



Hong Kong Government Recognized Service Supplier  
Approved Laboratory of The Woolmark Company

Members of :

American National Standards Institute  
American Society for Testing and Materials  
British Standards Institute

Hong Kong Association for Testing, Inspection and Certification Limited  
Hong Kong Toys Council

**TEST REPORT**

NUMBER: HKGH00945258

APPLICANT: RUBADUE WIRE CO., LTD.  
1301 NORTH 17TH AVE.,  
GREELEY CO 80631 USA  
ATTN: MANDY MA

DATE: Dec 21, 2009

**SAMPLE DESCRIPTION:**

EIGHT (8) SUBMITTED SAMPLES SAID TO BE **SINGLE AND MULTI LAYER INSULATED WINDING**

**WIREFEA:**

- GREEN WIRE COVERING.
- BLUE WIRE COVERING.
- VIRGIN WIRE COVERING.
- YELLOW WIRE COVERING.
- BLACK WIRE COVERING.
- TIN PLATED COPPER.
- SILVER PLATED COPPER.
- BARE PLATED COPPER.
- MW-80 WIRE.

REFERENCE NO. : S-AA-X-XX-P-X-L, S-AA-X-XX-P-X-N, D-AA-A01PXX-1.5, D-AA-X-XX-P-XX-L, D-AA-X-XX-P-XX-P, T-AA-X-XX-P-XXX-1.5, T-AA-X-XX-P-XXX-1, T-AA-X-XX-P-XXX-3.

COUNTRY OF ORIGIN : USA.

\*\*\*\*\*

**TESTS CONDUCTED:**

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

\*\*\*\*\*

**CONCLUSION:**

<u>TESTED SAMPLE</u>	<u>STANDARD</u>	<u>RESULT</u>
SUBMITTED SAMPLES	WITH REFERENCE TO TEST METHOD OF IEC 62321 EDITION 1.0 : 2008 AND MAXIMUM CONCENTRATION LIMITS QUOTED FROM RoHS DIRECTIVES 2002/95/EC AND AMENDMENT 2005/618/EC	PASS

\*\*\*\*\*

FOR AND ON BEHALF OF :  
INTERTEK TESTING SERVICES HK LTD.

KAREN S.C. NG  
GENERAL MANAGER



**TEST REPORT**

NUMBER : HKGH00945258

TESTS CONDUCTED

1 RoHS CHEMICAL TEST

(A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT		
	(1)	(2)	(3)
CADMIUM (Cd) CONTENT (mg/kg)	ND (<2)	ND (<2)	ND (<2)
LEAD (Pb) CONTENT (mg/kg)	ND (<2)	ND (<2)	ND (<2)
MERCURY (Hg) CONTENT (mg/kg)	ND (<2)	ND (<2)	ND (<2)
CHROMIUM (VI) (Cr <sup>6+</sup> ) CONTENT (mg/kg) (FOR NON-METAL)	ND (<1)	ND (<1)	ND (<1)
CHROMIUM (VI) (Cr <sup>6+</sup> ) RESULT (BY SPOT TEST ON METAL)	--	--	--
CHROMIUM (VI) (Cr <sup>6+</sup> ) RESULT (BY BOILING WATER EXTRACTION ON METAL) (mg/kg WITH 50cm <sup>2</sup> )	--	--	--
POLYBROMINATED BIPHENYLS (PBBs) (mg/kg)			
MONOBROMOBIPHENYL (MonoBB)	ND (<5)	ND (<5)	ND (<5)
DIBROMOBIPHENYL (DiBB)	ND (<5)	ND (<5)	ND (<5)
TRIBROMOBIPHENYL (TriBB)	ND (<5)	ND (<5)	ND (<5)
TETRABROMOBIPHENYL (TetraBB)	ND (<5)	ND (<5)	ND (<5)
PENTABROMOBIPHENYL (PentaBB)	ND (<5)	ND (<5)	ND (<5)
HEXABROMOBIPHENYL (HexaBB)	ND (<5)	ND (<5)	ND (<5)
HEPTABROMOBIPHENYL (HeptaBB)	ND (<5)	ND (<5)	ND (<5)
OCTABROMOBIPHENYL (OctaBB)	ND (<5)	ND (<5)	ND (<5)
NONABROMOBIPHENYL (NonaBB)	ND (<5)	ND (<5)	ND (<5)
DECABROMOBIPHENYL (DecaBB)	ND (<5)	ND (<5)	ND (<5)
POLYBROMINATED DIPHENYL ETHERS (PBDEs) (mg/kg)			
MONOBROMODIPHENYL ETHER (MonoBDE)	ND (<5)	ND (<5)	ND (<5)
DIBROMODIPHENYL ETHER (DiBDE)	ND (<5)	ND (<5)	ND (<5)
TRIBROMODIPHENYL ETHER (TriBDE)	ND (<5)	ND (<5)	ND (<5)
TETRABROMODIPHENYL ETHER (TetraBDE)	ND (<5)	ND (<5)	ND (<5)
PENTABROMODIPHENYL ETHER (PentaBDE)	ND (<5)	ND (<5)	ND (<5)
HEXABROMODIPHENYL ETHER (HexaBDE)	ND (<5)	ND (<5)	ND (<5)
HEPTABROMODIPHENYL ETHER (HeptaBDE)	ND (<5)	ND (<5)	ND (<5)
OCTABROMODIPHENYL ETHER (OctaBDE)	ND (<5)	ND (<5)	ND (<5)
NONABROMODIPHENYL ETHER (NonaBDE)	ND (<5)	ND (<5)	ND (<5)
DECABROMODIPHENYL ETHER (DecaBDE)	ND (<5)	ND (<5)	ND (<5)

\*\*\*\*\*



**TEST REPORT**

NUMBER : HKGH00945258

TESTS CONDUCTED

TESTING ITEM	RESULT		
	(4)	(5)	(6)
CADMIUM (Cd) CONTENT (mg/kg)	ND (<2)	ND (<2)	ND (<2)
LEAD (Pb) CONTENT (mg/kg)	ND (<2)	ND (<2)	ND (<2)
MERCURY (Hg) CONTENT (mg/kg)	ND (<2)	ND (<2)	ND (<2)
CHROMIUM (VI) (Cr <sup>6+</sup> ) CONTENT (mg/kg) (FOR NON-METAL)	ND (<1)	ND (<1)	--
CHROMIUM (VI) (Cr <sup>6+</sup> ) RESULT (BY SPOT TEST ON METAL)	--	--	NEGATIVE
CHROMIUM (VI) (Cr <sup>6+</sup> ) RESULT (BY BOILING WATER EXTRACTION ON METAL) (mg/kg WITH 50cm <sup>2</sup> )	--	--	NEGATIVE (<0.02)
POLYBROMINATED BIPHENYLS (PBBs) (mg/kg)			
MONOBROMOBIPHENYL (MonoBB)	ND (<5)	ND (<5)	ND (<5)
DIBROMOBIPHENYL (DiBB)	ND (<5)	ND (<5)	ND (<5)
TRIBROMOBIPHENYL (TriBB)	ND (<5)	ND (<5)	ND (<5)
TETRABROMOBIPHENYL (TetraBB)	ND (<5)	ND (<5)	ND (<5)
PENTABROMOBIPHENYL (PentaBB)	ND (<5)	ND (<5)	ND (<5)
HEXABROMOBIPHENYL (HexaBB)	ND (<5)	ND (<5)	ND (<5)
HEPTABROMOBIPHENYL (HeptaBB)	ND (<5)	ND (<5)	ND (<5)
OCTABROMOBIPHENYL (OctaBB)	ND (<5)	ND (<5)	ND (<5)
NONABROMOBIPHENYL (NonaBB)	ND (<5)	ND (<5)	ND (<5)
DECABROMOBIPHENYL (DecaBB)	ND (<5)	ND (<5)	ND (<5)
POLYBROMINATED DIPHENYL ETHERS (PBDEs) (mg/kg)			
MONOBROMODIPHENYL ETHER (MonoBDE)	ND (<5)	ND (<5)	ND (<5)
DIBROMODIPHENYL ETHER (DiBDE)	ND (<5)	ND (<5)	ND (<5)
TRIBROMODIPHENYL ETHER (TriBDE)	ND (<5)	ND (<5)	ND (<5)
TETRABROMODIPHENYL ETHER (TetraBDE)	ND (<5)	ND (<5)	ND (<5)
PENTABROMODIPHENYL ETHER (PentaBDE)	ND (<5)	ND (<5)	ND (<5)
HEXABROMODIPHENYL ETHER (HexaBDE)	ND (<5)	ND (<5)	ND (<5)
HEPTABROMODIPHENYL ETHER (HeptaBDE)	ND (<5)	ND (<5)	ND (<5)
OCTABROMODIPHENYL ETHER (OctaBDE)	ND (<5)	ND (<5)	ND (<5)
NONABROMODIPHENYL ETHER (NonaBDE)	ND (<5)	ND (<5)	ND (<5)
DECABROMODIPHENYL ETHER (DecaBDE)	ND (<5)	ND (<5)	ND (<5)

\*\*\*\*\*



**TEST REPORT**

NUMBER : HKGH00945258

TESTS CONDUCTED

TESTING ITEM	RESULT		
	(7)	(8)	(9)
CADMIUM (Cd) CONTENT (mg/kg)	ND (<2)	ND (<2)	ND (<2)
LEAD (Pb) CONTENT (mg/kg)	ND (<2)	ND (<2)	ND (<2)
MERCURY (Hg) CONTENT (mg/kg)	ND (<2)	ND (<2)	ND (<2)
CHROMIUM (VI) (Cr <sup>6+</sup> ) CONTENT (mg/kg) (FOR NON-METAL)	--	--	--
CHROMIUM (VI) (Cr <sup>6+</sup> ) RESULT (BY SPOT TEST ON METAL)	NEGATIVE	NEGATIVE	NEGATIVE
CHROMIUM (VI) (Cr <sup>6+</sup> ) RESULT (BY BOILING WATER EXTRACTION ON METAL) (mg/kg WITH 50cm <sup>2</sup> )	NEGATIVE (<0.02)	NEGATIVE (<0.02)	NEGATIVE (<0.02)
POLYBROMINATED BIPHENYLS (PBBs) (mg/kg)			
MONOBROMOBIPHENYL (MonoBB)	ND (<5)	ND (<5)	ND (<5)
DIBROMOBIPHENYL (DiBB)	ND (<5)	ND (<5)	ND (<5)
TRIBROMOBIPHENYL (TriBB)	ND (<5)	ND (<5)	ND (<5)
TETRABROMOBIPHENYL (TetraBB)	ND (<5)	ND (<5)	ND (<5)
PENTABROMOBIPHENYL (PentaBB)	ND (<5)	ND (<5)	ND (<5)
HEXABROMOBIPHENYL (HexaBB)	ND (<5)	ND (<5)	ND (<5)
HEPTABROMOBIPHENYL (HeptaBB)	ND (<5)	ND (<5)	ND (<5)
OCTABROMOBIPHENYL (OctaBB)	ND (<5)	ND (<5)	ND (<5)
NONABROMOBIPHENYL (NonaBB)	ND (<5)	ND (<5)	ND (<5)
DECABROMOBIPHENYL (DecaBB)	ND (<5)	ND (<5)	ND (<5)
POLYBROMINATED DIPHENYL ETHERS (PBDEs) (mg/kg)			
MONOBROMODIPHENYL ETHER (MonoBDE)	ND (<5)	ND (<5)	ND (<5)
DIBROMODIPHENYL ETHER (DiBDE)	ND (<5)	ND (<5)	ND (<5)
TRIBROMODIPHENYL ETHER (TriBDE)	ND (<5)	ND (<5)	ND (<5)
TETRABROMODIPHENYL ETHER (TetraBDE)	ND (<5)	ND (<5)	ND (<5)
PENTABROMODIPHENYL ETHER (PentaBDE)	ND (<5)	ND (<5)	ND (<5)
HEXABROMODIPHENYL ETHER (HexaBDE)	ND (<5)	ND (<5)	ND (<5)
HEPTABROMODIPHENYL ETHER (HeptaBDE)	ND (<5)	ND (<5)	ND (<5)
OCTABROMODIPHENYL ETHER (OctaBDE)	ND (<5)	ND (<5)	ND (<5)
NONABROMODIPHENYL ETHER (NonaBDE)	ND (<5)	ND (<5)	ND (<5)
DECABROMODIPHENYL ETHER (DecaBDE)	ND (<5)	ND (<5)	ND (<5)

mg/kg = MILLIGRAM PER KILOGRAM = ppm  
 mg/kg WITH 50cm<sup>2</sup> = MILLIGRAM PER KILOGRAM WITH 50 SQUARE CENTIMETER  
 < = LESS THAN  
 ND = NOT DETECTED  
 NA = NOT APPLICABLE

\*\*\*\*\*





Hong Kong Government Recognized Service Supplier  
Approved Laboratory of The Woolmark Company

Members of :

American National Standards Institute  
American Society for Testing and Materials  
British Standards Institute

Hong Kong Association for Testing, Inspection and Certification Limited  
Hong Kong Toys Council

**TEST REPORT**

NUMBER: HKGH00945258

TESTS CONDUCTED

POSITIVE = A POSITIVE TEST RESULT INDICATED THE PRESENCE OF Cr(VI) AT THE TIME OF TESTING, EQUAL TO OR GREATER THAN THRESHOLD OF 1 mg/kg FOR SPOT TEST PROCEDURE OR 0.02 mg/kg FOR BOILING -WATER-EXTRACTION PROCEDURES WITH A SAMPLE SURFACE AREA OF 50cm<sup>2</sup> USED. HOWEVER, IT SHALL NOT BE INTERPRETED AS THE Cr(VI) CONCENTRATION IN THE COATING LAYER OF THE SAMPLE AND SHOULD NOT BE USED AS A METHOD DETECTION LIMIT FOR THIS QUALITATIVE TEST.

NEGATIVE = A NEGATIVE TEST RESULT INDICATED ABOVE POSITIVE OBSERVATION WAS NOT FOUND AT THE TIME OF TESTING. WHEN THE SPOT-TEST SHOWED A NEGATIVE RESULT, THE BOILING-WATER-EXTRACTION PROCEDURE SHALL BE USED TO VERIFY THE RESULT.

TESTED COMPONENTS:

- (1) GREEN PLASTIC.
- (2) BLUE PLASTIC.
- (3) TRANSLUCENT PLASTIC.
- (4) YELLOW PLASTIC.
- (5) BLACK PLASTIC.
- (6) SILVER COLOR METAL (WIRE).
- (7) SHINY SILVER COLOR METAL (WIRE).
- (8) COPPER COLOR METAL (WIRE).
- (9) RED PLATED METAL (WIRE).

(B) RoHS REQUIREMENT:

RESTRICTED SUBSTANCES	LIMITS
CADMIUM (Cd)	0.01% (100 ppm)
LEAD (Pb)	0.1% (1000 ppm)
MERCURY (Hg)	0.1% (1000 ppm)
CHROMIUM (VI) (Cr <sup>6+</sup> )	0.1% (1000 ppm)
POLYBROMINATED BIPHENYLS (PBBs)	0.1% (1000 ppm)
POLYBROMINATED DIPHENYL EHTERS (PBDEs)	0.1% (1000 ppm)

THE ABOVE LIMITS WERE QUOTED FROM 2002/95/EC AND AMENDMENT 2005/618/EC FOR HOMOGENEOUS MATERIAL.

\*\*\*\*\*



**TEST REPORT**

NUMBER : HKGH00945258

TESTS CONDUCTED

(C) TEST METHOD:

TESTING ITEM	TESTING METHOD	REPORTING LIMIT
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0 : 2008, BY ACID DIGESTION AND DETERMINED BY ICP-OES	2 mg/kg
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0 : 2008, BY ACID DIGESTION AND DETERMINED BY ICP - OES	2 mg/kg
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0 : 2008, BY ACID DIGESTION AND DETERMINED BY ICP - OES	2 mg/kg
CHROMIUM (VI) (Cr <sup>6+</sup> ) CONTENT (FOR NON-METAL)	WITH REFERENCE TO IEC 62321 EDITION 1.0 : 2008, BY ALKALINE DIGESTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER	1 mg/kg
CHROMIUM (VI) (Cr <sup>6+</sup> ) CONTENT (FOR METAL)	WITH REFERENCE TO IEC 62321 EDITION 1.0 : 2008, BY SPOT TEST.	POSITIVE/ NEGATIVE (THRESHOLD OF 1 mg/kg)
CHROMIUM (VI) (Cr <sup>6+</sup> ) CONTENT (FOR METAL)	WITH REFERENCE TO IEC 62321 EDITION 1.0 : 2008, BY BOILING WATER EXTRACTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER	POSITIVE/ NEGATIVE (THRESHOLD OF 0.02mg/kg with 50cm <sup>2</sup> )
POLYBROMINATED BIPHENYLS (PBBs) & POLYBROMINATED DIPHENYL ETHERS (PBDEs)	WITH REFERENCE TO IEC 62321 EDITION 1.0 : 2008, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS AND FURTHER HPLC CONFIRMATION WHEN NECESSARY	5 mg/kg

DATE SAMPLE RECEIVED: DEC 03, 2009 AND DEC 16, 2009

TESTING PERIOD: DEC 03, 2009 TO DEC 18, 2009

\*\*\*\*\*

END OF REPORT

