



Test Report

No.HKHL1305046451JL

Date: JUN 14, 2013

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THERMOLON KOREA CO., LTD
11-16, NOKSANSANDAN 165-RO, 14BEON-GIL (SONGJEONG-DONG),
GANGSEO-GU, BUSAN, 618-817, SOUTH KOREA

The following samples were submitted and identified on behalf of the client as:

THERMOLON™ NON-STICK / THERMOLON™ ENDURANCE2 / THERMOLON™ RESILIENCE2

SGS Case No. : HKHL130500030145
Manufacturer : THERMOLON KOREA CO., LTD
Country of Origin : SOUTH KOREA
Sample Receiving Date : MAY 07, 2013
Test Performing Date : MAY 07 – 20, 2013

Test Requested : Please refer to the result summary.

Test Method & Results : Please refer to next page(s).

Result Summary :

Test Requested	Conclusion
1. German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and BfR recommendation.	--
a) Non-stick coating – Overall migration test	PASS
b) Non-stick coating – Specific migration of Phenol	PASS
c) Non-stick coating – Specific migration of Formaldehyde	PASS
d) Non-stick coating – Specific migration of Primary Aromatic Amine	PASS
e) Non-stick coating – Specific migration of Chromium (VI)	PASS
f) Non-stick coating – Specific migration of Chromium (III)	PASS
g) Non-stick coating – Specific migration of Perfluorooctanoic acid (PFOA)	PASS

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Result Summary :

Test Requested	Conclusion
2. German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30.	--
a) Metal – Extractable heavy metals	PASS
3. German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 31.	--
a) Sensorial examination odour and taste test	PASS
4. Council of Europe Resolution AP (2004) 1 and hence Article 3 of European Regulation No. 1935/2004.	--
a) Non-stick coating – Overall migration	PASS
5. European Directive 84/500/EEC and its amendment 2005/31/EC – Leachable Lead and Cadmium	PASS
6. US FDA 21 CFR 175.300 – Determination of Amount of Extractives	PASS

 Signed for and on behalf of
 SGS Hong Kong Ltd.



 Che Wai Leuk, Jerry
 Section Manager

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Test Results :

1) German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and BfR recommendation.

a) Non-stick coating – Overall migration

Method : With reference to EN 1186-1:2002 for selection of conditions and test methods;
 EN 1186-9:2002 aqueous food simulants by article filling method;
 EN 1186-14:2002 substitute test.

Simulant Used	Test Condition	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible Limit (mg/kg)
		1		
3% Acetic Acid (W/V) Aqueous Solution	2 hours at 100°C	ND	5.0	60
50% Ethanol (V/V) Aqueous Solution	2 hours at 100°C	ND	5.0	60
Fatty food substitute				
95% Ethanol	6 hours at 60°C	ND	5.0	60
Isooctane	4 hours at 60°C	ND	5.0	60
Comment	--	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

Note : 1. mg/kg = milligram per kilogram of foodstuff in contact with
 2. °C = degree Celsius
 3. ND = Not Detected

b) Non-stick coating – Specific migration of Phenol

Method : Sample preparation in 3% acetic acid (w/v) in aqueous solution at 95°C for 60 minutes, followed by analysis using UV-visible Spectrometry.

Test Item	Result (mg/dm ²)	Reporting Limit (mg/dm ²)	Permissible Limit (mg/dm ²)
	1		
Specific migration of Phenol	ND	0.05	0.05
Comment	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

Note : 1. mg/dm² = milligram per square decimeter
 2. °C = degree Celsius
 3. ND = Not Detected

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Test Results (Con't) :

c) Non-stick coating – Specific migration of Formaldehyde

Method : Sample preparation in 3% acetic acid (w/v) in aqueous solution at 95°C for 60 minutes, followed by analysis using UV-visible Spectrometry.

Test Item	Result (mg/dm ²)	Reporting Limit (mg/dm ²)	Permissible Limit (mg/dm ²)
	1		
Specific migration of Formaldehyde	ND	0.1	2.5
Comment	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

 Note : 1. mg/dm² = milligram per square decimeter

2. °C = degree Celsius

3. ND = Not Detected

d) Non-stick coating – Specific migration of Primary Aromatic Amine

Method : Sample preparation in 3% acetic acid (w/v) in aqueous solution at 95°C for 60 minutes, followed by analysis using UV-visible Spectrometry.

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Requirement
	1		
Specific migration of Primary Aromatic Amine	ND	0.02	Not detectable
Comment	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

Note : 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. °C = degree Celsius

3. ND = Not Detected



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Test Results (Con't) :

e) Non-stick coating – Specific migration of Chromium (VI)

Method : Sample preparation in 3% acetic acid (w/v) in aqueous solution at 95°C for 60 minutes, followed by analysis using UV-visible Spectrometry.

Test Item	Result (mg/L)	Reporting Limit (mg/L)	Requirement
	1		
Specific migration of Chromium (VI)	ND	0.02	Not detectable
Comment	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

Note : 1. mg/L = milligram per litre

2. °C = degree Celsius

3. ND = Not Detected

f) Non-stick coating – Specific migration of Chromium (III)

Method : Sample preparation in 3% acetic acid (w/v) in aqueous solution at 95°C for 60 minutes, followed by analysis using UV-visible Spectrometry and Inductively Coupled Argon Plasma Spectrometry.

Test Item	Result (mg)	Reporting Limit (mg)	Permissible Limit (mg)
	1		
Specific migration of Chromium (III)	ND	0.02	0.02
Comment	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

Note : 1. mg = milligram

2. °C = degree Celsius

3. ND = Not Detected

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Test Results (Con't) :

g) Non-stick coating – Specific migration of Perfluorooctanoic acid (PFOA)

Method : Sample Preparation with reference to EN13130-1:2002, followed by analysis using Liquid Chromatography Mass Spectrometry (LC-MS).

Simulant Used	Test Condition	Result (mg/dm ²)	Reporting Limit (mg/dm ²)	Permissible Limit (mg/dm ²)
		1		
3% Acetic Acid (W/V) Aqueous Solution	60 minutes at 95°C	ND	0.002	0.005
Comment	--	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

 Note : 1. mg/dm² = milligram per square decimeter
 2. °C = degree Celsius
 3. ND = Not Detected

2) German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30.

a) Metal – Extractable heavy metals

Method : Sample preparation in 3% acetic acid (w/v) in aqueous solution at 100°C for 2 hours with reference to EN13130-1:2004 for selection of test method, followed by analysis using Inductively Coupled Argon Plasma Spectrometry (ICP).

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Recommended Limit (mg/kg)
	1		
Extractable Chromium	ND	0.05	1
Extractable Nickel	ND	0.05	0.07
Extractable Lead	ND	0.01	0.02
Extractable Cadmium	ND	0.002	0.002
Extractable Copper	ND	0.10	5
Extractable Cobalt	ND	0.01	0.05
Extractable Aluminium	0.27	0.20	2
Extractable Manganese	ND	0.25	0.6
Comment	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

 Note : 1. mg/kg = milligram per kilogram of foodstuff in contact with
 2. °C = degree Celsius
 3. ND = Not Detected

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Test Results (Con't) :

3) German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 31.

a) Sensory examination – odour and taste test

Method : With reference to DIN10955:2004-06.

Test Item	Result	Permissible Limit
	1	
Sensorial examination odour (Intensity scale)	1.0	2.5
Sensorial examination taste (Intensity scale)	1.0	2.5
Comment	PASS	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

Note : Intensity scale :

- 0 – no perceptible deviation
- 1 – deviation just perceptible
- 2 – moderate deviation
- 3 – distinct deviation
- 4 – large deviation

4) Council of Europe Resolution AP (2004) 1

a) Non-stick Coating – Overall migration

Method : With reference to EN 1186-1:2002 for selection of conditions and test methods;

EN 1186-9:2002 aqueous food simulants by article filling method;

EN 1186-14:2002 substitute test.

Simulant Used	Test Condition	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible Limit (mg/kg)
		1		
3% Acetic Acid (W/V) Aqueous Solution	2 hours at 100 °C	ND	5.0	60
50% Ethanol (V/V) Aqueous Solution	2 hours at 100 °C	ND	5.0	60
Fatty food substitute				
95% Ethanol	6 hours at 60 °C	ND	5.0	60
Isooctane	4 hours at 60 °C	ND	5.0	60
Comment	--	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

Note : 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. °C = degree Celsius

3. ND = Not Detected

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Test Results :

5) European Directive 84/500/EEC and its amendment 2005/31/EC – Leachable Lead and Cadmium

Method : With reference to European Directive 84/500/EEC and its amendment 2005/31/EC. Analysis was performed by Atomic Absorption Spectrometry.

Test Item	Results	Reporting Limit	Category 2 Limit
	1		
Released Lead (mg/L)	ND	0.1	4.0
Released Cadmium (mg/L)	ND	0.01	0.3
Volume of 4% Acetic acid used (mL)	2100	--	--
Height (mm)	52	--	--
Diameter (mm)	240	--	--
Comment	PASS	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

Note : 1. mg/L = milligram per liter
2. ND = Not Detected

Remark : 1. Category 1 – Articles which cannot be filled and articles which can be filled, the internal depth of which does not exceed 25 mm.
2. Category 2 – Articles, not in categories 1 or 3, which can be filled.
3. Category 3 – Cooking ware; packaging and storage vessels having a capacity of more than three litres.

6) US FDA 21 CFR 175.300 – Determination of Amount of Extractives

Method : With reference to US FDA 21 CFR 175.300.

For repeated use :

Extractants	Test Condition	Result (mg/inch ²)	Reporting Limit (mg/inch ²)	Permissible Limit (mg/inch ²)	Limit Related to 0.005% of Water Capacity (mg/inch ²)
		1			
Distilled Water	250°F for 2 hours	ND	1.0	18	1.14
8% Alcohol	250°F for 2 hours	ND	1.0	18	1.14
n-Heptane	150°F for 2 hours	ND	1.0	18	1.14
Comment	--	PASS	--	--	--

Sample Description :

1. Metal w/ Grey Non-stick Coating (Pan)

Note : 1. mg/inch² = milligram per square inch
2. °F = degrees Fahrenheit
3. ND = Not Detected

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Photo Appendix



Sample as received

*** End of Report ***

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