

BESTSUB TECHNOLOGIES CO LTD
RM810 EXCHANGE SQUARE, NO268 DONGFENG ZHONG ROAD, YUEXIU DISTRICT,
GUANGZHOU 510030 CHINA

The following sample(s) was/were submitted and identified on behalf of the client as:

Sample Description : 10OZ COLOR CHANGING MUG (BLACK, MATT)
Style / Item No. : B1CB-02
Test Performed : Selected test(s) as requested by applicant
Sample Receiving Date : May 08, 2014
Test Performing Date : May 08, 2014 to May 21, 2014
Test Result(s) : For further details, please refer to the following page(s)

Signed for and on behalf of
SGS-CSTC Ltd.



Jason Cheung
Approved Signatory



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I . Physical Test

Part 1 Dishwasher resistance (BS EN 12875)

1. Test conducted:

BS EN 12875-4: 2006 Mechanical dishwashing resistance of utensils — Part 4: Rapid test for domestic ceramic articles

2. Scope: This European Standard specifies a rapid method for testing the dishwashing resistance of ceramic articles intended for domestic use. It does not define the number of dishwashing cycles that any given product should withstand.

Test sample description :	Mug
Number of Tested Sample(s):	4 Pieces
Number of Controlled Sample(s):	1 Piece

3. Test Procedure:

With reference to BS EN 12875-4: 2006 Test method

4. Test Result as follows:

4.1 After 16hours:

	Articles with or without decoration (Category of articles)	Test specimen number	Color	Gloss	Clouding	Resistant deposits and iridescent layers	Other aspects
Inspector 1	Ceramic Tableware	1#	0	0	/	0	0
		2#	0	0	/	0	0
		3#	0	0	/	0	0
		4#	0	0	/	0	0
Average			0	0	/	0	0
Inspector 2	Ceramic Tableware	1#	0	0	/	0	0
		2#	0	0	/	0	0
		3#	0	0	/	0	0
		4#	0	0	/	0	0
Average			0	0	/	0	0
Overall rating			0	0	/	0	0



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4.2 After 32hours:

	Articles with or without decoration (Category of articles)	Test specimen number	Color	Gloss	Clouding	Resistant deposits and iridescent layers	Other aspects
Inspector 1	Ceramic Tableware	1#	0	0	/	0	0
		2#	0	0	/	0	0
		3#	0	0	/	0	0
		4#	0	0	/	0	0
Average			0	0	/	0	0
Inspector 2	Ceramic Tableware	1#	0	0	/	0	0
		2#	0	0	/	0	0
		3#	0	0	/	0	0
		4#	0	0	/	0	0
Average			0	0	/	0	0
Overall rating			0	0	/	0	0

Note:

Classification	Rating
0	No visible change
1	First discernible change
2	Clearly visible change



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Part 2 Microwave resistance (BS EN 15284)

1. Test conducted:

BS EN 15284: 2007 Materials and articles in contact with food stuffs – Test method for the resistance to microwave heating of ceramic, glass, glass-ceramic or plastics cookware

2. Scope: This European Standard specifies a method for the determination of the resistance to microwave heating of cookware made of ceramic, glass, glass-ceramic or plastics. It is applicable to articles that are intended for multiple re-use in a microwave oven. It is not applicable to articles, particularly those made from plastics, which are intended to be discarded after one use.

Test sample description :	Mug
Number of Tested Sample(s):	3 Pieces
Number of Controlled Sample(s):	1 Piece

3. Test Procedure:

With reference to BS EN 15284: 2007 test method.

4. Test Requirement:

4.1 Visually inspect the test specimen for damage according to the criteria in Table 1.

Table 1 --- inspection criteria

Material	Cracking	Crazing	Scaling	Color	Melting	Deformation	Suitability for re-use	Charring
Ceramic	+	+ ^a	+ ^b	+ ^c				
Glass, glass-ceramic	+		+b	+ ^c				
Plastics	+			+ ^c	+ ^d	+	+ ^e	+

(+)= to be inspected

^a refers to the glaze

^b refers to on-glaze decoration

^c if several colors are present on one article to be inspected, the color with the greatest change shall be chosen

^d article shall not be too soft to handle

^e article shall be washable and stain resistant

NOTE 1 For the color criterion, an inspector and inspection site that meet the requirements of Clause 4 and 5.2 of EN 12875-2:2001 are required [2]

4.2 The maximum surface temperature of handles after the short period heating (6.6) shall not exceed the following limit values:

ceramic, glass-ceramic or glass: 56 °C;

plastics: 60 °C.



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NOTE 1 These temperatures can be found by reference to a one minute contact time in EN ISO 13732-1 [1].

NOTE 2 As temperatures measured after the long period of heating vary significantly depending on the microwave oven used for testing, no temperature limit values apart from those for handles are given.

5. Test Result:

Pass

- 1) Visually inspect the test specimen: No visible change.
- 2) The highest surface temperature: 32.4°C (after the short period)
86.7°C (after the long period)

Part 3 Thermal Shock Test

Test Conducted: BS EN 1183-1997 Materials and articles in contact with foodstuffs-Test methods for thermal shock and thermal shock endurance – Test Method B

Scope: - This European Standard specifies test methods for thermal shock and for thermal shock endurance for brittle materials, for example glass, glass-ceramics and ceramics intended for use in ovens or as tableware.
Two test methods are described:
- Test method A is used for articles known to be sensitive to thermal shock.
- Test method B is generally applicable
The test method to be applied depends on the intended use of the article and/or its thermal shock resistance.

Number of Tested Sample(s)	:	3 Pieces
Number of Controlled Sample(s)	:	1 Piece

Test Procedure:

- a). Remove any dirt or loose debris from the samples and, if necessary, dry the sample.
- b). Fill the cold water bath with water, containing a staining agent, to a volume equal to not less than five times the apparent volume of the overall dimensions of the samples to be tested (including the volume of the basket) and to a depth sufficient for complete immersion of the samples plus not less than 50mm. Locate to the test oven and adjust and maintain the water temperature to within ±2°C of the specified lower temperature, t₂.
- c). Place the samples, either separately or contained in the basket in the test oven which has been previously heated to the upper temperature, t₁. Maintain the samples at the temperature until they have reached equilibrium.
- d). Remove the samples from the test oven either one at a time, holding them with the tongs or, if the samples are large or contained in the basket, with the gloves. Immerse the samples without impact completely in the cold water bath for a specified period between 8 s and 2 min ensuring that all hollowware is filled with water.



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Complete the process of transferring each sample, or the basket with samples, from opening of the test oven to immersion in (5±1s). ensure that the difference in temperature between the test oven and the cold water is not more than ±3°C from the required temperature value at the time of transference.

- e). Remove the samples from the cold water bath. Inspect immediately each sample for any chipping, cracking, crazing or breakage and determine the number of samples which have failed the test.

Test Requirement:

Inspect immediately each sample for chipping, cracking, crazing or breakage and determine the number of samples which have failed the test.

Test Result: PASS

Number of samples	t ₁ °C	t ₂ °C	t ₁ - t ₂ °C	Number of failures	Mode of failure
3 Pieces	280	20	260	0	/

Part 4 Handle Strength

Test Conducted: CERAM PT32

Test sample: 3 Pieces

Test Result: Type 1: Cup

Sample No.	Handle Strength Failure Value (Nm)	Pass
1	0.14	H
2	0.17	H
3	0.17	H
Mean	0.16	---

H: Handle Broke; P: Handle detached at point of contact; T: Test piece broke
The average handle failure = 0.16 Nm;

**The failure shall not be at the handle/body interface (Nature of Failure shall not be P), the average impact energy to produce handle failure shall not be less than 0.05J (0.04 ft.lbf).
The samples meet the requirements of BSI PAS 54, December 2003.**



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Sample Photo:



II. SGS Ref No.: CANHG1407219201

Result Summary :

Test Requested

European Council Directive 84/500/EEC & 2005/31/EC - Leachable Lead and Cadmium
Leachable Cobalt

Conclusion

PASS
PASS

Conclusion : When tested as specified, the tested parameters comply with the requirement stating under Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004.

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description	Material (claimed by the client)
SN1	CAN14-072192.001	Ceramic mug	ceramic



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European Council Directive 84/500/EEC & 2005/31/EC - Leachable Lead and Cadmium

Test Requested : As specified by client, to determine Leachable Lead and Cadmium from Ceramic used in contact with food for compliance with European Council Directive 84/500/EEC and its amendment Commission Directive 2005/31/EC.

Test Method : As specified in EEC Directive 84/500/EEC & 2005/31/EC. Analysis was performed by ICP-OES.

Sample 001 Category 2

	<u>Vol. of 4%HAc used for vessel(mL)</u>	<u>Depth (mm)</u>
1	350	85
	<u>Leachable Lead (mg/L)</u>	<u>Leachable Cad- mium(mg/L)</u>
1	<0.1	<0.01
Limit	4.0	0.3

Notes :

Category 1: Articles that cannot be filled and articles that can be filled, the internal depth of which does not exceed 25 mm.

Category 2: Articles, not in categories 1 or 3, which can be filled.

Category 3: Cooking ware; packaging and storage vessels having a capacity of more than three liters.

Leachable Cobalt

Test Requested : As specified by client, to determine the Leachable Cobalt contents from the submitted samples.

Test Method : As specified in EEC Directive 84/500/EEC & 2005/31/EC. Analysis was performed by ICP-OES.

Sample 001 Hollowware

	<u>Vol. of 4%HAc used for vessel(mL)</u>	<u>Depth (mm)</u>
1	350	85
	<u>Leachable Cobalt (mg/L)</u>	
1	<0.05	
Limit	0.05	



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Notes :

Limit = Recommended Limit

Sample photo:



CAN14-072192.001

End of Report

