



TEST REPORT

Reference No	:	WTF17F1091927A1C
Applicant	- :	Mid Ocean Brands B.V.
Address	الن	Unit 201 2/F., Laford Centre, 838 Lai Chi Kok Road, Cheung Sha Wal Kowloon, Hong Kong.
Manufacturer	N.C.	108694
Sample Name	٠: ر	RIO Twist ball pen with light
Model No.	VIE.	MO9222
Test Requested	į	In accordance with the RoHS Directive 2011/65/EU
Test Method	4	1) With Reference to IEC 62321-2:2013, disassembly, disjointment an mechanical sample preparation
		2) With Reference to IEC 62321-3-1:2013, screening - Lead, mercury cadmium, total chromium and total bromine by X-ray fluorescence spectrometry
		3) With reference to IEC62321-4:2013, determination of Mercury by ICP-OES
		4) With reference to IEC62321-5:2013, determination of Lead and Cadmium by ICP-OES
		5) With reference to IEC 62321: 2008 and IEC 62321-7-1:2015, determination of Hexavalent Chromium by UV-Vis
		6) With reference to IEC62321-6:2015, determination of PBBs and PBDEs by GC-MS
Test Conclusion	3	Based on the performed tests on the submitted samples, the results comply with the RoHS Directive 2011/65/EU
Date of Receipt sample		2017-10-09 & 2017-10-20
Date of Test	:	2017-10-09 to 2017-10-21
Date of Issue	Cort	2017-10-23
Test Result	15	Please refer to next page (s)

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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Compiled by:

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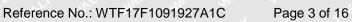
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Test Results:

Part No.	Part Description	Part Description Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
	THE THE LITER OLITE AND	Cd	BL	t st	EX
, LTV	min me me m	Pb	BL	alter wife while	Whi. M
_1	White plastic shell	Hg	BL	NA	Comply
<u> </u>	life while whi whe wir	Cr	BL	TEX TEX TEX	NITE NAL
1,,		Br	BL	Mr. Mr. Mr. 1	
	et alter with while wall	Cd	BL	at at let .	IEK LIE
In.	141, 141	Pb	BL	of the work who	211
2	Silvery metal buckle	Hg	BL	NA	Comply
	mr mr m.	Cr	BL	ie alter miter wall	WILL
	at let set set s	Br	on Bran	20, 20, 2,	. +
ie.	WILL AUT. AND AND AND	Cd	BL 0	t TEX TEX STEE	WILL ON
		Pb	BL	Wr. Mur Mr.	21, 2,
3	Dark blue plastic tube	Hg	BL	NA NA	Comply
M	10 10 15 15 15 15 15 15 15 15 15 15 15 15 15	Cr	BL	write while we we	211
A	t feet the street with	Br	BL		et et
WILL	Mur. My. All, O.	Cd	BL	DDDa i ND	WILL
· .	at at a ste	Pb	BL		*
4	White plastic tube	Hg	BL	PBBs : ND PBDEs : ND	Comply
	The state of the s	Cr	BL	F DDL3 . ND	
EX	TEK SLIEN CLIEN	Br IN	at at at	TEX	
11/2	24, 25,	Cd	BL	With White Whi a	ing with
	EX TEX ITEX LITE	Pb	BL	7	
5	White plastic tube Hg BL NA Cr BL	NA NA	Comply		
			1		
LIE!	at we want	Br	BL	BL H	LIER
71		Cd	BL N	in the Mr.	71.
TEX	Brown plastic cover with silvery	Pb	BL	DDDo : ND	TEX
6	coating	Hg	BL	PBBs : ND PBDEs : 147	Comply
+	Coating	Cr	BL	FBDLS.147	EX X
الد	is were must any	Br	+ IN+	TEX LIFE OLIVE	Li' MIL
	L St St SET SET	Cd	BL		1. 1
	White plastic ring with silvery	Pb	BL	et tet tet	Er Wile.
7	coating	Hg	BL	NA NA	Comply
TEX	Coaling	Cr	BL		TEX
	The My My	Br Br	BL	ie with with war.	W. 1
.*	EX TEX ITEX LITER WA	Cd	BL	The state of	at .
	VI MI MU MI	Pb	BL	TER STEE STEE	UNLI WA
8	Yellow plastic sheet	Hg	BL	NA	Comply
-	ier write Muri Muri Mil	Cr	BL	LEK TEK TEK	LIEK WALTE
1111	11, 12	Br	BL	in in white me	



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		V	11
7		3	

Part No.	Part Description	on Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
et	TEN ITEN LITER WITE OF	Cd	BL	1 14 114	LEX.
	her, we she so so	Pb	BL	alter white white	While M
9	Silvery metal spring	Hg	BL	NA	Comply
	ite with my min with	Cr	BL	TEX TEX TEX	NITE WALT
20		Br	BL	Mr. Mr. Mr. 2	
٠ .	alter pull while while	Cd	BL	at at let i	LEK LIET
Me	in in	Pb	BL	Wife Will Aut. Mus	2112
10	Silvery metal spring	Hg	BL	NA	Comply
Write.	mi, my my m	Cr	BL	iet alter white white	WILL
	at left test	Br	BL	20, 20, 2,	
TE.	Will Mr. Au. Au.	Cd	BL	t let jet jet	Will all
		Pb	BL	Wr. Mr. My	20, 20,
11	Silvery metal nib	Hg	BL	NA NA	Comply
n.	All All A	Cr	BL	" Life while we	in the
	t let let le cife	Br W	BL	<u> </u>	et let
MILL	The Mr. Mr.	Cd	BL	I'M LIET WITE WILL	WLL
	The state of the s	Pb	BL W	- m. m. m.	
12	White plastic tube	Hg	BL	A NA NA	Comply
	in in	Cr	BL WILL WILL WILL WILL WILL WILL WILL WI	while when we	111. 21.
EX	TEX LIER SLIER ON	Br	BL	t et et	TEX S
10	24, 24,	Cd	BL	alle and and	ur, au
	ex lex tex tree	Pb	BL	4, 7,	et et
13	Blue ink	Hg	BL	NA NA	Comply
7,		Cr	MBL 3	in the this can	
TE		Br	BL	t I EX TEX ITE	
711		Cd	BL .	in the things	70, 7
EX		Pb	BL	the set of	LEX.
14	Silvery metal tube	Hg	BL	NA	Comply
_	at let tex tex tex or	Cr	BL	<i>i</i> n. <i>i</i>	* 4
· · ·	it with mur mur my	Br	→ BL →	TEX LIER SLIER	LIE MILL
		Cd	BL	Mr. M. M. M.	. 4
	A STEEL WITE MULT MALL	Pb	BL	the set set of	EX LIER
15	White plastic tube with silvery	Hg	BL	Cr ⁶⁺ : ND	Comply
EX	coating	Cr	IN		- TEX
nii .	Mur Au Au Au	Br Br	BL	E NITE NITE NAIL	MUT. M
	et let tet tet tet	Cd	BL	14, 2,	×
I E	Will Mar Mar W	Pb	, ∠ BL ⊘	TEX TEX TIES	Comply
16	Semi-transparent plastic tube	Hg	BL	NA	
+ ,	EL OTEL WILL MUTE MALL	Cr	BL	at at at	TEX ITE
M	14. 14. 1.	Br	BL	The Mail Wall W	MIL







Part No.	Part Description	Result	of XRF	Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
i, t	TEN TEN TEN OUT OF	Cd	BL		CEX.
	mi, me me in a	Pb	BL	alter white white	While M
17	White plastic tube	Hg	BL	NA	Comply
	LIE WILL WALL MAN	Cr	BL	TEX TEX LIER	alie anti
	The state of the s	Br	BL	with the the	, 2,
٠ .	ALTE RULL WALL WALL	Cd	BL	at at all a	EK LIE
	70, 70	Pb	BL	NI WALL WALL WAS	M
18	Silvery metal spring	Hg	BL	NA NA	Comply
	mi me me	Cr	BL	ier alter with white	Will 2
	at at let let	Br	M BL	1/11/2 1/11/2	
JE.	WILL MULL MU MIN MIN MIN	Cd	BL 0	t TEX TEX TEX	امار ماران
	the state of	Pb	BL	We have	20, 70,
19	Transparent body of LED	Hg	BL	PBBs : ND	Comply
	Mr. M. M.	Cr	BL	PBDEs : ND	in the
	t let let it little	Br W	IN		et let
anti-	THE THE THE	Cd	BL	I's LIE WITE IN	Mrc
	at at a second	Pb	BL W	- 1/11 1/11 2	
20	Silvery metal pin of LED	Hg	BL	Cr ⁶⁺ : Negative	Comply
	in in the	Cr	IN A	while were we	20. 20.
	TEX LIEX SLIEN BOOK	Br	BL	the state of	TEX S
ای	20, 20,	Cd	BL	alle and whi a	V 74
	ex ret ret itel	Pb	BL	4, 7, 1	at at
21	Grey plastic cover of switch	Hg	BL	NA NA	Comply
	Tex wifet whitek writer	Cr	BL	in my my my	
		Br	BL	to the time	
70,		Cd	BL N	y who wh	10, 1
		Pb	BL	The state of the s	EX
22	White plastic keystroke of switch	Hg	BL	NA	Comply
	ex ex tex tex tex	Cr	BL	10, 12 T	.* .«
	Tit mit mut my	Br	# BL	TEX LIEX SLIER	TIE WILL.
	· · · · · · · · · · · · · · · · · · ·	Cd	BL	Mr. M. W.	, 1
	in white white white	Pb	BL	at let let i	EX CLIER
23	Silvery metal pin of switch	Hg	BL	NA	Comply
	TEX STEX STEE WITE .	Cr	BL		TEX
	Mer Mr. M. A.	⇒ Br →	BL	E WIE WILL WALL	MUT. M
.4	at the set set of	Cd	BL	14. 4.	× _
	VIII MULT MULT MAN	Pb	BL BL	- TEX LIEX LITER	White Whi
24	Black plastic base of switch	Hg	BL	NA	Comply
	THE WILL WILL MUST MY	Cr	BL	at at let	TEX LIE
	11, 12,	Br	BL	WILL MULL AND	411.



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Part No.	Part Description	Result	of XRF	Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
-ex-	THE THE LIFE WITH	Cd	BL	1 4 4	, Et
NII"	aver Aver Aver Av	Pb	BL	alter white	
25	Silvery metal pin of switch	Hg	BL	NA	Comply
	life while while when wh	Cr	BL	TEX TEX TEX	
71,		Br	BL	min me me a	
٠ .	et alter with whit while	Cd	BL	at at let .	CEK LIFE
M		Pb	BL	Ni White whi wh	
26	Silvery metal spring with black	Hg	BL	NA	Comply
Nr.	coating of switch	Cr	BL	IE SITE WITE WALL	
	the set set set	Br	BL _M	20, 20,	*
TE.	WILL MULL AND AND AND	Cd	L BL	t TEX TEX STEE	NITE WY
		Pb	BL	Wr. Mur Mr.	
27	Silvery metal strip of switch	Hg	BL	Cr ⁶⁺ : Negative	Comply
- In	in in	Cr	IN	"OLICE MULL MULL M	
	t tex itex its writer	Br	BL		et et
WILL	Mur. Mur. Mr. M.	Cd	BL	I'M NITER WITE WAL	
٠. ـــ	at let it ite	Pb	BL	41, 42,	
28	Blue plastic tube	Hg	BL	NA NA	Comply
	The state of the s	Cr	BL	nur mu m	
CEX	TEX LIFE OLIVE NAME	Br	BL	at at all	JEK J
12	20, 20,	Cd	BL	- Will Muli war	
Ļ,	EX TEX LIFE SLITE	Pb	BL		
29	Red plastic tube	Red plastic tube Hg BL NA	NA	Comply	
	at let tex trex	Cr	JUBE 3	10 20 25	
. Lie		Br	BL	t the steel steel	
21,	DAY A Y A A Y A	Cd	BL N	The same	
TEX	TIES V	Pb	BL	LEK TEK	
30	Semi-transparent plastic tube	Hg	BL	NA NA	Comply
*	TEX TEX STEEL WITE MULTER	Cr	BL		
112	r. Mur. All. All.	Br	BL	TER STE WITE	The Mark
	at let tex tex tex	Cd	BL	21, 24, 24	
المارين	White Man was my	Pb	BL	EX TEX LIER N	
31	Black plastic tube	Hg	BL	NA NA	Comply
TEX	SLIED WILL WALL WALL OF	Cr	BL	at at the	
iv.	111 11 11	Br	BL	it with the wife	1/1 1
ex	TEX ITEX SITES OUTE IN	Cd	BL"	***	
	in my my m	Pb	BL	- LIE WITE WITE	
32	Orange plastic tube	Hg	BL	NA	Comply
	it will mur, and an	Cr	BL	TEX TEX TEX	
10,		Br	BL	The The The	

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Part No.	Part Description	Result	of XRF	Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
- 14	THE ITER STEE WITE I	Cd	BL	1 4 4	LEX .
Mil.	me me me m	Pb	BL	ALTER WITE WALTE	Whi. W.
33	Green plastic tube	Hg	BL	NA	Comply
TEN 1	File Mury Mury Mury My	Cr	BL	TEX TEX TIES	ALTE MALTE
1,0	the state of the s	Br	BL	7 Mr. M. 2	





Remark:

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(1) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr6⁺) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1: 2013 (unit: mg/kg)

Element	Polymer	Metal	Composite Materials
Cd	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	$LOD < IN < (150+3\sigma) \le OL$
Pb	$BL \le (700-3\sigma) < IN < (1300+3\sigma) \le OL$	$BL \le (700-3\sigma) < IN < (1300+3\sigma) \le OL$	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Hg	$BL \le (700-3\sigma) < IN < (1300+3\sigma) \le OL$	$BL \le (700-3\sigma) < IN < (1300+3\sigma) \le OL$	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Cr	BL ≤ (700-3σ) < IN	BL ≤ (700-3σ) <in< td=""><td>BL ≤ (500-3σ) < IN</td></in<>	BL ≤ (500-3σ) < IN
Br	BL ≤ (300-3σ) < IN	E WALLE WALLE WALL W	BL ≤ (250-3σ) < IN

BL= Below Limit

OL= Over Limit

LOD = Limit of Detection

-- = Not Regulated

- (2) "IN" expresses the inconclusive region, and further chemical testing to confirm whether it complies with the requirement of RoHS Directive.
- (3) The XRF screening test for RoHS elements the reading may be different to the actual content in the sample be of non-uniformity composition.
- (4) ppm = mg / kg, based on the dry weight of tested sample.
- (5) ND = Not Detected, less than the value of Method Detection Limit.
- (6) NA = Not Applicable, as the XRF screening test result was below the limit, it was not need to conduct the wet chemical testing.
- (7) MDL= Method Detection Limit in wet chemical test

	Test Items	Pb	Cd	Hg	Cr ⁶⁺		PBB	PBDE
	Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm ²	mg/kg	mg/kg
5	MDL	2.50	2	2	2	0.1	5	5 5

The MDL for single compound of PBBs and PBDEs is 5mg/kg, MDL of Cr⁶⁺ for polymer and composite sample is 2mg/kg and MDL of Cr⁶⁺ for metal sample is 0.1µg/cm².

(8) According to IEC 62321-7-1:2015, determined of Cr⁶⁺ on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is less than $0.10ug/cm^2$.

Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/cm².

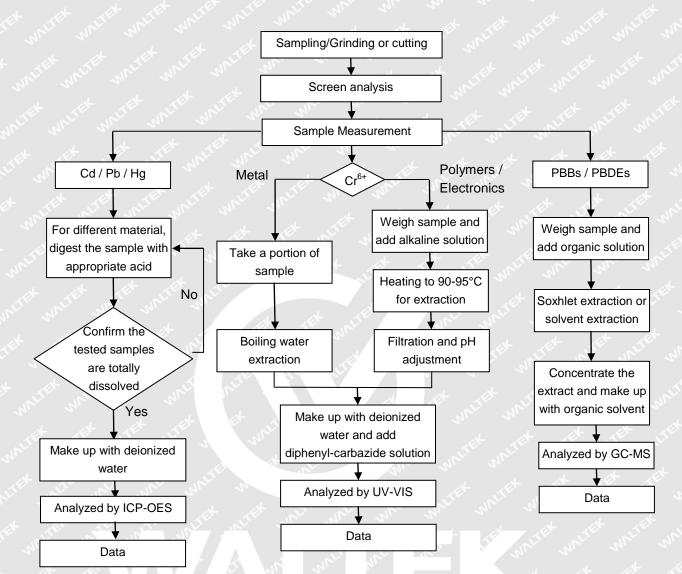
Information on storage conditions and production date of the tested sample is unavailable and thus Cr⁶⁺ results represent status of the sample at the time of testing.

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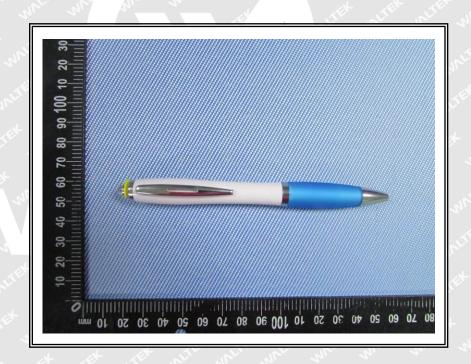
Measurement Flowchart:























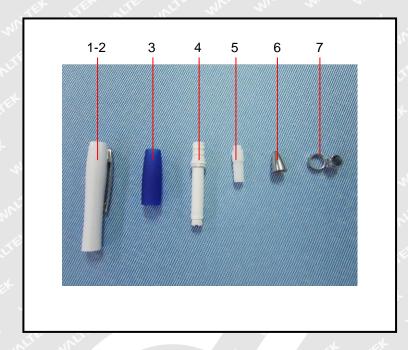


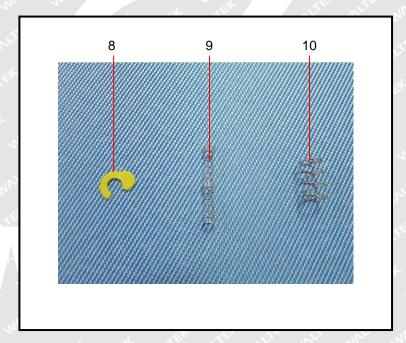


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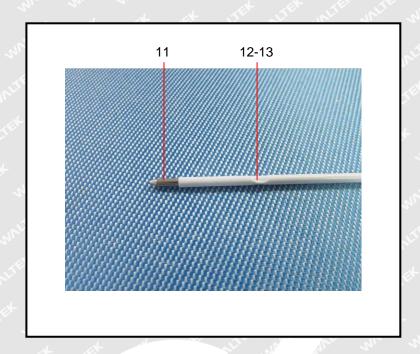
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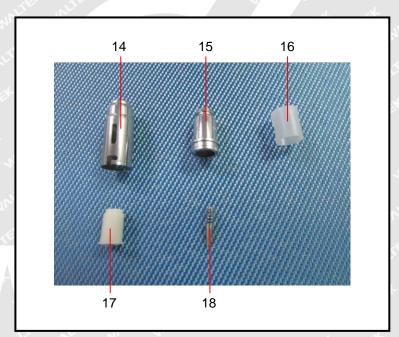
Photograph of parts tested:



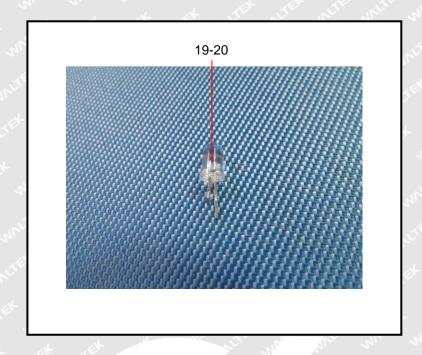


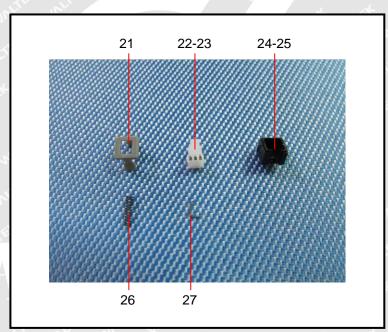




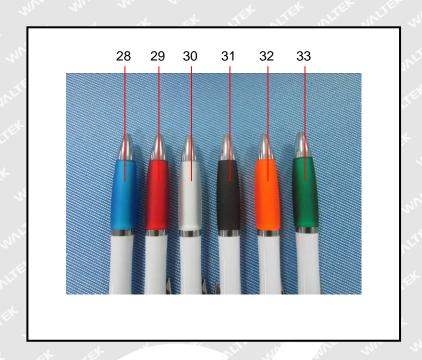












===== End of Report =====

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