

XRF Screening and Chemical Confirmation Test Report

Number: 191100142HZH-001

Applicant: ZHEJIANG KARUI MACHINERY CO., LTD.
NO.8 ZHANCHENG AVENUE, TAOZHU STREET, ZHUJI CITY,
ZHEJIANG PROVINCE, CHINA

Date: November 20, 2019

Sample Description:

One (1) piece of submitted sample said to be

Item Name : **Saw chain**

Testing Model : 2C0Q

Reference Model : 4A4Q, 1A0Q, 1C0Q, 1C8Q, 1C3Q, 2C3Q, 2C0, 3C0, 2C8, 2C8Q, 3C8, 2C3, 3C3,
2D0Q, 2D8Q, 2D3Q, 2D0, 2D8, 2D3, 1D0Q, 1D8Q, 1D3Q, 1D0R, 1D8R, 1D3R,
1B0, 5B0, 1B0G, 1B0Q, 3B0, 1B4G, 6E3, 1E3, 1E3R, 3E3



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>
Tested component of Submitted sample	Screening by XRF spectroscopy and chemical confirmation test for RoHS Directive 2011/65/EU and amendment (EU)2015/863	Pass

To be continued

Authorized By:

For Intertek Testing Services Ltd., Shanghai, Hangzhou Branch

Patrick Chen
Manager

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Tests Conducted

Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) and bromine (Br) content were measured with reference to IEC 62321-3-1 Edition 1.0:2013 by XRF spectroscopy and chemical confirmation test for RoHS restricted substances. And Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs) and Phthalates content were determined by Gas Chromatographic-Mass Spectrometric (GC-MS).

(A) Results:

Part No.	Tested Components	Refer information	Restricted Substance	XRF Result	Screened Results (BL phthalates)	Chemical Confirmation result	Conclusion on RoHS
1	Metal block (black metal)		Cd	P	NA	/	Pass
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	NA		/	
			DEHP	NA	NA	/	
			BBP	NA	NA	/	
			DBP	NA	NA	/	
			DIBP	NA	NA	/	
2	Metal block (silver metal)		Cd	P	NA	/	Pass
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	NA		/	
			DEHP	NA	NA	/	
			BBP	NA	NA	/	
			DBP	NA	NA	/	
			DIBP	NA	NA	/	
3	Sheet metal (silver metal)		Cd	P	NA	/	Pass
			Pb	P		/	
			Hg	P		/	
			Cr	X		Cr ⁶⁺ =Negative	
			Br	NA		/	
			DEHP	NA	NA	/	
			BBP	NA	NA	/	
			DBP	NA	NA	/	
			DIBP	NA	NA	/	
4	Metal block (black metal)		Cd	P	NA	/	Pass
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	

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Part No.	Tested Components	Refer information	Restricted Substance	XRF Result	Screened Results (BL phthalates)	Chemical Confirmation result	Conclusion on RoHS
			Br	NA		/	
			DEHP	NA	NA	/	
			BBP	NA	NA	/	
			DBP	NA	NA	/	
			DIBP	NA	NA	/	

Remark: P = Pass (Below the lower screening limit of table (B1))

X = Inconclusive result (Further chemical test was suggested (see table (B1).)

BL=Below the lower screening limit of table (B2) and pass

NA = Not applicable

ND = Not detected

ppm = Parts per million = mg/kg

* = Failed item

Negative=The Cr (VI) concentration is less than 0.10 µg/cm².The sample is negative for Cr (VI).

Inconclusive = The Cr (VI) concentration is between 0.10 µg/cm² and 0.13 µg/cm² .The result is considered to be inconclusive. Unavoidable coating variations may influence the determination.

Positive = The sample is positive for Cr (VI) is based on visual comparison only. Sample solution is significantly more intense than the 0.13 µg/cm² equivalent comparison standard. No Colourimetric measurement was performed.

(#1) = The screened result was found in the region of inconclusive and further chemical test was suggested (see table A).

(#2) = Cr was detected above the screening limits and further chemical test was suggested (see table A).

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(B)

(B1) XRF Screening Limits in mg/kg for Regulated Elements in Various Matrices.

Element	Polymer materials	Metallic materials	Composite materials
Cd	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 150 \leq F$
Pb	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Hg	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Cr	$P \leq 700 < X$	$P \leq 700 < F$	$P \leq 500 < X$
Br	$P \leq 300 < X$	Not applicable	$P \leq 250 < X$

(B2) Preliminary screening test will be used for phthalates, if the results exceed the warning area in the following table, further chemical methods will be conducted to confirm the exact content by GC/MS.

Phthalates	Polymer
Bis(2-ethylhexyl)phthalate(DEHP)	$BL \leq 600 < X$
Butyl benzyl phthalate(BBP)	$BL \leq 600 < X$
Dibutyl phthalate(DBP)	$BL \leq 600 < X$
Diisobutyl phthalate(DIBP)	$BL \leq 600 < X$

(C) Estimated detection limits in mg/kg for regulated elements in various matrices.

Element	Polymer materials	Metallic materials	Composite materials
Cd	50	70	70
Pb	100	200	200
Hg	100	200	200
Cr	100	200	200
Br	200	Not applicable	200

Disclaimers:

This XRF Screening and Chemical Confirmation Test Report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF Screening and Chemical Confirmation Test Report is sufficient for its/his/her purposes.

The results shown in this XRF Screening and Chemical Confirmation Test Report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis is required to obtain quantitative data.

To be continued

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(D) Chemical confirmation test methods:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) Content	With reference to IEC 62321-5 Edition 1.0 : 2013, by acid digestion and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321-5 Edition 1.0 : 2013, by acid digestion and determined by ICP - OES	2 mg/kg
Mercury (Hg) Content	With reference to IEC 62321-4 Edition 1.0 : 2013, by acid digestion and determined by ICP - OES	2 mg/kg
Chromium (VI) (Cr ⁶⁺) content (for non-metal)	With reference to IEC 62321-7-2 Edition 1.0 : 2017, by organic solvent dissolution or swell the sample matrix, followed by alkaline digestion and determined by UV-VIS Spectrophotometer.	10mg/kg
Chromium (VI) (Cr ⁶⁺) content (for metal)	With reference to IEC 62321-7-1 Edition 1.0: 2015, by boiling water extraction and determined by UV-VIS Spectrophotometer.	Positive(>0.13 µg/m ²)/ Negative(<0.10 µg/m ²) Inconclusive(0.10--0.13 µg/m ²)
Polybrominated Biphenyls (PBBs) & Polybrominated Diphenyl Ethers (PBDEs) Content	With reference to IEC 62321-6 edition 1.0:2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	5 mg/kg
Phthalates(DEHP, BBP, DBP, DIBP) Content	With reference to IEC62321-8 : 2017, by solvent extraction and determined by GC/MS	100mg/kg

(E) 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 ⁶⁺)	0.1% (1000 ppm)
Polybrominated biphenyls (PBBs)	0.1% (1000 ppm)
Polybrominated diphenyl ethers (PBDEs)	0.1% (1000 ppm)
Phthalates(DEHP, BBP, DBP, DIBP)	0.1% (1000 ppm)

The above limits were quoted from 2011/65/EU and (EU) 2015/863 for homogeneous material.

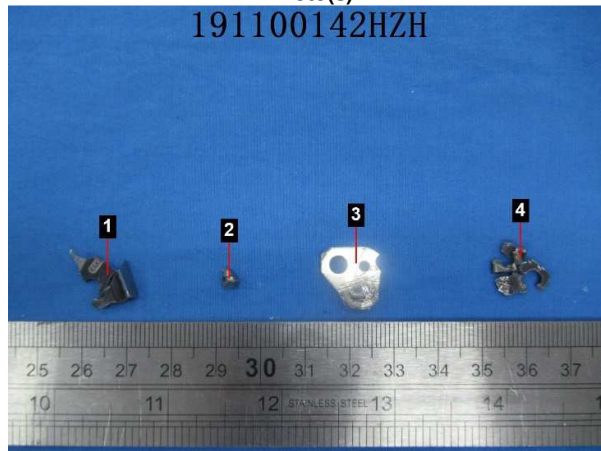
Date sample received: November 07, 2019

Testing period: November 07, 2019 to November 17, 2019

To be continued

Photo(s)

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End of this report

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