since 1987
KFCC
Ceramica®
World First, World Best

COOKWARE COATINGS

KOREA FINE CERAMIC CO., LTD.

KFCC Ceramica®

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Greetings

Korea Fine Ceramic Co., Ltd., also known as KFCC had been established in 1987 with a slogan, “Technology for Human Happiness”, which created functional fine ceramic coating materials at the first time, which was also successfully commercialized in the world market.

KFCC developed eco-friendly fine ceramic coating material being applied for various items and fields through constant research and development as well as sincere endeavor, gaining recognition for KFCC’s technical skill and quality in the world market.

Based on a spirit for “Human Happiness”, KFCC always expends times and effort for continuous development. KFCC makes our lives comfortable and enhanced in various applications, although nobody could recognize KFCC’s technology.

KFCC won’t be satisfied with the top position in the market, and even makes more efforts to expand its business to the global market with the entrepreneurial spirit for the greater value.

Thinking of social value, KFCC is a member of society doing its best anytime and anywhere to be a respectful company and will always get closer to happiness for all of society members.

KFCC will constantly try to satisfy customers’ demands, through making continuous research and development always to be with you.
Thank you.

Korea Fine Ceramic Co., Ltd.

History

1980’s

1987.02 Incorporation
1987.12 Selected as the blue chip medium and small enterprises (the Ministry of Commerce and Industry)

1990’s

1990.02 Developed high functional thin film type fine ceramic coating material with KAIST as a national policy material development assignment
1991.09 Established a technical research institute(the Ministry of Scientific Technique)
1994.03 Developed ‘non-flammable and weathering resistance ceramic coating’ with Korea institute of Energy Research
1995.01 Developed ‘Industrial high temperature ceramic coating material’ with Korea Institute of Machinery and Materials
1995.11 Acquired KT(Korea New Technology) mark (the Ministry of Scientific Technique)
1997.05 Concluded an export contract for ceramic coating material with NGK in Japan
1997.07 Received a prize for development of excellence fine ceramic construction materials
1997.11 Developed non-stick fine ceramic coating material for cookware
1998.04 Developed ‘high functional ceramic coating material’ with Kangwon Regional Small and Medium Business Administration as a technical innovation development assignment
1999.02 Selected as High-Tech venture enterprise

2000’s

2000.07 Acquired ISO 9001
2001.03 Concluded an export contract for ceramic coating with Nippon Aluminum Co., Ltd.
2002.03 Concluded an export contract for ceramic construction panels with Tostem Corporation in Japan
2003.05 Supplied ceramic coating panels to the Tianjin Museum in China
2004.04 Supplied non-flammable ceramic coating material and coated interior panels to subway stations and metro cars
2005.01 Acquired the grand grade of HB mark(eco-friendly construction materials) (Korea Air Cleaning Association)
2005.03 Acquired ISO 14001
2005.03 Credited for CLEAN workplace (Korea Occupational Safety and Health Agency)
2005.07 Selected for the blue chip small and medium enterprises for export
2006.05 Applied non-flammable ceramic coating to platform screen door in subway stations
2008.11 Received a prize, certifying “3 Million US Dollar Export Tower”
2009.01 Registered ‘KFCC CERAMICA’ as the trademark for the Korean market
2009.06 Registered ‘KFCC CERAMICA’ as the trademark for the European market

2010’s

2010.01 Acquired certification issued from TUV Rheinland for food contact
2010.02 Registered ‘KFCC CERAMICA’ as the trademark for US market
2010.05 Registered ‘KFCC CERAMICA’ as the trademark for Canadian market
2010.11 Received a prize, certifying “5 Million US Dollar Export Tower”
2011.06 Acquired qualification of the Korea-EU FTA certificate of origin
2011.12 Received a prize, certifying “10 Million US Dollar Export Tower”
2012.07 Acquired qualification of the Korea-Asean FTA certificate of origin
2014.04 Acquired AEO certification
2014.05 Establish a branch in CHINA
2014.08 Authenticated by the Government of Gangwon Province as a Centenial Business
2015.06 Selected as Global Hidden Champions
2016.12 Awarded Certificate for Contribution of High Tech Material Development
PRESENT obtained about 20 patents in Cookware, Construction, Heating equipment and the others.
KFCC is exporting the CERAMICA over the 10 counties in Europe, Asia, Latin America, Middle East etc.

FEATURE OF 'CERAMICA'

The world's best technology for human happiness from KFCC

What is the fine ceramic coating "Ceramica"?
"Ceramica" is an inorganic Fine Ceramic Coating Material made from KFCC through "Low temperature-cured micro thickness ceramic dry film based on nano-technology and sol-gel process".
"Ceramica" is the first sol-gel processed fine ceramic coating material formed from low curing temperature(80~250℃), apart from so-called conventional ceramic such as porcelain enamel requiring high curing temperature(600~1,500℃). This low curing temperature can easily access special substrates or applications which have low meting point. KFCC Ceramica dry film is known as nontoxic and eco-friendly coating material to human beings, because the coating only needs water and alcohol as its solvent.

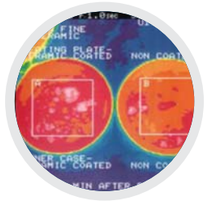
High hardness
- The film is hard to get scratch and damage.

Abrasion resistance
- The film doesn't get worn out easily for long-term use due to high durability.

Non-stick
- When cooking, food doesn't easily get stuck on the coated surface.

Harmless to humans
- 'KFCC Ceramica' does not contain any toxic material such as heavy metal, carcinogens, and endocrine-disrupting chemicals.

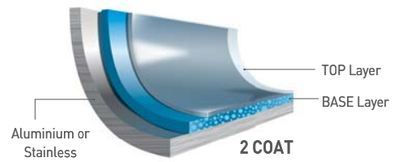
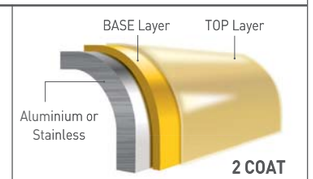
Non-flammable film
- There's neither discol-oration nor toxic gas from the coated surface at high temperature.



High efficiency of far infrared rays
- Over 92% of far infrared radiation from the film makes food delicious and gives energy savings as well as reduction of CO2

Various colors
- 'KFCC Ceramica' provides various colors and shows beauty and splendor.

Product Grade & Performance

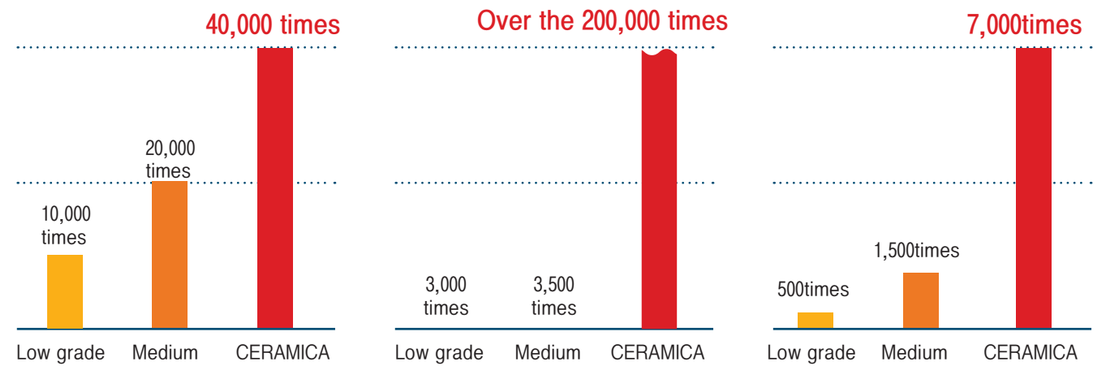
TEST ITEM	INTERIOR					EXTERIOR	
Generation (Product name)	5-generation (ART EGIS)	4-generation (ART DIOS)	3-generation (ART PLUS)	2-generation (NW)	1-generation (NH)	HGN	
Coating Layer							
Pencil Hardness	9H					9H	
Adhesion	25 / 25					25 / 25	
Gloss	40 ~ 60					50 ~ 70	
Far Infrared Ray Emission	91 ~ 94%						
Abrasion Resistance	Over 200,000 cycles					Over 200,000 cycles	
Non-stick	★★★★★	★★★★	★★★	★★	★	★★	★★
Corrosion Resistance	★★★★★	★★★★	★★★★	★★★★	★★★	★★★	★★
Chemical Resistance	PASS (Solvent / Acid / Alkaline resistance)					PASS (Solvent / Acid / Alkaline resistance)	
Extraction Test	PASS					PASS	
PFOA content	NOT DETECTED					NOT DETECTED	
FDA conformity	PASS (US FDA 21 CFR 175.300)					PASS (US FDA 21 CFR 175.300)	
RoHS	PASS					PASS	
LFGB	PASS					PASS	

NON-STICK

※Non-stick test (300℃ pre-heating type)

After cleaning a coated pan with neutral detergent, heat it up to 300℃ for 30 minutes then let it cool off at room temperature(20~25℃). Set 180~190℃ temperature and fry eggs without oil.(1 egg fry takes 100 seconds.) If 10 eggs are passed without definite sticking, evaluate 1 cycle and try to make another cycle as same as very beginning of the test. The test shall be done when eggs completely get stuck twice in a row.

Comparison of Abrasion Resistance



※Test Method

1. Abrasion Resistance I (Dry Condition)

Using test solution 3M MSBL-45 on Taber abrasion tester, in dry condition, 40,000 times alternating motion in 60 rpm with abrasive solution shall be done under 1kg weight load without substrate exposure on dry film surface during the test.
(In every 5,000 times, test solution must be changed as new one.)

2. Abrasion Resistance II (Wet Condition)

Using test solution 3M MSBL-45 on Taber abrasion tester, in neutral detergent water(water: 200㎖ / detergent: 1g), alternating motion in 60 rpm with abrasive solution shall be done under 1kg weight load without substrate exposure on dry film surface during the test.
(In every 20,000 times, test solution must be changed as new one.)

3. Abrasion Resistance III (Wet Condition)

Using test solution 3M 7447B on Taber abrasion tester, in neutral detergent water(water: 200㎖ / detergent: 1g), alternating motion in 70 rpm with abrasive solution shall be done under 4.5kg weight load without substrate exposure on dry film surface during the test.
(In every 250 times, test solution must be changed as new one.)

Comparison between Ceramica & Organic dry film

Before

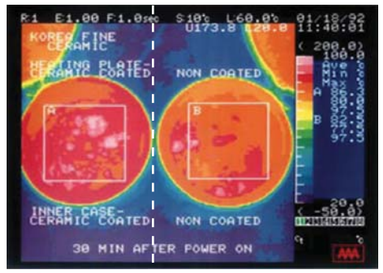
After

● **CERAMICA (for exterior)**
- Non-flammable dry film
- Less damage from high heat sources
- Staining resistance
- Easy cleaning
- Scratch resistance
- High gloss & various colors

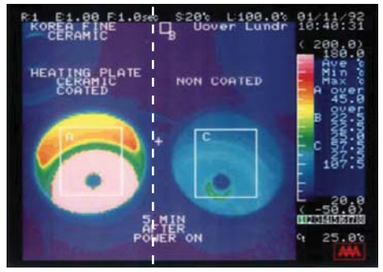
● **Organic paint (for exterior)**
- Easy to get staining by food
- Hard to clean staining
- Easy to get scratch owing to poor hardness
- Easy to get burnt & discolored from high heat temperature

Far Infrared Ray & Heat Radiation Effect

Comparison test on heat efficiency of far infrared rays

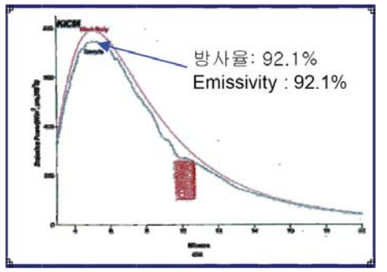


Ceramica inner pot | PTFE inner pot

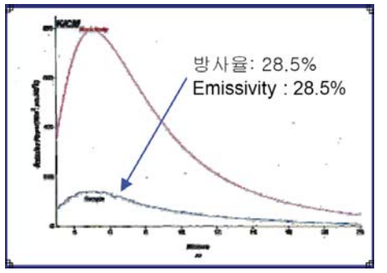


Ceramica Heating plate | UnCoated Heating plate

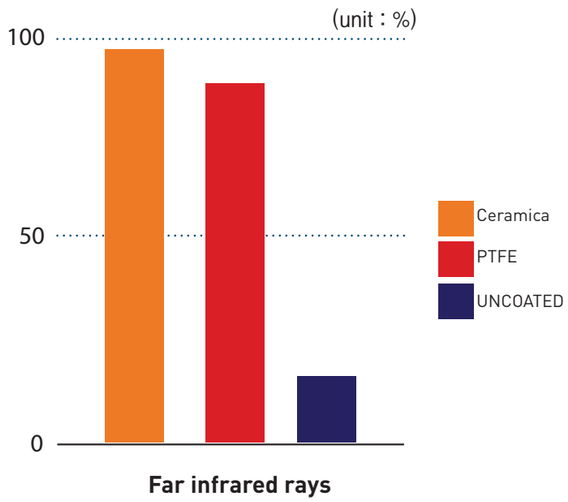
Comparison data of far infrared ray emission



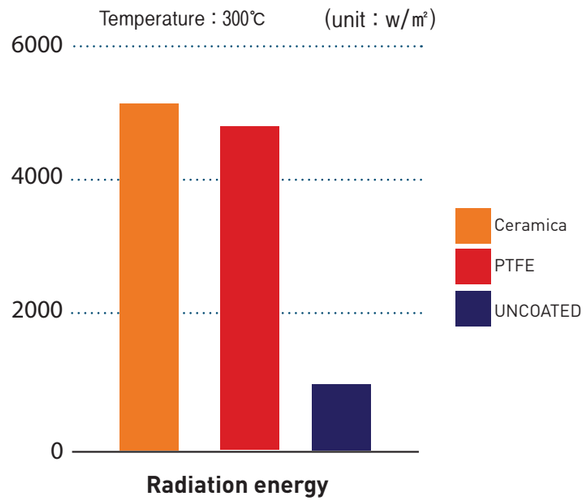
Ceramica coated Applications



Uncoated Applications



Far infrared rays



Radiation energy

Eco-friendly fine ceramic coating material 'CERAMICA'

KFCC Ceramica contains none of toxic heavy metals and harmful substances, and complies with international "food contact" standards such as US FDA, German LFGB, EU REACH, ROHS, etc., as eco-friendly material for human beings.


LFGB


RoHS


FDA


BTX


Halogen,PFOA, PFOS Free


SVHC


TVOC

Various color

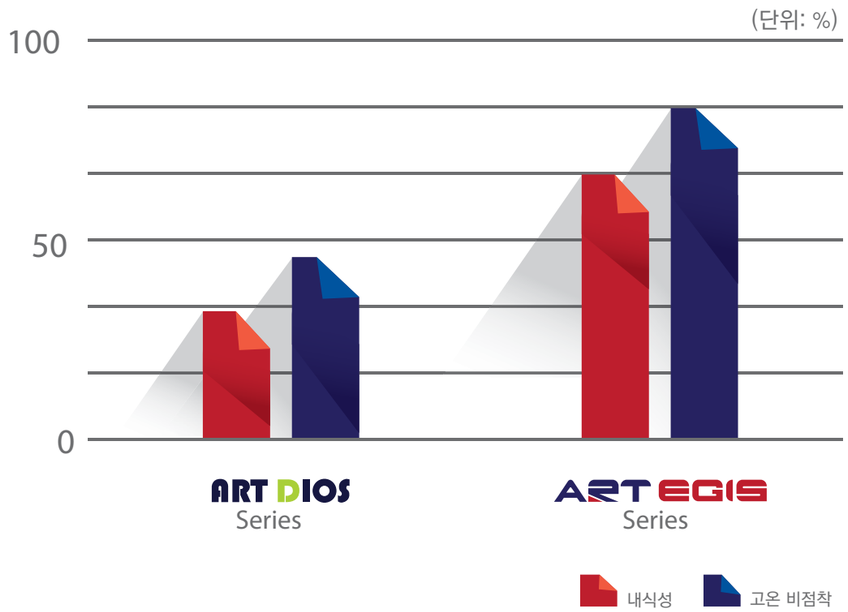
KFCC Ceramica suggests unique color design in various options for characterful product development, along with advantages of KFCC Ceramica.

KFCC Ceramica Product Type

ART EGIS

KFCC Ceramica 5th generation ART EGIS is the latest version improving non-stick and corrosion resistance compared to previous version ART DIOS. The brand new ART EGIS offers the more durable performances for the long comfortable and easy cooking life.

ART DIOS VS ART EGIS **Performance Comparison**



Name	Coating method	Standard DFT	Standard Gloss
ART EGIS BS (Base Coat)	2coat 1Baking	33±5㎛	55±10 (60° angle)
ART EGIS TC (Top Coat)	2coat 1Baking	6±2㎛	55±10 (60° angle)

HGN

HGN series is applied for exterior of cookware, in order to enhance value along with non-stick, easy-cleaning, strength, high gloss, etc. It is hard to get scratch from light damage and discoloration, which will make products more valuable.

Name	Coating method	Standard DFT	Standard Gloss
HGN-3000 (Base Coat)	2coat 1Baking	33±5㎛	60±10 (60° angle)
HGN-1 (Top Coat)	2coat 1Baking	7±2㎛	60±10 (60° angle)

MAGMA

KFCC Ceramica MAGMA is designed as a special edition apart from 1st~5th generation and HGN product, however, it offers unique design as well as excellent non-stick function and outstanding corrosion resistance, which is formed by 3-coat dry film layer performing volcanic visual effect like real magma.

STRUCTURE OF MAGMA

MAGMA TC
MAGMA Top Coat, providing non-stick, easy-cleaning, staining resistance etc.

MAGMA MC
MAGMA Mid Coat, as a core layer forming shape and design of dry film

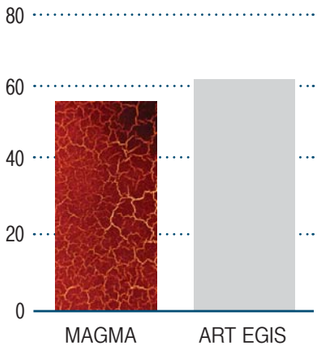
MAGMA BS
MAGMA Base Coat, enhancing powerful adhesion between substrate and mid coat layer

OUTSTANDING ABRASION RESISTANCE

MAGMA offers way better abrasion resistance in comparison with existing general ceramic coating.

After 1,000,000 times

※TEST METHOD
Abrasion Resistance (Wet Condition)
Using test solution 3M MSBL-45 on Taber abrasion tester, in neutral detergent water(water: 200㎖ / detergent: 1g), 1,000,000 times alternating motion in 60 rpm with abrasive solution shall be done under 1kg weight load without substrate exposure on dry film surface during the test.
(In every 20,000 times, test solution must be changed as new one.)



EXCELLENT NON-STICK PERFORMANCE

MAGMA also provides high non-stick performance that can be very similar with KFCC 5th generation Ceramica ART EGIS.

※TEST METHOD
Non-stick Test (300℃ pre-heating type)
After cleaning a coated pan with neutral detergent, heat it up to 300℃ for 30 minutes then let it cool off at room temperature(20~25℃).
Set 180~190℃ temperature and fry eggs without oil.(1 egg fry takes 100 seconds.) If 10 eggs are passed without definite sticking, evaluate 1 cycle and try to make another cycle as same as very beginning of the test.
The test shall be done when eggs completely get stuck twice in a row.

KFCC Ceramica Print Technology

KFCC Ceramica offers good solutions to create unique design and special patterns in various colors through special coating materials for Silkscreen Print, Pad Print, and Decal Print.

Silkscreen Print

Silkscreen Print

PAD print

Decal Print

CLASSIC MARBLE & CERABLE

KFCC Ceramica offers various spattering effect, so-called marble stone effect for various designs satisfying customers' demands all the time. The brand new stone coating CERABLE maximizes spattering effect with both solid and metallic colors. (All KFCC Ceramica series are available for both classic marble and CERABLE effect.)

CERAMICA CLASSIC MABLE

CERAMICA CERABLE

KFCC Ceramica

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