



<b>Test Report No.:</b> 19301022 001 <i>Prüfbericht - Nr.:</i>		Page 1 of 13 Seite 1 von 13	
<b>Client:</b> <i>Auftraggeber:</i>		Infinity Cable Company Pty Ltd 15 Sleigh Place, Wetherill Park, NSW 2164, Australia	
<b>Test item:</b> <i>Gegenstand der Prüfung:</i>		V-90 PVC insulated, 5V-90 PVC sheathed electric cable	
<b>Identification:</b> <i>Bezeichnung:</i>		Refer to page 2	<b>Serial No.:</b> Serien-Nr.: No Serial Number
<b>Receipt No.:</b> <i>Wareneingangs-Nr.:</i>		1113006155	<b>Date of receipt:</b> Eingangsdatum: 09/07/2013
<b>Condition of test item at delivery:</b> <i>Zustand des Prüfgegenstandes bei Anlieferung:</i>		Completed cable from factory production	
<b>Testing location:</b> <i>Prüfart:</i>		TÜV Rheinland Australia Pty. Ltd. 27 Sheehan Road, Heidelberg West, VIC 3081	
<b>Test specification:</b> <i>Prüfgrundlage:</i>		AS/NZS 5000.2:2006 Electric cables – Polymeric insulated for working voltages up to 450/750V	
<b>Test Result:</b> <i>Prüfergebnis:</i>		<b>The test item passed the test specifications.</b> Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage.	
<b>Testing Laboratory/</b> <i>Prüflaboratorium:</i>		TÜV Rheinland Australia Pty. Ltd. 27 Sheehan Road, Heidelberg West, VIC 3081	
<b>Compiled by/</b> zusammengestellt:		<b>Reviewed by/</b> kontrolliert:	
 09/08/2013 Gergo BOGDAN		 09/08/2013 Istvan SZECSEI	
<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>
<b>Other Aspects/</b> Sonstiges:			
N/A			
<b>Abkürzungen:</b>		<b>Abbreviations:</b>	
P(ass) = entspricht Prüfgrundlage		P(ass) = passed	
F(ail) = entspricht nicht Prüfgrundlage		F(ail) = failed	
N/A = nicht anwendbar		N/A = not applicable	
N/T = nicht getestet		N/T = not tested	
<p><b>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</b></p> <p>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</p>			

Revision 5.0

Accredited for compliance  
with ISO/IEC 17025  
Technical Competence



ACCREDITATION No. 1700

**Test Report**  
**AS/NZS 5000.2:2006**

Electric cables – Polymeric insulated for working voltages up to 450/750V

**Test item particulars:**

2C+Earth 2.5mm<sup>2</sup>, V-90 PVC insulated and 5V-90 PVC sheathed 450/750V rated flat electric cable

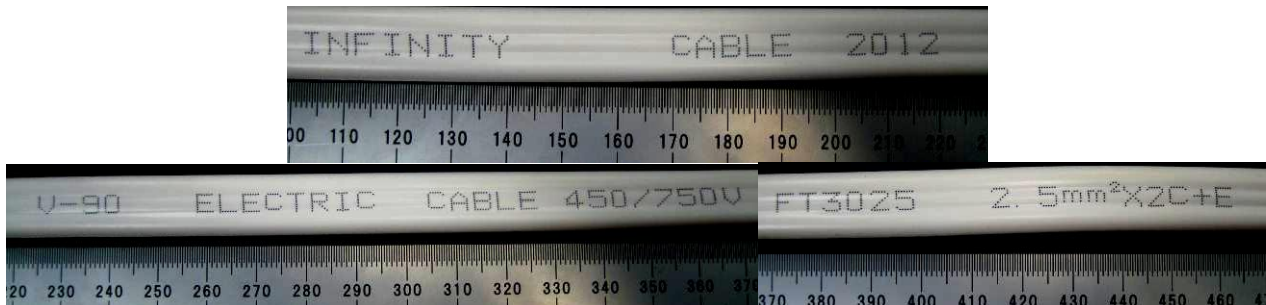
**General remarks:**

1. This report shall not be reproduced, except in full.
2. Details in test data / test plan no. 1113006155
3. Specification applied:  
 AS/NZS 5000.2:2006  
 AS/NZS 1125:2001 inc. amendment 1  
 AS/NZS 3808:2000 inc. amendment 1 & 2
4. Reporting of results herein is in accordance with NATA recommendations taking into account U of M.  
 (a) For minimum limits - Where measurement is on the limit or above the limit it is deemed to comply.  
 Where measurement is below the limit it is deemed not to comply.  
 (b) For maximum limits - Where measurement is on the limit or below the limit it is deemed to comply.  
 Where measurement is above the limit it is deemed not to comply.
5. For reporting of results the estimated uncertainty for measurement taken into account
6. This test report is based on assessment and tests applied to the specific test item(s) as submitted by the client. TÜV Rheinland Australia disclaims any and all responsibility or obligation for any other item.

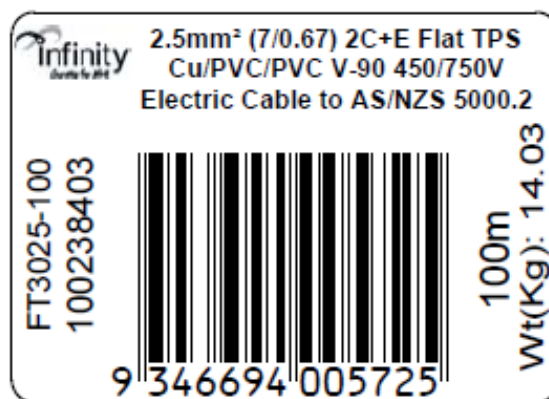
**Description of the test item:**

Test item is type FT3025, 2C+Earth 2.5mm<sup>2</sup>, V-90 PVC insulated and 5V-90 PVC sheathed, 450/750V rated flat cables.

**Marking on cable: "INFINITY CABLE 2012 V-90 ELECTRIC CABLE 450/750V FT3025 2.5mm<sup>2</sup>X2C+E"**



**Marking of cable drums:**



**Options/accessories/ancillary equipment:**

The equipment was tested without any optional accessory installed. Hence, this report does not cover parameters that are influenced by the installation of optional accessory that might affect safety in the meaning of this standard.

AS/NZS 5000.2:2006			
Clause	Requirement + Test	Result - Remark	Verdict
<b>5</b>	<b>CONDUCTORS</b>		P
	Conductors shall consist of plain or tinned annealed copper, complying with the relevant requirements of AS/NZS 1125 including uniaxial conductors	Plain annealed stranded conductors, see page 7	P
	Class 1 (solid) conductors shall not be used for sizes of 1.5 mm <sup>2</sup> and above	No solid conductors used	N/A
	Where tinning is provided, any wires taken from the completed cable need not comply with the continuity test for tin plating	Not tinned	N/A
	Cables having solid phase conductors of 1.0 mm <sup>2</sup> may use solid earth conductors of the same size.	Not such construction	N/A
<b>6</b>	<b>INSULATION</b>		P
6.1	Used insulation material	V-90	P
	Insulation shall comply with the requirements of the relevant parts of AS/NZS 3808	See page 10	P
6.2	The insulation shall be applied over, but shall not adhere to, the conductor.		P
6.3	Thickness		P
	The average thickness of the insulation (ti) shall be not less than the thickness specified in Table 1 or Table 2, as appropriate	Required: <b>3 x 2.5mm<sup>2</sup></b> - 0.7mm  Measured: <b>3 x 2.5mm<sup>2</sup></b> - 0.7mm	P
	Minimum thickness at any point shall not be less than the minimum thickness specified in Table 1 or Table 2, as appropriate	Required: <b>3 x 2.5mm<sup>2</sup></b> - 0.53mm  Measured : <b>3 x 2.5mm<sup>2</sup></b> - 0.63mm	P
6.4	Core identification		P
	Green or yellow shall not be used other than on earth. Earth conductors shall be durably coloured with a combination of green and yellow, applied so that in any 15 mm length of core, one of these colours covers not less than 30% and not more than 70% of the surface of the core, the other colour covering the remainder of the surface. The mass of the insulation shall be either green or yellow, the other colour may be part of the mass or at the surface only.		P
	Recommended core colors:		P
	Phase cores: red, white, blue	Red used	P
	Neutral core: black.	Black used	P

## AS/NZS 5000.2:2006

Clause	Requirement + Test	Result - Remark	Verdict
	For other than earth conductors, the colouring for identification may be within the mass or at the surface of the core insulation.	Surface coloured	P
<b>7</b>	<b>CONSTRUCTION OF CABLES</b>		P
7.1	All cables shall be oversheathed in accordance with Clause 8.	Oversheath applied	P
7.2	Flat cables		P
	For multicore cables the cores shall be laid parallel in the same plane and touching.	Laid parallel and touching	P
7.3	Circular cables	Not circular cable	N/A
7.3.1	Cores, other than any centre core in circular cables, shall be laid up in helical, helical 'SZ', or waveform configuration.		N/A
7.3.2	When used, fillers, barrier/binder tapes and other binders shall be compatible with the other materials of the cable with which they are in contact.		N/A
<b>8</b>	<b>OVERSHEATH</b>		P
8.1.1	Material of oversheath	5V-90	P
	Oversheath shall comply with the requirements of the relevant parts of AS/NZS 3808	See page 11	P
8.1.2	3V-90 shall not be used on multicore circular cables	Not circular construction	N/A
8.2	The sheath shall be applied over, but not adhere to the core assembly or screen, if any.		P
8.3	Thickness		P
8.3.1	Single core and flat cables		P
	The average thickness of the sheath (ts) shall be not less than the thickness specified in Table 1 or Table 2, as appropriate	Required: <b>3 x 2.5mm<sup>2</sup></b> – 1.0mm  Measured : <b>3 x 2.5mm<sup>2</sup></b> – 1.0mm	P
	Minimum thickness at any point shall not be less than the thickness specified in Table 1 or Table 2, as appropriate	Required: <b>3 x 2.5mm<sup>2</sup></b> - 0.75mm  Measured : <b>3 x 2.5mm<sup>2</sup></b> – 0.76mm	P
8.3.2	Circular cables	Not circular construction	N/A
	The required average thickness of the sheath (ts) shall be calculated $ts=0.035D_p+1.0\text{mm}$ and shall not be less than 1.2mm	Not circular construction	N/A
	Minimum thickness at any point shall not be less than 0.85ts – 0.10 mm	Not circular construction	N/A

## AS/NZS 5000.2:2006

Clause	Requirement + Test	Result - Remark	Verdict
<b>9</b>	<b>MARKING</b>		P
9.1	Information to be marked on cable		P
(a)	A registered name or registered mark which enables the manufacturer or supplier of the cord to be identified.	Infinity Cables – marked	P
(b)	Year of manufacture	2012 – marked	P
(c)	Designation of insulation.	V-90 – marked	P
(d)	Words “ELECTRIC CABLE “ followed by the rated voltage	450/750V – marked	P
	The distance between two blocks of marking shall not exceed 550 mm		P
9.2	Legibility of marking	Easily legible	P
9.3	Marking of packaging		P
	Every packaging unit shall have the following information identified by means of an attached tag or label, or by marking directly on the unit:	Marking labels placed on cable drums	P
(a)	A registered name or registered mark which enables the manufacturer or supplier of the cable to be identified.	Infinity logo marked	P
(b)	Voltage rating	450/750V – marked	P
(c)	The number of cores and the size of conductors	2.5mm <sup>2</sup> 2C+Earth – marked	P
(d)	Designation of insulation and sheath	V-90 – marked	P
(e)	The catalogue number, type number, name or other marking to distinguish the cable.	FT3025 – marked	P
(f)	Length of cable	100m - marked	P
(g)	Reference to the standard: AS/NZS 5000.2	Marked	P
<b>10</b>	<b>TESTS according to Table 3</b>		P
Test 1	Conductors comply with AS/NZS1125, except tin plating	See page 7	P
Test 2	Conductor resistance	See page 7	P
Test 3	Insulation complies with AS/NZS 3808	See page 10	P
Test 4	Oversheath complies with AS/NZS 3808	See page 11	P
Test 5	Insulation thickness (clause 2.2.3)	See page 3	P
Test 6	Sheath thickness (clause 2.2.3)	See page 4	P
Test 7	High voltage test for 4h	No breakdown	P
Test 9	High voltage test for 5min		P

## AS/NZS 5000.2:2006

Clause	Requirement + Test	Result - Remark	Verdict
	(a) on single core cables	Not required	N/A
	(b) Multicore cables	No breakdown	P
Test 10	Vertical flame propagation		P
	Charring not extend beyond the limits	Self-extinguished No charring beyond the limits	P
	No ignition of filter paper	No flaming droplets	P
Test 11	Compatibility test after ageing	No dissimilar materials used	N/A
	Test parameters of ageing		N/A
	1.a) Tensile Strength of insulation, min 75%of unaged materials		N/A
	2.a) Elongation of insulation, min 65% of unaged material		N/A
	1.b) Tensile Strength of sheath, min 75%of unaged materials		N/A
	2.b) Elongation of sheath, min 65% of unaged material		N/A

AS/NZS 1125:2001 inc. amendment 1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>2</b>	<b>COPPER CONDUCTORS</b>		P
2.2	Material of conductor shall be high conductivity copper wire complying with the chemical composition designation C11000 in AS/NZS 1574.		P
2.3	Conductors shall be circular, shaped, solid, uniaxial, stranded, multiple-stranded circular, bunched circular, compressed, compacted, milliken or tinsel	Circular stranded	P
2.4	Joints in conductor	No joints	N/A
2.4.1	Joints are permitted in a solid conductor by welding only.		N/A
	Joints are also permitted in the individual wires of a stranded, uniaxial or bunched conductor and in the individual bunches or strands of a multiple-stranded conductor, from which it is formed. When joining conductors by silver-soldering, resistance butt welding or fusion welding, no joint in a wire shall be closer than 60 mm to that in any other wire or bunch in the same layer.		N/A
	Above restriction shall not apply when welding by cold pressure welding.		N/A
<b>2.5</b>	<b>Solid conductors (class 1)</b>		N/A
	Solid conductors shall be plain or metal-coated annealed or hard-drawn copper.	No solid conductors	N/A
	Solid conductors used up to max 2.5 mm <sup>2</sup> unless cable standard specifies otherwise		N/A
	The d.c. resistance of conductors at 20°C shall be as specified in Table 2.2 for the relevant nominal cross-sectional area of conductor.		N/A
<b>2.6</b>	<b>Stranded conductors (class 2)</b>		P
	Stranded conductors shall be plain or metal-coated annealed or hard-drawn copper.	Plain annealed	P
	The minimum number of wires shall be as specified in Table 2.3 for the relevant nominal cross-sectional area of conductor.	Required number of wires:3 Number of wires: 7	P
	The d.c. resistance of conductors at 20°C shall be as specified in Table 2.3 for the relevant nominal cross-sectional area of conductor.	Required max: 7.41 Ω/km Black core: 7.15 Ω/km Red core: 7.14 Ω/km Gr-Ye core: 7.14 Ω/km	P
	For stranded circular, uniaxial and circular compressed conductors the individual wires shall be the same nominal diameter.	Wires are same diameter	P

AS/NZS 1125:2001 inc. amendment 1			
Clause	Requirement + Test	Result - Remark	Verdict
	For stranded shaped, circular compacted and Milliken conductors the ratio of the largest wire cross-sectional area to the smallest wire cross-sectional area in the conductor shall not exceed 4.	Not such conductor	N/A
	The use of circular compacted conductors shall be restricted to conductor sizes of 6 mm <sup>2</sup> or greater unless otherwise specified in the appropriate cable Standard.	Not such conductor	N/A
	When a Milliken conductor is required, the conductor shall consist of sector-shaped stranded conductors lightly insulated from each other.	Not such conductor	N/A
<b>2.8</b>	<b>Flexible conductors (class 5)</b>		N/A
	The wires in Class 5 conductors shall be plain or metal-coated annealed copper.	No flexible conductors	N/A
	The individual wires shall be the same nominal diameter. The maximum wire diameter shall be as specified in Table 2.4 for the relevant nominal cross-sectional area of conductor.		N/A
	The d.c. resistance of conductors at 20°C shall be as specified in Table 2.4 for the relevant nominal cross-sectional area of conductor.		N/A
<b>2.9</b>	<b>Flexible conductors (class 6)</b>		N/A
	The wires in Class 5 conductors shall be plain or metal-coated annealed copper.	No flexible conductors	N/A
	The individual wires shall be the same nominal diameter. The maximum wire diameter shall be as specified in Table 2.5 for the relevant nominal cross-sectional area of conductor.		N/A
	The d.c. resistance of conductors at 20°C shall be as specified in Table 2.5 for the relevant nominal cross-sectional area of conductor.		N/A
<b>2.10</b>	<b>Multiple Stranded conductors (rope lay)</b>		N/A
	Wires in conductors shall be plain or tinned annealed copper.	No multiple stranded conductors	N/A
	The individual wires shall be the same nominal diameter. The maximum wire diameter shall be as specified in Table 2.6 for the relevant nominal cross-sectional area of conductor.		N/A
	The d.c. resistance of conductors at 20°C shall be as specified in Table 2.6 for the relevant nominal cross-sectional area of conductor.		N/A



AS/NZS 1125:2001 inc. amendment 1

Clause	Requirement + Test	Result - Remark	Verdict
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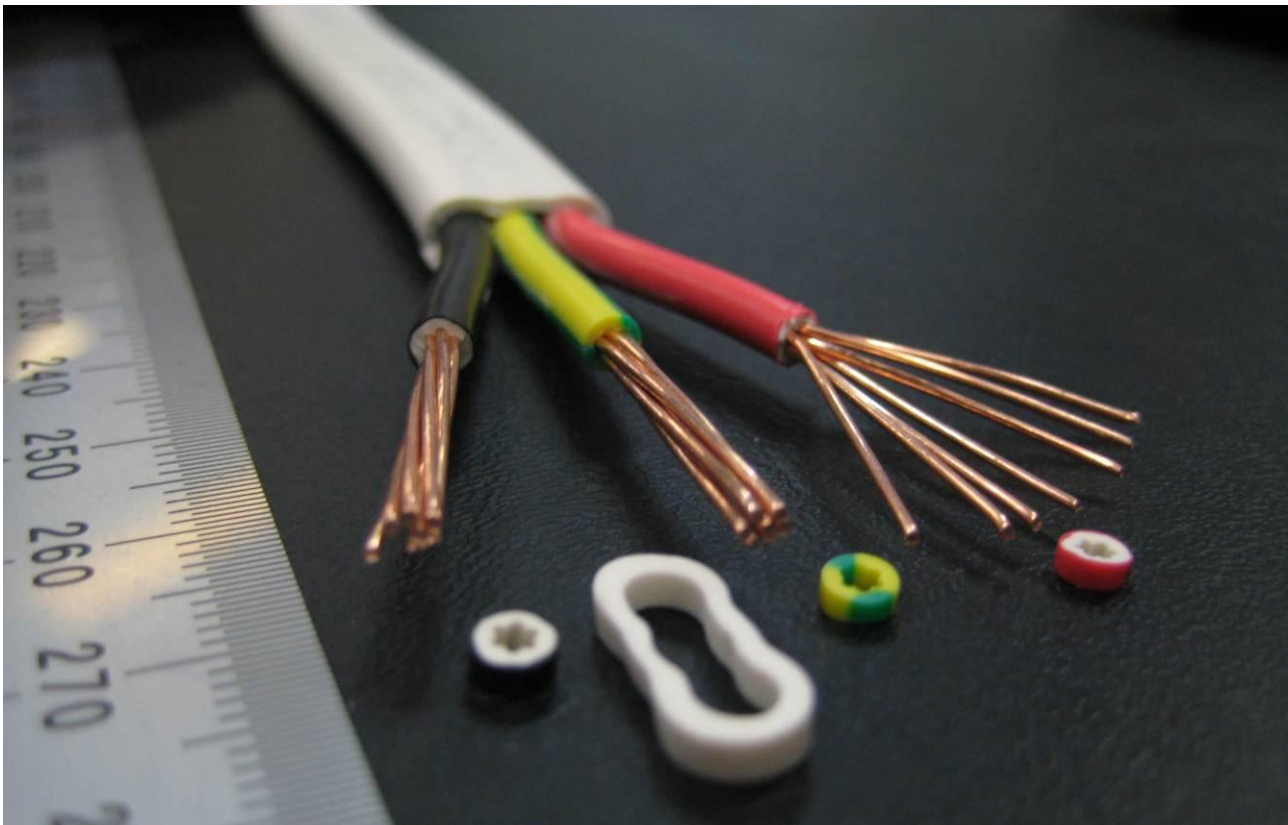
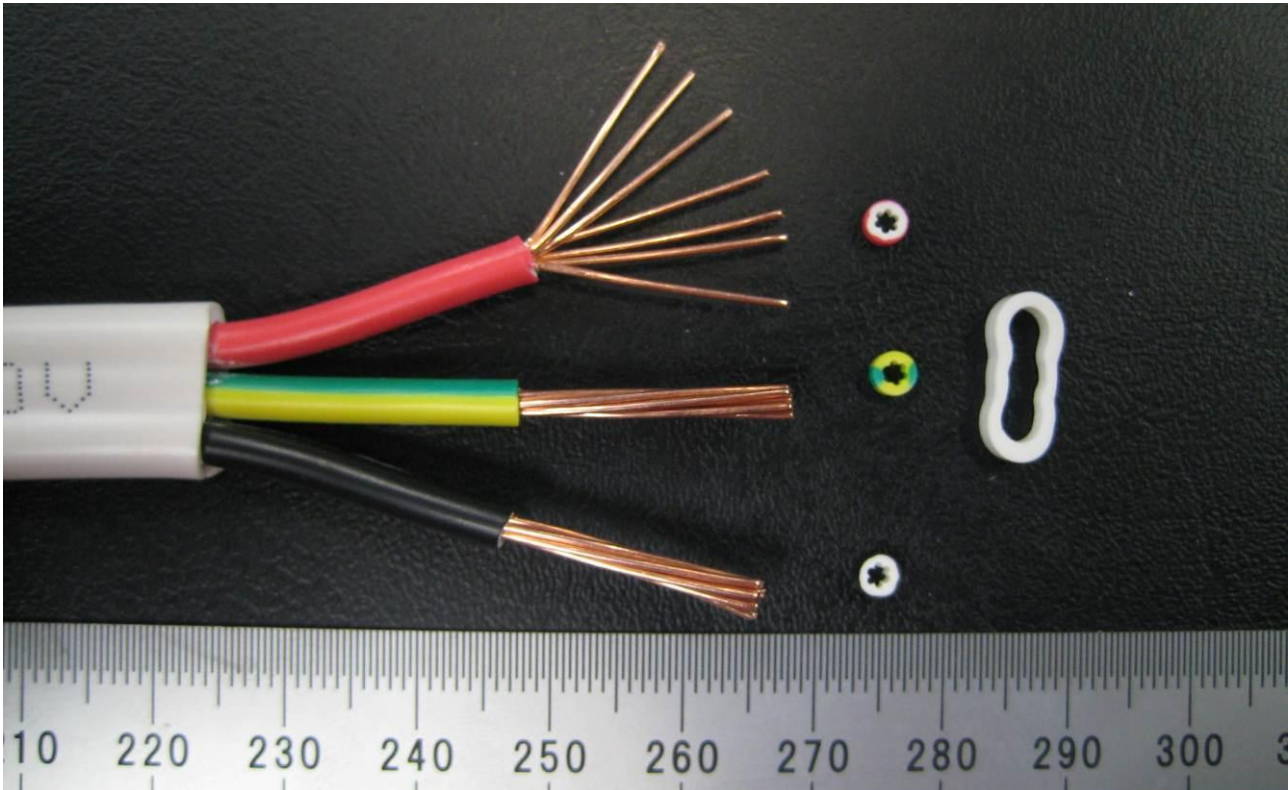
Table 2.1	TESTS FOR PLAIN OR TINNED COPPER CONDUCTORS		P
	Elongation of annealed conductor wires from stranded circular and bunched circular conductors.	<b>3x2.5mm2:</b> Required min.: 18% Measured average: 25.8% No wire found having less than 9% elongation.	P
	Coating continuity test for tinned conductors	Not required, see page 3	N/A
	Conductor resistance	See page 7	P

AS/NZS 3808:2000 inc. amendment 2			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4</b>	<b>MATERIALS</b>		-
4.1	Insulating material type	V-90	-
4.2	Sheathing material type	5V-90	-
<b>5</b>	<b>TESTS AND CRITERIA</b>		-
	The properties of materials are specified in the following tables:		-
	Requirements applicable for Insulating material:	Table 5, column 3	-
	Requirements applicable for Sheathing material:	Table 6, column 5	-
<b>Table 5</b>	<b>TESTS AND CRITERIA FOR INSULATION</b>		P
A	Mechanical tests without ageing:		P
A.1	Tensile strength - min. 12.5MPa	Measured: Black core: 18.4MPa Red core: 19.64MPa Green-Yellow core: 19.62MPa	P
A.2	Elongation at rupture - min. 150%	Measured: Black core: 237.6% Red core: 218.9% Green-Yellow core: 179.8%	P
B	Mechanical tests after ageing in air oven: 504h at 115 ± 2 °C		P
B.1	Tensile strength - min. 75% of value of unaged specimens	<b>Black core:</b> Required: 13.8MPa Measured: 19.05MPa <b>Red core:</b> Required: 14.73MPa Measured: 20.64MPa <b>Green-Yellow core:</b> Required: 14.7MPa Measured: 21.4MPa	P
B.2	Elongation at break - min. 65% of value of unaged specimens	<b>Black core:</b> Required: 154.4% Measured: 216.5% <b>Red core:</b> Required: 142.2% Measured: 206.6% <b>Green-Yellow core:</b> Required: 116.8% Measured: 197.7%	P
C	Loss of mass: 120h at 115 ± 2 °C - max. 2.5 mg/cm <sup>2</sup> of exposed area of specimens	Measured: Black core: 0.62mg/cm <sup>2</sup> Red core: 0.54mg/cm <sup>2</sup> Gr-Ye core: 0.71 mg/cm <sup>2</sup>	P

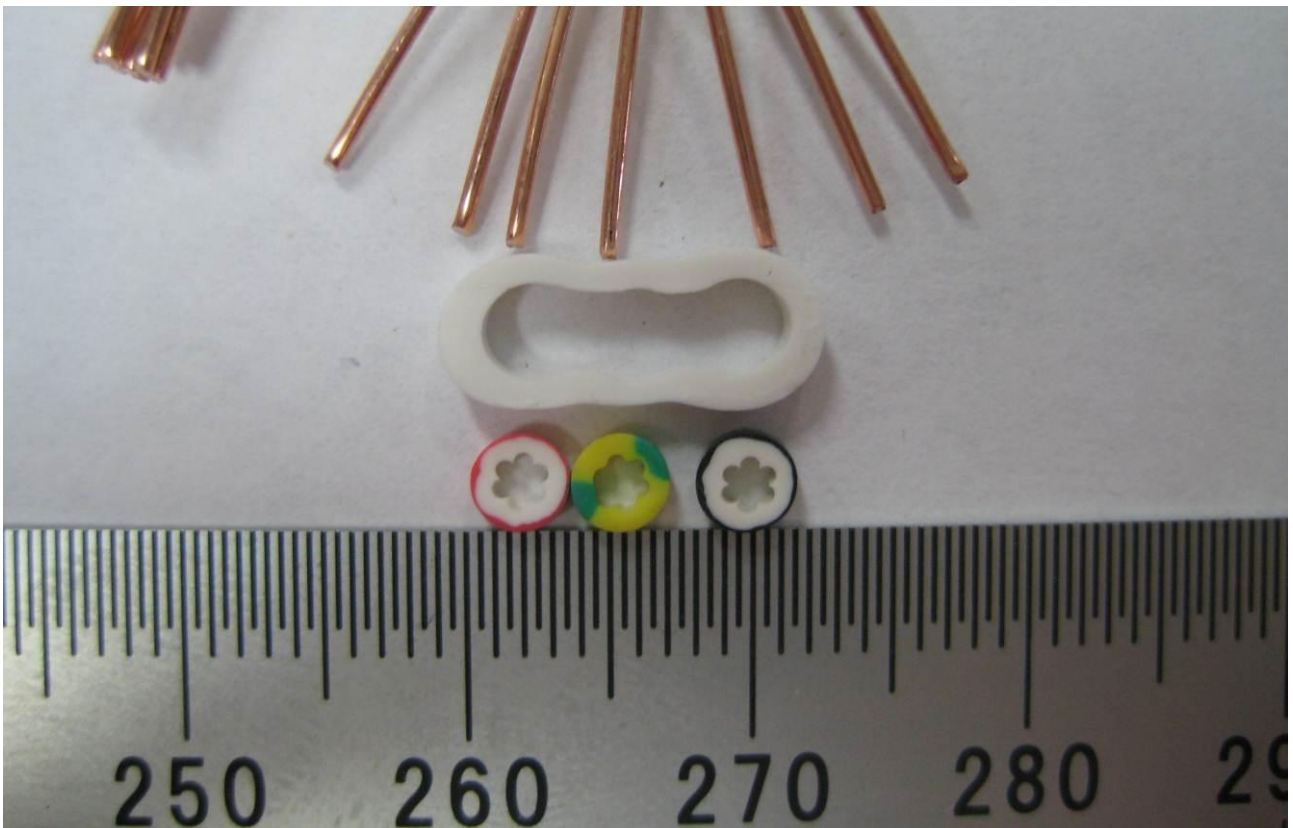
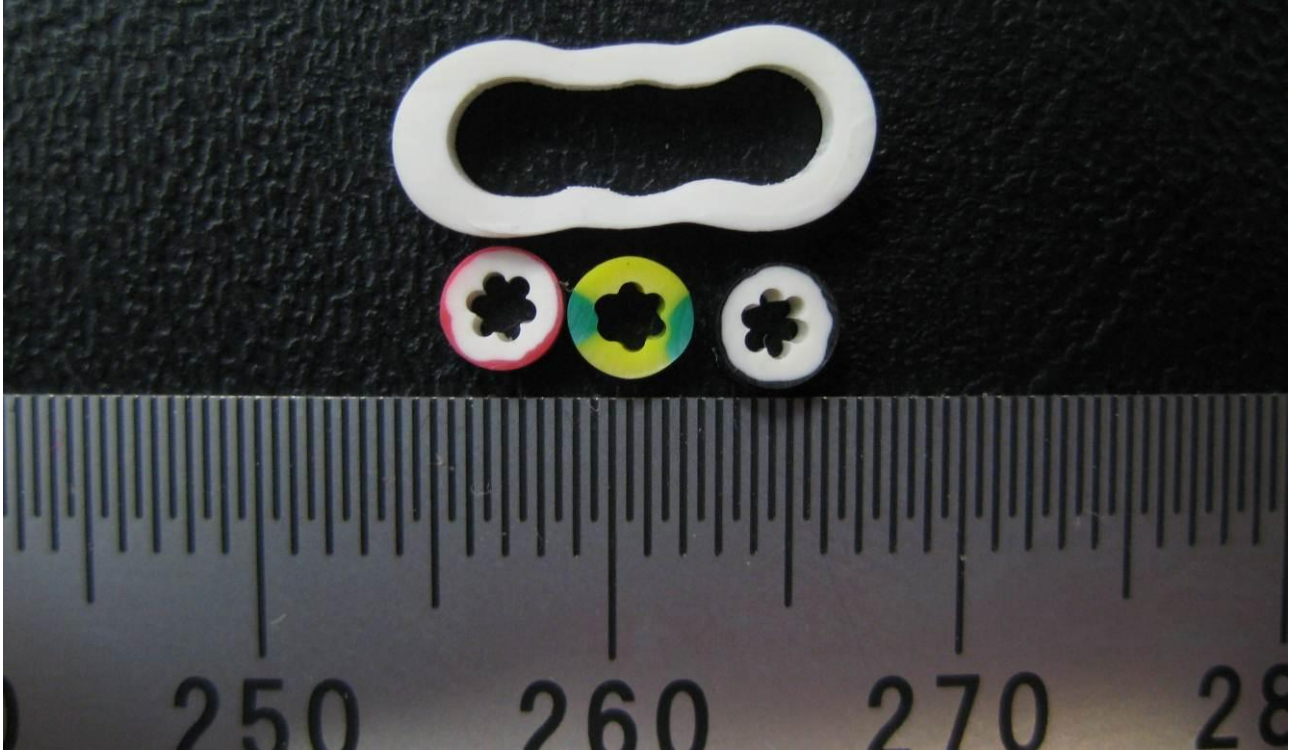
## AS/NZS 3808:2000 inc. amendment 2

Clause	Requirement + Test	Result - Remark	Verdict
D	Pressure test at high temperature: 90 ± 2 °C, Indentation - max. 50%	Measured: Black core: 31.4% Red core: 41.4% Gr-Ye core:41.4%	P
E	Heat shock test - No cracks	Mandrel diameter: 9mm Number of turns: 6	P
F	Hot-set test:	Not required for V-90 PVC	N/A
G	Electrical Characteristics:		P
	1. Insulation resistance constant (Ki) at 20°C minimum 40 (GΩm)	Measured: Black core: 290.1GΩ.m Red core: 267.8GΩ.m Gr-Ye core: 223.1GΩ.m	P
	2. Insulation resistance constant (Ki) at elevated temperature minimum 0.002 (GΩm) at 90°C	Measured: Black core: 0.145GΩ.m Red core: 0.133GΩ.m Gr-Ye core: 0.145GΩ.m	P
H	Exudation of plasticiser		N/A
<b>Table 6</b>	<b>TESTS AND CRITERIA FOR SHEATH</b>		P
A	Mechanical tests without ageing:		P
A.1	Tensile strength - min. 12.5MPa	Measured: 18.04MPa	P
A.2	Elongation at rupture - min. 150%	Measured: 304.0%	P
B	Mechanical tests after ageing in air oven: 504h at 115 ± 2 °C		P
B.1	Tensile strength - min. 75% of value of unaged specimens	Required: 13.53MPa Measured: 19.3MPa	P
B.2	Elongation at break - min. 65% of value of unaged specimens	Required: 197.6% Measured: 237.3%	P
C	Loss of mass: 120h at 115 ±2 °C - max. 2.5 mg/cm <sup>2</sup> of exposed area of specimens	Measured: 1.96 mg/cm <sup>2</sup>	P
D	Pressure test at high temperature: 90 ± 2 °C, Indentation - max. 50%	Measured: 36%	P
E	Heat shock test - No cracks	Mandrel diameter: 2mm Number of turns: 6	P
F	Hot-set test:	Not required for 5V-90 PVC	N/A
G	Exudation of plasticiser		N/A

PHOTOS



PHOTOS



END OF TEST REPORT