

TEST REPORT

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Applicant : KKC CO., LTD
Address : NO.61, LONGHUA RD, ZHOUXIN ST, QINGCHENG DISTRICT,
QINGYUAN, GUANGDONG, CHINA.

Below information submitted by the applicant:

Product Name : Grinder
Model : /
Reference info. : /
Manufacturer info. : /
Supplier info. : /
Buyer info. : /
Country of Destination : /
Country of Origin : China

Sample Received : 08.10, 2022; 08.30, 2022
Test Period : 08.10, 2022 - 09.29, 2022
Test Requirement : Refer to next pages
Test Method : Refer to next pages
Test Result : Refer to next pages
Test Conclusion : Refer to next pages

Revised report, instead of 8621.SHJ1.2208.0037.1, 2022-08-24

Signed for and on behalf of
Jordan Wang, General Manager
BU Chemical Compliance
TUV THURINGEN (SHANGHAI) CO., LTD.
Location: Shanghai

TÜV THÜRINGEN CHINA

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VERSION: 2022.01.01

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RESULT SUMMARY

Food contact materials in accordance with General Requirement (Article 3) in EU Regulation No. 1935/2004, German Food, Articles of Daily Use and Feed Code of September 1 2005 (LFGB) Section 30 and 31, BfR recommendation, Commission Directive 84/500/EEC with amendment 2005/31/EC, Technical Guide on Metals and Alloys used in food contact materials and articles of the 1st edition in 2013, Commission Regulation (EU) No 10/2011 and its subsequent amendment Regulation EU No.321/2011, No.1282/2011, No.1183/2012, No.202/2014, No.865/2014, No. 2015/174, No.2016/1416, No.2017/752, No.2018/79, No.2018/213, No.2019/37, No.2020/1245 on plastic materials and articles intended to come into contact with foodstuffs, AfPS GS 2019:01, test items as below:

| Test Items | Conclusion |
|--|------------|
| 1. Sensorial examination odor and taste | PASS |
| 2. Leachable Lead, Cadmium and Cobalt for ceramic Materials | PASS |
| 3. Specific migration of formaldehyde, PCP and Arsenic content, Pesticide content for wood materials | PASS |
| 4. Leachable heavy metals for metal materials | PASS |
| 5. overall migration; specific migration of primary aromatic amine; soluble heavy metal; specific migration of bisphenol A; specific migration of phthalates; specific migration of acrylonitrile; specific migration of 1,3-butadiene; specific migration of styrene, volatile organic matter; peroxide value, total Lead and Cadmium content for ABS materials | PASS |
| 6. Bisphenol A content for all polymer materials | PASS |
| 7. PAHs in accordance with AfPS GS 2019:01 for all polymer materials | PASS |

SAMPLE DESCRIPTION

| | |
|--------------------|---------------------------------------|
| Sample description | 1#. Ceramic core |
| | 2#. Wood body |
| | 3#. Wood body |
| | 4#. Silvery alu. Axis |
| | 5#. Silvery stainless steel spring |
| | 6#. Silvery stainless steel component |
| | 7#. White ABS |

TEST RESULTS

1. Sensorial examination odor and taste test

Test Method: sensory test with reference to DIN 10955:1983(2004)

| Test Items | Test Results | Permissible Limit |
|---|-----------------|-------------------|
| | Whole product | |
| Test Media | Distilled water | --- |
| Temperature, °C | 70.0 | --- |
| Contact Time, hour | 2.0 | --- |
| Sensorial examination odor | 0.0 | 2.5, max |
| Sensorial examination taste | 0.0 | 2.5, max |
| Comment(s) | PASS | --- |
| Scale evaluation: 0: No perceptible odor 1: Odor just perceptible (still difficult to define) 2: Moderate odor | | |

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| Test Items | Test Results | Permissible Limit |
|---|---------------|-------------------|
| | Whole product | |
| 3: Moderately strong odor 4: Strong odor | | |

2. Specific requirements for ceramic

2.1. Leachable Lead, Cadmium, Cobalt for ceramic materials

Test Method: with reference to DIN 51032-1986, analysis was performed by ICP or AAS

Test Media: 4% Acetic Acid

Test Condition: 22°C for 24hours

| Test Parameter | Units | MDL | Test Results | | | | Permissible Limit |
|----------------------|--------------------|------|------------------------------|---------------------|---------------------|---------------------|--------------------|
| | | | 1#, 1 st | 1#, 2 nd | 1#, 3 rd | 1#, 4 th | |
| Leaching Lead, Pb | mg/dm ² | 0.1 | n.d. | n.d. | n.d. | n.d. | See table 1 |
| Leaching Cadmium, Cd | mg/dm ² | 0.01 | n.d. | n.d. | n.d. | n.d. | |
| Leaching Cobalt, Co | mg/kg | 0.01 | n.d. | n.d. | n.d. | n.d. | Not more than 0.01 |
| Conclusion | | | flatware, non-cookware, PASS | | | | --- |

Table 1, permissible limits for articles made from ceramics, glass ceramics with decorated inner surfaces, and for articles with enameled surfaces.

| Items | | Flatware | | Hollowware | |
|---|--|--------------------------|-----------------------------|------------|---------------|
| | | Lead, mg/dm ² | Cadmium, mg/dm ² | Lead, mg/l | Cadmium, mg/l |
| Tableware Kitchen Equipment | Made from ceramic, glass and glass ceramic | 0.8* | 0.07* | 4.0* | 0.3* |
| | Enameled | 0.8 | 0.07 | 0.8 | 0.07 |
| Cooking & baking utensils, receptacles also used as packaging storage container | Made from ceramic, glass and glass ceramic | 0.4 | 0.05 | 1.5* | 0.1* |
| | Enameled | 0.1 | 0.05 | 0.4 | 0.07 |
| Samples for enameled container, part of equipment and water heater | | 0.1 | 0.05 | --- | --- |

Note: the limits were referred to DIN 51032

* in agreement with EC directive

Table 2, permissible limits of the Lead and Cadmium release from enamelled ware in contact with food.

| Items | | Maximum Lead release | | Maximum Cadmium release | |
|--|-----------------------|----------------------|------|-------------------------|------|
| | | mg/dm ² | mg/L | mg/dm ² | mg/L |
| Foodware without cook ware | Flatware | 0.8 | --- | 0.07 | --- |
| | Hollow ware, up to 3L | --- | 0.8 | --- | 0.07 |
| Cookware | Flatware | 0.1 | --- | 0.05 | --- |
| | Hollow ware, up to 3L | --- | 0.4 | --- | 0.07 |
| Tanks and vessels (capacity over 3L) tested by flat specimen | | 0.1 | --- | 0.05 | --- |

Note: the limits were extracted from the standard ISO 4531-2-1998

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3. Special requirements for wood materials

3.1. Extractable Formaldehyde

Test Method: sample preparation with reference to EN 13130-1:2004, followed by analysis with UV-Vis

| Test Parameter | Test Results | | | Permissible Limit |
|---|---------------------|---------------------|---------------------|-------------------|
| | 2#, 1 st | 2#, 2 nd | 2#, 3 rd | |
| Test Media | 3% acetic acid | | | --- |
| Temperature, °C | 70.0 | 70.0 | 70.0 | --- |
| Contact Time, hour | 2.0 | 2.0 | 2.0 | --- |
| Specific migration of Formaldehyde, mg/kg | 4.3 | 2.9 | <2.0 | ≤15 |
| Comment(s) | PASS | PASS | PASS | --- |

| Test Parameter | Test Results | | | Permissible Limit |
|---|---------------------|---------------------|---------------------|-------------------|
| | 3#, 1 st | 3#, 2 nd | 3#, 3 rd | |
| Test Media | 3% acetic acid | | | --- |
| Temperature, °C | 70.0 | 70.0 | 70.0 | --- |
| Contact Time, hour | 2.0 | 2.0 | 2.0 | --- |
| Specific migration of Formaldehyde, mg/kg | 4.3 | 3.4 | 2.3 | ≤15 |
| Comment(s) | PASS | PASS | PASS | --- |

3.2. PCP, TriCP, TeCP content

Test Method: solvent extracted, with reference to LFGB§64 BVL B 82.02.8, analysis was performed by GCMS

| Test Parameter | | | Test Results | | Permissible Limit |
|-----------------------------------|-------|------|--------------|------|-------------------|
| Test Items | Units | MDL | 2# | 3# | |
| PCP(Pentachlorophenol) content | mg/kg | 0.05 | n.d. | n.d. | 5, max |
| TriCP (Trichlorophenol) Content | mg/kg | 0.05 | n.d. | n.d. | 5, max |
| TeCP (Tetrachlorophenols) Content | mg/kg | 0.05 | n.d. | n.d. | 5, max |
| Comment(s) | --- | --- | PASS | PASS | --- |

3.3. Arsenic content

Test Method: acid digestion, analyzed by ICP-OES, ICP-MS

| Test Parameter | | | Test Results | | Permissible Limit |
|----------------|-------|------|--------------|------|-------------------|
| Test Items | Units | MDL | 2# | 3# | |
| Pesticides | mg/kg | 0.05 | n.d. | n.d. | 0.05, max |

3.4. Pesticides content

Test Method: with reference to EPA Method 8081B, 3620B, 3630C, analysis was performed by GC-MS, GC-ECD, GC-NPD, HPLC-DAD-MSD.

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| Test Parameter | | | Test Results | | Permissible Limit |
|----------------|-------|------|--------------|------|-------------------|
| Test Items | Units | MDL | 2# | 3# | |
| Pesticides | mg/kg | 0.05 | n.d. | n.d. | 0.05, max |

List of Pesticides with detection Limit

| Pesticides | CAS No. | MDL (mg/kg) | Pesticides | CAS No. | MDL (mg/kg) |
|----------------------|------------|-------------|---------------------------------|------------|-------------|
| Axinophosmethyl | 86-50-0 | 0.05 | Hexachlorobenzene | 118-74-1 | 0.05 |
| Azinophosethyl | 2642-71-9 | 0.05 | α -Hexachlorocyclohexane | 319-84-6 | 0.05 |
| Aldrine | 309-00-2 | 0.05 | β -Hexachlorocyclohexane | 319-85-7 | 0.05 |
| Bromophos-ethyl | 4824-78-6 | 0.05 | γ -Hexachlorocyclohexane | 319-86-8 | 0.05 |
| Carbaryl | 63-25-2 | 0.2 | Lindane (g-HCH) | 58-89-9 | 0.05 |
| Chlordane | 57-74-9 | 0.2 | Malathion | 121-75-5 | 0.2 |
| Chlordimeform | 6164-98-3 | 0.5 | Metamidophos | 10265-92-6 | 0.2 |
| Coumaphos | 56-72-4 | 0.05 | Methoxychlor | 72-43-5 | 0.05 |
| Cyfluthrin | 68359-37-5 | 0.2 | Mirex | 10265-92-6 | 0.05 |
| Cyhalothrin | 91465-08-6 | 0.05 | Monocrotophos | 6923-22-4 | 0.2 |
| Cypermethrin | 52315-07-8 | 0.05 | Parathion | 56-38-2 | 0.05 |
| DEF | 78-48-8 | 0.2 | Parathion-methyl | 298-00-0 | 0.2 |
| Deltamethrin | 52918-63-5 | 0.05 | Propethamphos | 31218-83-4 | 0.5 |
| 2,4'-DDD | 53-19-0 | 0.05 | Profenophos | 41198-08-7 | 0.05 |
| 4,4'-DDD | 72-54-8 | 0.05 | Quinalphos | 13593-03-8 | 0.05 |
| 2,4'-DDE | 3424-82-6 | 0.05 | Toxaphen (Camphechlor) | 8001-35-2 | 0.2 |
| 4,4'-DDE | 72-55-9 | 0.05 | Trifluralin | 1582-09-8 | 0.2 |
| 4,4'-DDT | 50-29-3 | 0.05 | 2,4,5-T | 93-76-5 | 0.5 |
| 2,4'-DDT | 789-02-6 | 0.05 | 2,4-D | 94-75-7 | 0.5 |
| Diazinon | 333-41-5 | 0.2 | Captafol | 2425-06-1 | 0.05 |
| Dicrotophos | 141-66-2 | 0.2 | Chlorfenvinphos | 470-90-6 | 0.05 |
| Dieldrine | 60-57-1 | 0.05 | Dichlorprop | 120-36-2 | 0.5 |
| Dimethoate | 60-51-5 | 0.05 | Dinoseb and salts | 88-85-7 | 0.5 |
| α -Endosulfan | 959-98-8 | 0.05 | MCPA | 94-74-6 | 0.5 |
| β -Endosulfan | 33213-65-9 | 0.05 | MCPB | 94-81-5 | 0.5 |
| Endrine | 72-20-8 | 0.05 | Mecroprop | 93-65-2 | 0.5 |
| Esfenvalerat | 66230-04-4 | 0.05 | Phosdrin/ Mevinphos | 7786-34-7 | 0.5 |
| Fenvalerate | 51630-58-1 | 0.05 | Perthane | 72-56-0 | 0.2 |
| Heptachlor | 76-44-8 | 0.05 | Strobane | 8001-50-1 | 0.2 |
| Heptachlorepoxyde | 1024-57-3 | 0.05 | Telodrine | 297-78-9 | 0.2 |

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| Pesticides | CAS No. | MDL (mg/kg) | Pesticides | CAS No. | MDL (mg/kg) |
|------------|-----------|-------------|------------|----------|-------------|
| Isodrine | 465-73-6 | 0.2 | TeCP | 935-95-5 | 0.05 |
| Kelevane | 4234-79-1 | 0.2 | Kepone | 143-50-0 | 0.2 |

4. Specific requirements for metal materials

4.1. Specific release heavy metals – CM/Res(2013)9

Test method: Sample prepared with reference to Technical Guide on Metals and Alloys used in food contact materials and articles of the 1st edition in 2013 (CM/Res(2013)9) and by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and Inductively Coupled Plasma Optical Emission Spectrometer with Mass Detector (ICP-MS) analysis.

Test Condition: 70.0°C/2.0hours with Citric acid (5 g/L) (0.5%)

| Extractable Elements | MDL | 1 st Result | 2 nd Result | 1 st + 2 nd Result | 7*Limit | Unit | mg/kg |
|----------------------|--------|------------------------|------------------------|--|---------|------------------------|--------|
| | | 4# | 4# | 4# | | 3 rd Result | Limit |
| Silver, Ag | 0.01 | n.d. | n.d. | n.d. | 0.56 | n.d. | 0.08 |
| Aluminum, Al | 0.01 | 1.13 | 0.72 | 1.85 | 35 | 0.46 | 5 |
| Chromium, Cr | 0.01 | n.d. | n.d. | n.d. | 1.75 | n.d. | 0.25 |
| Cobalt, Co | 0.01 | n.d. | n.d. | n.d. | 0.14 | n.d. | 0.02 |
| Copper, Cu | 0.01 | n.d. | n.d. | n.d. | 28 | n.d. | 4 |
| Iron, Fe | 0.01 | n.d. | n.d. | n.d. | 280 | n.d. | 40 |
| Magnesium, Mg | 0.01 | n.d. | n.d. | n.d. | --- | n.d. | --- |
| Manganese, Mn | 0.01 | n.d. | n.d. | n.d. | 12.6 | n.d. | 1.8 |
| Molybdenum, Mo | 0.01 | n.d. | n.d. | n.d. | 0.84 | n.d. | 0.12 |
| Nickel, Ni | 0.01 | n.d. | n.d. | n.d. | 0.98 | n.d. | 0.14 |
| Tin, Sn | 0.01 | n.d. | n.d. | n.d. | 700 | n.d. | 100 |
| Titanium, Ti | 0.01 | n.d. | n.d. | n.d. | --- | n.d. | --- |
| Vanadium, V | 0.01 | n.d. | n.d. | n.d. | 0.07 | n.d. | 0.01 |
| Zinc, Zn | 0.01 | n.d. | n.d. | n.d. | 35 | n.d. | 5 |
| Arsenic, As | 0.001 | n.d. | n.d. | n.d. | 0.014 | n.d. | 0.002 |
| Barium, Ba | 0.01 | n.d. | n.d. | n.d. | 8.4 | n.d. | 1.2 |
| Beryllium, Be | 0.01 | n.d. | n.d. | n.d. | 0.07 | n.d. | 0.01 |
| Cadmium, Cd | 0.001 | n.d. | n.d. | n.d. | 0.035 | n.d. | 0.005 |
| Mercury, Hg | 0.001 | n.d. | n.d. | n.d. | 0.021 | n.d. | 0.003 |
| Lithium, Li | 0.01 | n.d. | n.d. | n.d. | 0.336 | n.d. | 0.048 |
| Lead, Pb | 0.001 | n.d. | n.d. | n.d. | 0.07 | n.d. | 0.010 |
| Antimony, Sb | 0.01 | n.d. | n.d. | n.d. | 0.28 | n.d. | 0.04 |
| Thallium, Tl | 0.0001 | n.d. | n.d. | n.d. | 0.0007 | n.d. | 0.0001 |

Note: The submitted sample/component is a repeated use article. The migration test was carried out three times on the same article. The sum of the results of the first and second tests should not exceed seven times the limit (Result 1st test +

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Result 2nd test <7* limit) and the Result 3rd should not exceed the limit.

| Extractable Elements | MDL | 1 st Result | 2 nd Result | 1 st + 2 nd Result | 7*Limit | Unit | mg/kg |
|----------------------|--------|------------------------|------------------------|--|---------|------------------------|--------|
| | | 5# | 5# | 5# | | 3 rd Result | Limit |
| Silver, Ag | 0.01 | n.d. | n.d. | n.d. | 0.56 | n.d. | 0.08 |
| Aluminum, Al | 0.01 | n.d. | n.d. | n.d. | 35 | n.d. | 5 |
| Chromium, Cr | 0.01 | n.d. | n.d. | n.d. | 1.75 | n.d. | 0.25 |
| Cobalt, Co | 0.01 | n.d. | n.d. | n.d. | 0.14 | n.d. | 0.02 |
| Copper, Cu | 0.01 | n.d. | n.d. | n.d. | 28 | n.d. | 4 |
| Iron, Fe | 0.01 | n.d. | n.d. | n.d. | 280 | n.d. | 40 |
| Magnesium, Mg | 0.01 | n.d. | n.d. | n.d. | --- | n.d. | --- |
| Manganese, Mn | 0.01 | n.d. | n.d. | n.d. | 12.6 | n.d. | 1.8 |
| Molybdenum, Mo | 0.01 | n.d. | n.d. | n.d. | 0.84 | n.d. | 0.12 |
| Nickel, Ni | 0.01 | n.d. | n.d. | n.d. | 0.98 | n.d. | 0.14 |
| Tin, Sn | 0.01 | n.d. | n.d. | n.d. | 700 | n.d. | 100 |
| Titanium, Ti | 0.01 | n.d. | n.d. | n.d. | --- | n.d. | --- |
| Vanadium, V | 0.01 | n.d. | n.d. | n.d. | 0.07 | n.d. | 0.01 |
| Zinc, Zn | 0.01 | n.d. | n.d. | n.d. | 35 | n.d. | 5 |
| Arsenic, As | 0.001 | n.d. | n.d. | n.d. | 0.014 | n.d. | 0.002 |
| Barium, Ba | 0.01 | n.d. | n.d. | n.d. | 8.4 | n.d. | 1.2 |
| Beryllium, Be | 0.01 | n.d. | n.d. | n.d. | 0.07 | n.d. | 0.01 |
| Cadmium, Cd | 0.001 | n.d. | n.d. | n.d. | 0.035 | n.d. | 0.005 |
| Mercury, Hg | 0.001 | n.d. | n.d. | n.d. | 0.021 | n.d. | 0.003 |
| Lithium, Li | 0.01 | n.d. | n.d. | n.d. | 0.336 | n.d. | 0.048 |
| Lead, Pb | 0.001 | n.d. | n.d. | n.d. | 0.07 | n.d. | 0.010 |
| Antimony, Sb | 0.01 | n.d. | n.d. | n.d. | 0.28 | n.d. | 0.04 |
| Thallium, Tl | 0.0001 | n.d. | n.d. | n.d. | 0.0007 | n.d. | 0.0001 |

| Extractable Elements | MDL | 1 st Result | 2 nd Result | 1 st + 2 nd Result | 7*Limit | Unit | mg/kg |
|----------------------|------|------------------------|------------------------|--|---------|------------------------|-------|
| | | 6# | 6# | 6# | | 3 rd Result | Limit |
| Silver, Ag | 0.01 | n.d. | n.d. | n.d. | 0.56 | n.d. | 0.08 |
| Aluminum, Al | 0.01 | n.d. | n.d. | n.d. | 35 | n.d. | 5 |
| Chromium, Cr | 0.01 | n.d. | n.d. | n.d. | 1.75 | n.d. | 0.25 |
| Cobalt, Co | 0.01 | n.d. | n.d. | n.d. | 0.14 | n.d. | 0.02 |

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| Extractable Elements | MDL | 1 st Result | 2 nd Result | 1 st + 2 nd Result | 7*Limit | Unit | mg/kg |
|----------------------|--------|------------------------|------------------------|--|---------|------------------------|--------|
| | | 6# | 6# | 6# | | 3 rd Result | Limit |
| Copper, Cu | 0.01 | n.d. | n.d. | n.d. | 28 | n.d. | 4 |
| Iron, Fe | 0.01 | n.d. | n.d. | n.d. | 280 | n.d. | 40 |
| Magnesium, Mg | 0.01 | n.d. | n.d. | n.d. | --- | n.d. | --- |
| Manganese, Mn | 0.01 | n.d. | n.d. | n.d. | 12.6 | n.d. | 1.8 |
| Molybdenum, Mo | 0.01 | n.d. | n.d. | n.d. | 0.84 | n.d. | 0.12 |
| Nickel, Ni | 0.01 | n.d. | n.d. | n.d. | 0.98 | n.d. | 0.14 |
| Tin, Sn | 0.01 | n.d. | n.d. | n.d. | 700 | n.d. | 100 |
| Titanium, Ti | 0.01 | n.d. | n.d. | n.d. | --- | n.d. | --- |
| Vanadium, V | 0.01 | n.d. | n.d. | n.d. | 0.07 | n.d. | 0.01 |
| Zinc, Zn | 0.01 | n.d. | n.d. | n.d. | 35 | n.d. | 5 |
| Arsenic, As | 0.001 | n.d. | n.d. | n.d. | 0.014 | n.d. | 0.002 |
| Barium, Ba | 0.01 | n.d. | n.d. | n.d. | 8.4 | n.d. | 1.2 |
| Beryllium, Be | 0.01 | n.d. | n.d. | n.d. | 0.07 | n.d. | 0.01 |
| Cadmium, Cd | 0.001 | n.d. | n.d. | n.d. | 0.035 | n.d. | 0.005 |
| Mercury, Hg | 0.001 | n.d. | n.d. | n.d. | 0.021 | n.d. | 0.003 |
| Lithium, Li | 0.01 | n.d. | n.d. | n.d. | 0.336 | n.d. | 0.048 |
| Lead, Pb | 0.001 | n.d. | n.d. | n.d. | 0.07 | n.d. | 0.010 |
| Antimony, Sb | 0.01 | n.d. | n.d. | n.d. | 0.28 | n.d. | 0.04 |
| Thallium, Tl | 0.0001 | n.d. | n.d. | n.d. | 0.0007 | n.d. | 0.0001 |

5. Special requirements for ABS materials

5.1. Overall migration test

Test method:

EN 1186-1:2002 guide to the selection of conditions and test methods for overall migration

EN 1186-2:2022 Materials and articles in contact with foodstuffs - Plastics - Part 2: Test methods for overall migration in vegetable oils

EN 1186-3:2022 Materials and articles in contact with foodstuffs - Plastics - Part 3: Test methods for overall migration in evaporable simulants

| Test Parameter | Test Results | Permissible Limit |
|--|--------------|-------------------|
| | 7# | |
| Test Media | MPPO | --- |
| Temperature, °C | 40.0 | --- |
| Contact Time, hour | 240.0 | --- |
| 1 st , Overall migration test, mg/dm ² | <3.0 | --- |
| 2 nd , Overall migration test, mg/dm ² | <3.0 | --- |

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| Test Parameter | Test Results | Permissible Limit |
|--|--------------|-------------------|
| | 7# | |
| 3 rd , Overall migration test, mg/dm ² | <3.0 | 10, max |
| Comment(s) | PASS | --- |

5.2. specific migration of heavy metal

Test Method: with reference to EN 13130-1:2004, followed by analysis using ICP-OES, UV-vis, IC, ICP-MS

| Test Parameter | Test Results | | | Permissible Limit |
|---|---------------------|---------------------|---------------------|-------------------|
| | 7#, 1 st | 7#, 2 nd | 7#, 3 rd | |
| Test Media | 3% acetic acid | | | --- |
| Temperature, °C | 40.0 | 40.0 | 40.0 | --- |
| Contact Time, hour | 240.0 | 240.0 | 240.0 | --- |
| Soluble Aluminum, Al, mg/kg | <0.10 | <0.10 | <0.10 | ≤1.0 |
| Soluble Ammonium, NH ₄ , mg/kg | <0.01 | <0.01 | <0.01 | --- |
| Soluble Antimony, Sb, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.04 |
| Soluble Arsenic, As, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Soluble Barium, Ba, mg/kg | <0.10 | <0.10 | <0.10 | ≤1.0 |
| Soluble Cadmium, Cd, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Soluble Calcium, Ca, mg/kg | <0.01 | <0.01 | <0.01 | --- |
| Soluble Chromium, Cr, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.02 |
| Soluble Cobalt, Co, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.05 |
| Soluble Copper, Cu, mg/kg | <0.10 | <0.10 | <0.10 | ≤5.0 |
| Soluble Europium, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.05 |
| Soluble Gadolinium, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.05 |
| Soluble Iron, Fe, mg/kg | <0.50 | <0.50 | <0.50 | ≤48 |
| Soluble Lanthanum, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.05 |
| Soluble Lead, Pb, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.02 |
| Soluble Lithium, Li, mg/kg | <0.10 | <0.10 | <0.10 | ≤0.6 |
| Soluble Magnesium, Mg, mg/kg | <0.01 | <0.01 | <0.01 | --- |
| Soluble Manganese, Mn, mg/kg | <0.10 | <0.10 | <0.10 | ≤0.6 |
| Soluble Mercury, Hg, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Soluble Nickel, Ni, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.02 |
| Soluble Potassium, K, mg/kg | <0.01 | <0.01 | <0.01 | --- |
| Soluble Sodium, Na, mg/kg | <0.01 | <0.01 | <0.01 | --- |
| Soluble Terbium, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.05 |
| Soluble Zinc, Zn, mg/kg | <0.05 | <0.05 | <0.05 | ≤5.0 |
| Comment(s) | PASS | PASS | PASS | --- |

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5.3. Specific migration test of primary aromatic amine

Test method: Sample preparation with reference to EN 13130-1:2004, followed by analysis with reference to DIN 55610:1986.

| Test Parameter | Test Results | | | Permissible Limit |
|---|---------------------|---------------------|---------------------|-------------------|
| | 7#, 1 st | 7#, 2 nd | 7#, 3 rd | |
| Test Media | 3% acetic acid | | | --- |
| Temperature, °C | 40.0 | 40.0 | 40.0 | --- |
| Contact Time, hour | 240.0 | 240.0 | 240.0 | --- |
| Specific migration of 2-Anisidine, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4,4'-Benzidine, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4,4'-Methylene-bis(2-chloroaniline), mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4,4'-Diaminodiphenylmethane, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4,4'-Oxydianiline, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4-Chloroaniline, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 3,3'-Dimethoxybenzidine, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 3,3'-Dimethylbenzidine, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 2-Methoxy-5-methylaniline, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 2,4,5-Trimethylaniline, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4,4'-Thiodianiline, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4-Aminoazobenzene, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 2,4-Diaminoanisole, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4,4'-Diamino-3,3'-dimethyldiphenyl methane, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 2-Naphthylamine, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 3,3'-Dichlorobenzidine, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4-Aminobiphenyl, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 2-Toluidine, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 4-Chloro-2-methylaniline, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 2,4-Diaminotoluene, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 2-Aminoazotoluene, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 2-Amino-4-nitrotoluene, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of 1,3-Phenylenediamine, mg/kg | <0.002 | <0.002 | <0.002 | ≤0.002 |
| Specific migration of primary aromatic amine, mg/kg | <0.01 | <0.01 | <0.01 | ≤0.01 |
| Comment(s) | PASS | PASS | PASS | --- |

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5.4. Specific Migration of Bisphenol A

Test Method: sample preparation with reference to EN 13130-1:2004, analysis by GC/MS

| Test Parameter | Test Results | | | Permissible Limit |
|--|---------------------|---------------------|---------------------|-------------------|
| | 7#, 1 st | 7#, 2 nd | 7#, 3 rd | |
| Test Media | 3% acetic acid | | | --- |
| Temperature, °C | 40.0 | 40.0 | 40.0 | --- |
| Contact Time, hour | 240.0 | 240.0 | 240.0 | --- |
| Specific migration of Bisphenol A, mg/kg | <0.05 | <0.05 | <0.05 | 0.05, max |
| Comment(s) | PASS | PASS | PASS | --- |

5.5. Specific migration of softeners and phthalates

Test Method: Sample preparation with reference to EN 13130-1:2004, followed by analysis with GC/MS

| Test Parameter | Test Results | | | Permissible Limit |
|---|---------------------|---------------------|---------------------|-------------------|
| | 7#, 1 st | 7#, 2 nd | 7#, 3 rd | |
| Test Media | 3% acetic acid | | | --- |
| Temperature, °C | 40.0 | 40.0 | 40.0 | --- |
| Contact Time, hour | 240.0 | 240.0 | 240.0 | --- |
| Specific migration of DEHP, mg/kg | <0.05 | <0.05 | <0.05 | 1.5, max |
| Specific migration of DBP, mg/kg | <0.05 | <0.05 | <0.05 | 0.3, max |
| Specific migration of BBP, mg/kg | <0.05 | <0.05 | <0.05 | 30, max |
| Specific migration of DINP, mg/kg | <0.05 | <0.05 | <0.05 | 9, max |
| Specific migration of DIDP, mg/kg | <0.05 | <0.05 | <0.05 | 9, max |
| Specific migration of DEHT, mg/kg | <0.05 | <0.05 | <0.05 | 60, max |
| Specific migration of DEHA, mg/kg | <0.05 | <0.05 | <0.05 | 18, max |
| Specific migration of other phthalates and softeners, mg/kg | <0.05 | <0.05 | <0.05 | 0.05, max |
| Comment(s) | PASS | PASS | PASS | --- |

5.6. Total Lead and Cadmium Content

Test Method: with reference to EN 1122, analysis was performed by ICP-OES/ AAS.

| Test Parameter | Units | MDL | Test Results | Permissible Limit |
|-----------------------|-------|-----|--------------|-------------------|
| | | | 7# | |
| Total Lead Content | mg/kg | 2 | n.d. | 40, max |
| Total Cadmium Content | mg/kg | 2 | n.d. | 20, max |

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5.7. Peroxide Value

Test Method: with reference to European Pharmacopeia 5.0, Ph.Eur. Method 2.5.5

| Test Parameter | Units | MDL | Test Results | Permissible Limit |
|----------------|-------|-----|--------------|-------------------|
| | | | 7# | |
| Peroxide value | --- | --- | Neg. | Negative |

5.8. Volatile organic matter

Test method: With reference to LFGB BfR Part B Part II Section XV, May 2003 and LFGB section 35 B80.301(EG).

Test condition: 90°C, 24 hours

| Test Parameter | Units | MDL | Test Results | Permissible Limit |
|------------------------------|--------------------|-----|--------------|-------------------|
| | | | 7# | |
| Volatile organic matter, VOM | mg/dm ² | 1.0 | n.d. | 15, max |

5.9. Specific migration of Acrylonitrile, Styrene and 1,3-butadiene

Test Method: sample preparation with reference to EN 13130-1:2004, EN 13130-3:2004, analysis by HS-GC/MS

| Test Parameter | Test Results | | | Permissible Limit |
|--|---------------------|---------------------|---------------------|-------------------|
| | 7#, 1 st | 7#, 2 nd | 7#, 3 rd | |
| Test Media | 3% acetic acid | | | --- |
| Temperature, °C | 40.0 | 40.0 | 40.0 | --- |
| Contact Time, hour | 240.0 | 240.0 | 240.0 | --- |
| Specific migration of Acrylonitrile, mg/kg | <0.01 | <0.01 | <0.01 | 0.01, max |
| Specific migration of Styrene, mg/kg | <0.01 | <0.01 | <0.01 | 0.05, max |
| Specific migration of 1,3-butadiene, mg/kg | <0.01 | <0.01 | <0.01 | 0.01, max |
| Comment(s) | PASS | PASS | PASS | --- |

6. Other chemical safety requirements

6.1. Bisphenol A content

Test Method: with reference to EPA 3550, solvent extracted, followed analyzed by GC/MS and LC/MS/MS

| Test Parameter | Units | MDL | Test Results | Permissible Limit |
|---|-------|------|--------------|-------------------|
| | | | 7# | |
| Bisphenol A content BPA, CAS No.80-05-7 | mg/kg | 0.05 | n.d. | 0.05, max |

6.2. PAHs content

Test Method: With reference to AFPS GS 2019:01, Analysis was performed by GC-MS.

| Test Parameter | Units | MDL | Test Results | Permissible Limit |
|----------------|-------|-----|--------------|-------------------|
| | | | 7# | |
| Naphthalene | mg/kg | 0.2 | n.d. | Refer to form |
| Phenanthrene | mg/kg | 0.2 | n.d. | Refer to form |
| Anthracene | mg/kg | 0.2 | n.d. | Refer to form |
| Fluoranthene | mg/kg | 0.2 | n.d. | Refer to form |

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| Test Parameter | Units | MDL | Test Results | Permissible Limit |
|------------------------|-------|-----|---------------|-------------------|
| | | | 7# | |
| Pyrene | mg/kg | 0.2 | n.d. | Refer to form |
| Benzo[a]anthracene | mg/kg | 0.2 | n.d. | Refer to form |
| Chrysene | mg/kg | 0.2 | n.d. | Refer to form |
| Benzo[b]fluoranthene | mg/kg | 0.2 | n.d. | Refer to form |
| Benzo[k]fluoranthene | mg/kg | 0.2 | n.d. | Refer to form |
| Benzo[a]pyrene | mg/kg | 0.2 | n.d. | Refer to form |
| Indeno[1,2,3-cd]pyrene | mg/kg | 0.2 | n.d. | Refer to form |
| Dibenzo[a,h]anthracene | mg/kg | 0.2 | n.d. | Refer to form |
| Benzo[g,h,i]perylene | mg/kg | 0.2 | n.d. | Refer to form |
| Benzo[j]fluoranthene | mg/kg | 0.2 | n.d. | Refer to form |
| Benzo[e]pyrene | mg/kg | 0.2 | n.d. | Refer to form |
| Sum of 15 PAHs | mg/kg | --- | Cat.1 PASS | Refer to form |

LIMITS FOR PAH IN PRODUCTS according to AfPS Document GS 2019:01

| Parameter | Materials, that are intended to be put into the mouth or materials in toys with intended and prolonged skin-contact (longer than 30s) | Materials, not covered by category 1, with foreseeable skin-contact of > 30 s (prolonged skin-contact) or short-term repetitive contact with the human skin | | Materials, not covered by category 1 or 2, with foreseeable skin-contact of up to 30 s (short-term skin contact) | |
|--|---|---|--|--|--|
| | | Toys according to Toy Directive 2009/48/EU | Other products according to Product Safety Act | Toys according to Toy Directive 2009/48/EU | Other products according to Product Safety Act |
| Benzo[a]pyrene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Benzo[e]pyrene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Benzo[a]anthracene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Benzo[b]fluoranthene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Benzo[j]fluoranthene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Benzo[k]fluoranthene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Benzo[g,h,i]perylene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Chrysene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Dibenzo[a,h]anthracene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Indeno[1,2,3-cd]pyrene | <0.2 | <0.2 | <0.5 | <0.5 | <1 |
| Phenanthrene, Pyrene, Anthracene, Fluoranthene | Sum<1 | Sum<5 | Sum<10 | Sum<20 | Sum<50 |
| Naphthalene | <1 | <2 | <2 | <10 | <10 |
| Sum 15 PAHs | <1 | <5 | <10 | <20 | <50 |

Note:

1. The products in category 2 and category 3 are divided into two groups with respective limits: toys according to directive 2009/48/EC and all other products according to ProdSG.
2. Add the requirement of repeated short term skin contact material in category 2

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Note,

%, percentage; mg, milligrams; g, grams; kg, kilograms
mg/kg = milligrams per kilograms; mg/L = milligrams per litre
0.1% = 1000mg/kg = 1000mg/L
< = less than; > = greater than
MDL = method detection limit
n.d. = not detected, < MDL
n.a. = not applicable
n.r. = not required
EX = abbr. of Exempted

***** To be continued *****



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SAMPLE IMAGE



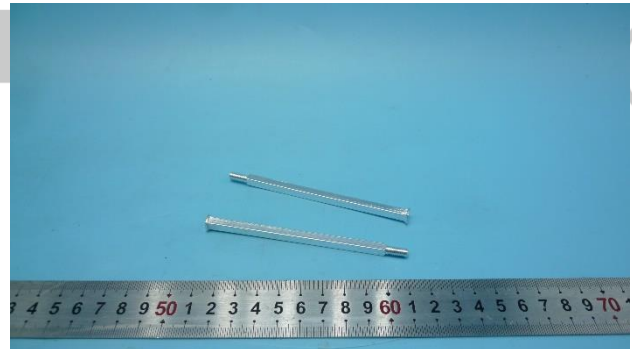
1#



2#



3#



4#



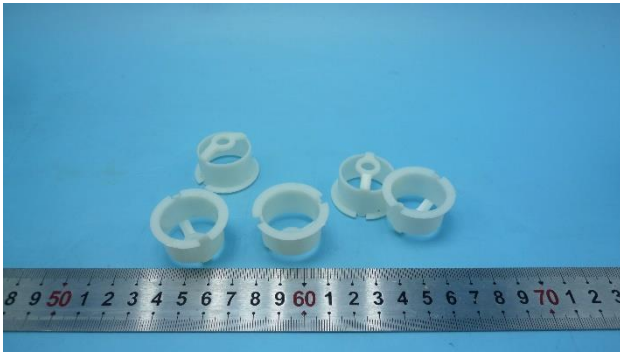
5#



6#

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7#

***** END OF REPORT *****

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