0006 g; S2: 1.0003 g; S3: 1.0004 g

Precondition	Temperature (°C)	Humidity (%)	Duration(h)
	23±2	50±5	16

2.2 Test Result

Sheath(outer)	Result			Average
PH	6.82	6.59	6.64	6.68
Conductivity(µs/mm)	0.394	0.382	0.401	0.392

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Sheath(inner)	Result			Average
PH	7.02	7.13	6.89	7.01
Conductivity($\mu\text{s}/\text{mm}$)	0.458	0.574	0.562	0.531

Insulation	Result			Average
PH	7.30	7.70	7.63	7.54
Conductivity($\mu\text{s}/\text{mm}$)	2.105	2.043	2.248	2.132

Requirement: PH \geq 4.3, Conductivity \leq 10 $\mu\text{s}/\text{mm}$

Conclusion: Pass

3. IEC 61034-2:2013 Measurement of smoke density of cables burning under defined conditions Part 2: Test procedure and requirements

3.1 Sample details

Diameter	56.8mm
Number of bundles	1
Number of strands in the bundle	1

Pre-conditioning	Indoor		Duration
	Temp: 23 \pm 2 $^{\circ}$ C	Humidity: 50 \pm 5%	16 h
Ignition Source	Fire source 1		

3.2 Test Result

The minimum light transmittance within 40 minutes; (%)	83.2
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Requirement: Within the first 40 minutes, the light transmittance shall not drop to below 60%.

Conclusion: Pass

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4. BS 8491:2008(R2015) Method for assessment of fire integrity of large diameter power cables for use as components for smoke and heat control systems and certain other active fire safety systems

No.	Test Item	Unit	Requirement	Evaluation
4	Resistance to fire of cables			
4.1	830°C Flame time: 120min, application of impact at 10min intervals, five minutes before the end of the test apply a burst of water, sixty seconds intervals, bending radius is about 330mm, apply rated voltage 1kV Fixings type: U-bolts, P-clips Mounting: Use the U-bolts to attach the test sample to the upper horizontal elements of the test ladder and use the P-clips to attach the test specimen to the central vertical elements of the test ladder.			
	Whether the fuses rupture during the period of the test	--	None of the fuses ruptures during the period of the test	Pass
	Whether the lamp is extinguished during the period of the test	--	None of the lamp is extinguished during the period of the test	Pass

Statement: The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to the sole criterion for assessing the potential smoke and toxicity hazard of the product in use.

Test results are just for client internal reference.

Changzhou Jinbiao Railway Transportation Technical Service Co., Ltd.

Drafted by:

Lynn Liu

Lynn liu

Approved by:

Shen Hui

Shen hui

-End of Report-

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