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Applicant: OMC CORPORATION LIMITED

Contact information: #7 Zhongke Road, Jiangning District, Nanjing City, 211100 China

The following sample(s) was (were) submitted and identified by client as:

Sample Name : Stepper Motor

Model No. : 17HS19-2004S1

Series Model : Nema 6, Nema 8, Nema 11, Nema 14, Nema 16, Nema 17, Nema 23, Nema

24, Nema 34, Nema 42, Nema 52

Trade mark : STEPPERONLINE

Sample Received Date : Aug. 14, 2020

Testing Period : From Aug. 14, 2020 to Aug. 20, 2020

Test Request : Please refer to next page(s).

Test Result(s) : Please refer to next page(s).

Signed for and on behalf of Shen Zhen UONE Test Co., LTD.

Prepared by

Checked by

Approved by

Marcia Deng

Nora Deng

Levent Liang



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|-------|---------------------------------|---|---|--|---|
| Sum | mary of test results: | | | 10 | |
| TES | T REQUEST | | | CONCLUSION | |
| RoH | | | | | |
| (1) | Polybrominated Biphenyls (PBBs | s) and Polybrominated DiphenylEt | | PASS | |
| (2) | To determine Phthalates (DBP, B | BP, DEHP, DIBP) content by cher | mical test | PASS | |
| | | | | | |
| | Sum TEST RoHS | To determine Lead (Pb), Cadmiu (1) Polybrominated Biphenyls (PBBs content by screening test and che | Summary of test results: TEST REQUEST RoHS Directive 2011/65/EU and its subsequent amendments & Directive To determine Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent (1) Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEic content by screening test and chemical test | Summary of test results: TEST REQUEST RoHS Directive 2011/65/EU and its subsequent amendments & Directive (EU) 2015/863 To determine Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), (1) Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs) content by screening test and chemical test | Summary of test results: TEST REQUEST RoHS Directive 2011/65/EU and its subsequent amendments & Directive (EU) 2015/863 To determine Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), (1) Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs) content by screening test and chemical test |



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Test Material List

| Material No. | Description (Location) | Photo(s) of tested materials |
|--------------|-----------------------------------|------------------------------|
| 1 0 | Metal (housing) coated with black | De TOE TOE TOE |
| 2 | Copper metal (coil) | |
| 3 | Beige plastic case | 1-3 4 5 6 7-10 |
| 4 | Silver metal shaft | |
| M 5 MF | Silver metal (magnet) | |
| 6 | Metal cover with black coating | 00 |
| £7 <u>(</u> | Silver metal (bearing) | |
| 8 | Silver metal cover | |
| 9 | Silver metal (fixed frame) | |
| 10 | Silver metal (ball) | NOI, 1901, 1901, 1911 |
| 11 | Black plastic (terminal case) | 4 4 |
| 12 | Silver metal (pin) | Mr. OHr. OHr. OH |
| 13 | Silver metal (wire) | 11-13 14 15 16 17 18 |
| 14 | Blue plastic (cable) | |
| 15 | Red plastic (cable) | |
| 16 | Green plastic (cable) | |
| 0 17 | Black plastic (cable) | φ 📗 ϙ |
| 18 | The silver label | 10 20 21 |
| 19 | White plastic (gasket) | 19 20 21 |
| 20 | Silver metal (screw) | |
| 21 | Black coated metal (gasket) | |



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Test Result(s):

(1) Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs)

<u>Test Method:</u> IEC62321-3-1: 2013, IEC62321-4: 2013+A1:2017, IEC62321-5: 2013, IEC62321-6: 2015, IEC 62321-7-1:2015, IEC 62321-7-2: 2017, analyzed by EDXRF & ICP-OES & GC-MS & UV-Vis.

| | 'Obs. | EDXRF Result (1) | | | | | Chemical Result (2) | 10 m | (OP) (OP) |
|-----|-------|------------------|----|----|----|----|---------------------|--|------------|
| | No. | Pb | Cd | Hg | Cr | Br | (mg/kg) | Remark ⁽³⁾ | Conclusion |
| | 1 | BL | BL | BL | BL | NA | OHE OHE | Mr -Mr | PASS |
| 1 | 2 | BL | BL | BL | BL | NA | 2 2 2 | 100 | PASS |
| | 3 | BL | BL | BL | BL | BL | - NE | de -de | PASS |
| 1 | 4 | BL | BL | BL | BL | NA | 10, 20, 11 | 2, 170, | PASS |
| | 5 | BL | BL | BL | BL | NA | & - & | & -& | PASS |
| 1 | 6 | BL | BL | BL | BL | NA | 10 20 11 | 12 12 12 12 12 12 12 12 12 12 12 12 12 1 | PASS |
| | 7 | BL | BL | BL | BL | NA | 4 - 4 | 4 - 4 | PASS |
| | 8 | BL | BL | BL | BL | NA | 10 HOT THOIL | Mr. 10 Mr. | PASS |
| | 9 | BL | BL | BL | BL | NA | 0 0 | 2 | PASS |
| | 10 | BL | BL | BL | BL | NA | WE -WE | ME -ME | PASS |
| 1 | 11 | BL | BL | BL | BL | BL | 12 72 11 | 110 | PASS |
| | 12 | BL | BL | BL | BL | NA | JE - JE | <u> </u> | PASS |
| 1 | 13 | BL | BL | BL | BL | NA | 10, 20, 11 | 1, 170, | PASS |
| | 14 | BL | BL | BL | BL | BL | 4 4. | 44. | PASS |
| - / | 15 | BL | BL | BL | BL | BL | 110 HO 170 HO | July 11 Dun. | PASS |
| | 16 | BL | BL | BL | BL | BL | | | PASS |
| | 17 | BL | BL | BL | BL | BL | , on the .c | Mr. Ohr | PASS |
| | 18 | BL | BL | BL | BL | BL | 0. 0. 0. | 0 | PASS |
| | 19 | BL | BL | BL | BL | BL | ME -ME | NE -NE | PASS |
| 1 | 20 | BL | BL | BL | BL | NA | 110, 710, 11 | , 10, | PASS |
| | 21 | BL | BL | BL | BL | NA | <u> </u> | <u>k</u> -k | PASS |



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Remark:

- (1) ①Results are obtained by EDXRF for primary screening, and further wet chemical testing by ICP-OES (for Cd, Pb, Hg), UV-VIS (for Cr(VI)) and GC/MS (for PBBs, PBDEs) is recommended to be performed, if an inconclusive result was found (as "X" in below table) (unit: mg/kg).
 - 20L = Over Limit, BL = Below Limit, X = Inconclusive, NA = Not Applicable.
 - The EDXRF screening test for RoHS elements The reading may be different to the actual content in the sample be of non-uniformity composition.

| Element | Polymer | Metal | Composite Materials |
|---------|------------------------------|------------------------------|-----------------------|
| Cd | BL ≤(70-3σ)< X <(130+3σ)≤ OL | BL ≤(70-3σ)< X <(130+3σ)≤ OL | LOD < X <(150+3σ)≤ OL |
| DI | BL ≤(700-3σ)< X <(1300+3σ)≤ | BL ≤(700-3σ)< X <(1300+3σ)≤ | BL ≤(500-3σ)< X |
| Pb | OL (| & & OL & & | <(1500+3σ)≤ OL |
| 101- | BL ≤(700-3σ)< X <(1300+3σ)≤ | BL ≤(700-3σ)< X <(1300+3σ)≤ | BL ≤(500-3σ)< X |
| Hg | OL | OL | <(1500+3σ)≤ OL |
| Br | BL ≤ (300-3σ)< X | NA | BL ≤ (250-3σ)< X |
| Cr | BL ≤ (700-3σ)< X | BL ≤ (700-3σ)< X | BL ≤ (500-3σ)< X |

Units and limits in EU RoHS Directive 2011/65/EU:

| Element | Pb | Cd | Hg | Cr(VI) | PBBs(single) | PBDEs(single) |
|---------|-------|-------|-------|--------|--------------|---------------|
| Unit | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Limit | 1000 | 100 | 1000 | 1000 | 1000 | 1000 |

(2) ① mg/kg = ppm = 0.0001%, N.D. = Not Detected (Less than RL).

②Unit and RL (Report limit) in wet chemical test.

| Element | Pb | Cd | Hg | Cr(VI) | PBBs(single) | PBDEs(single) |
|---------|-------|-------|-------|--------|--------------|---------------|
| Unit | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| RL | 2 | 2 | 2 | 2 | 5 | 5 |

3According to IEC 62321-7-1:2015, result on Cr(VI) for metal sample is shown as Positive/Negative.

Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) coating.

Storage condition and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

- According to IEC 62321-3-1:2013, this column represents the results of wet chem test.
- (3) This column represents the exempted decoration of material or other related testing sample's information.



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(2) Phthalates (DBP, BBP, DEHP, DIBP) content

Test Method: IEC 62321-8: 2017, analyzed by gas chromatographic- mass spectrometer (GC-MS).

| Substances | DBP | ВВР | DEHP | DIBP | 10HP 10H |
|---------------|---------|---------|----------|---------|------------|
| CAS No. | 84-74-2 | 85-68-7 | 117-81-7 | 84-69-5 | 0 0 |
| Limit (mg/kg) | 1000 | 1000 | 1000 | 1000 | Conclusion |
| RL (mg/kg) | 30 | 30 | 30 | 30 | 110 110 |
| Material No. | ale ale | Result | (mg/kg) | ale ale | ale ale |
| 10, 310, | N.D. | N.D. | N.D. | N.D. | PASS |
| 4 11 4 A | N.D. | N.D. | N.D. | N.D. | PASS |
| 14 | N.D. | N.D. | N.D. | N.D. | PASS |
| 15 | N.D. | N.D. | N.D. | N.D. | PASS |
| 16 | N.D. | N.D. | N.D. | N.D. | PASS |
| 17 | N.D. | N.D. | N.D. | N.D. | PASS |
| 18 | N.D. | N.D. | N.D. | N.D. | PASS |
| 19 | N.D. | N.D. | N.D. | N.D. | PASS |

Note:

- mg/kg = milligram per kilogram (ppm).
- 2. RL = report limit.
- 3. N.D.=not detected(less than RL).



Test Process Flow 1. Lead, Cadmium, Mercury Cut and Weigh the Add Digested Reagents or Completely dissolved and Cool Solutions Samples the Digested Solution Analyzed by ICP-OES Data process Filter the Digested Solution 2. Hexavalent Chromium (Non-metal) Add Digested Reagents or Cut and Weigh the Heat Samples at Proper Samples Solutions temperature Adjust pH value to 7.5±0.5 Cool and then Filter the Add the DI Water and use Nitric acid solution Solution Dipthenylcarbazide Adjust pH value to 2.0±0.5 Analyzed by UV-Vis use Sulfur acid solution Hexavalent Chromium (Metal) Heat Water to boil and keeping Cut sample (50+5) Add 50mL DI water to beaker 10mins cm² Add 1mL color Add 1mL orthophosphoric acid Complement the water to 50mL developing reagent

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

深圳市宇冠检测有限公司 Shen Zhen UONE Test Co., LTD.

Analyzed by UV-Vis

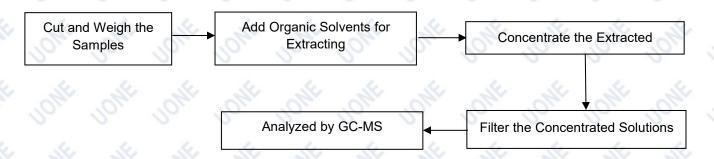
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Test Process Flow (Continued):

3. PBBs & PBDEs, Phthalates



Remark: This report replaces the report whose report No. is U01605200814606E. The original report No. is U01605200814606E will be automatically nullified on the date of issuance of this report.

Photo(s) of Sample:



End of Report

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