



EN 13501-1
Euroclass B-s1, d0
6mm & 12mm/all Hanex colors



ENDLESS POSSIBILITIES



For further details visit WWW.ASHTON-TECHNOLOGIES.COM

Email: info@ashton-technologies.com

Tel: 359-0755

ONE SEAMLESS SURFACE

HANEX® SOLID SURFACE CAN BE FABRICATED AND INSTALLED IN ALMOST ANY RESIDENTIAL OR COMMERCIAL APPLICATION WITH INCONSPICUOUS SEAMS.

HANEX® ACHIEVES THE HIGHEST FR CLASSIFICATION ON THE MARKET-EN13501-1b.

- THE ONLY LIMITATION OF HANEX® IS YOUR IMAGINATION
- HIGHLY DURABLE
- MAINTAINS ITS COLOUR AND SHAPE
- RESISTANT TO HEAT, MOULD, POLLUTANTS AND BACTERIA
- EASY TO CARE FOR, MAINTAIN AND REPAIR
- EXTENSIVE COLOUR RANGE
- 10 YEARS LIMITED WARRANTY
- ENDLESS DESIGN POSSIBILITIES



BEAUTY. DURABILITY. DESIGN FLEXIBILITY.



HANEX® solid surface products are crafted from a unique blend of acrylic resins and natural materials, so sheets can be cut, shaped and formed into an unlimited range of designs. Best of all, unlike other surfacing materials, HANEX® can be repaired and restored to its original condition.

This combination of durability and flexibility brings unparalleled advantages - both practical and aesthetic.

YOUR DESIGNS NEED ONLY BE LIMITED BY YOUR IMAGINATION.

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RESIDENTIAL APPLICATIONS



HANEX® is an ideal hygienic material that is resistant to moisture, pollutants and bacteria, making it easy to clean and maintain. Its stain resistance combined with colour consistency throughout makes it ideal for all surface applications in the home. With a wide range of refined colours available, HANEX® can help you achieve virtually any design concept.

Residential applications include:

Kitchen worksurface with integrated sinks & splashbacks, bathroom worksurface & vanities with integrated bowls, door sills, bath & shower surrounds, wall cladding, lighting & objet d'art.



HANEX®

ONE SEAMLESS SURFACE



Whether your style is minimal and elegant or bright and bold, HANEX's colour palette follows the latest design trends and has been developed to be integrated with a broad range of finishes and materials. Choose from a rich array of hues and textures to suit any setting or mood.



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COMMERCIAL APPLICATIONS



HANEX® is non-porous and certified NSF 51 for Food Preparation areas. Therefore, it can be applied in any application where sanitation is of utmost importance, such as washrooms, commercial kitchens, hospitals, playrooms or schools.

The unlimited design flexibility of HANEX® enables you to create a beautiful and durable aesthetic in any commercial setting, be it a hospital, bank, restaurant, hotel or office space.

HANEX® ACHIEVES THE FOLLOWING

Fire Certification EN13501-1b

This is the European Fire classification relating to all construction products, including products incorporated within building elements. Products are considered in relation to their end use application. Hanex® achieves EN13501-1b which is comparable to BS476 Class 0.

NSF51 Certification

This Standard is applicable to the materials and finishes used in the manufacture of food equipment (e.g., beverage dispenser, cutting board, work surfaces, etc).

Stain Resistance Report

Hanex is an acrylic solid surface material product with a high level of alumina trihydrate content as the filler, an ingredient which provides superior resistance to stains and chemicals. However, exposure to harsh chemicals should be avoided. In case of surface contamination, quickly flush affected area with adomestic gritty cleaner and water. Sand if necessary, as a rule of thumb, surface damage may vary with the chemical strength and exposure time.

GreenGuard Certification

Indoor Air Quality Certification ensures that products meet indoor air quality pollutant guidelines/standards.

Scientific Certification Systems

These certificates relate to recycled chips in use in our material.

Certificates available at www.hanex.co.uk





BELLASSIMO

The new, luxurious premium Solid surface from Hanex.
 Bellissimo is innovative in its design flexibility, providing possibilities never imagined.
 With Bellissimo, you've found the type of surface you've always wanted:



BL-014 STRATUS



BL-002 CELADON



BL-015 CHAMPAGNE



BL-003 PIETRA PANNA



BL-006 MAPLE WOOD



BL-016 CUMULUS



BL-010 TERRACOTTA



BL-012 WINE BLACK

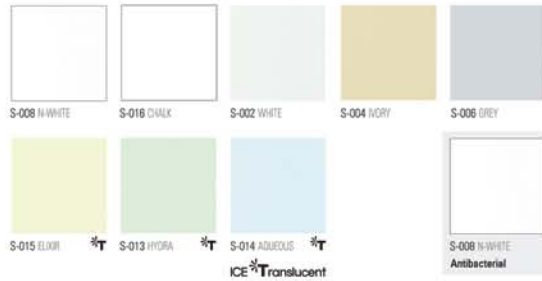
As with many products, darker colours tend to show scratches, dust etc. more readily than lighter colours. Therefore we do not recommend these colours for areas for areas of high wear and tear e.g. kitchen worktops.

For further details visit WWW.ASHTON-TECHNOLOGIES.COM
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HANEX® COLOUR COLLECTION

Solo



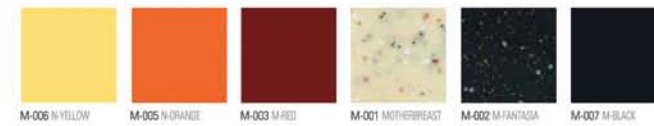
Duo



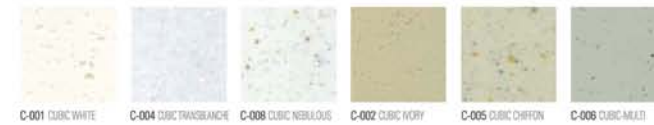
Pearl



Magic



Cubic



Trio



As with many products, darker colours tend to show scratches, dust etc. more readily than lighter colours. Therefore we do not recommend these colours for areas of high wear and tear e.g. kitchen worktops.

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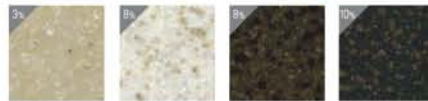
CARE & MAINTENANCE

Galleria



Recycled products

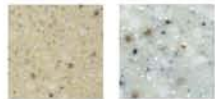
SCS Certified



GAM-003 Honeywheat GAM-004 Sandylower GAR-006 Desertcastle GAR-007 Terrasenna

(Including % of recycled chip material)

Giant



G-008 PALERMO

G-003 DEW



As with many products, darker colours tend to show scratches, dust etc. more readily than lighter colours. Therefore we do not recommend these colours for areas of high wear and tear e.g. kitchen worktops.



Unlike other surfacing materials, HANEX® is non-porous and features full dimensional colouring. This allows HANEX® to be easily polished, removing any surface damage such as scratches, allowing you to restore the surface to its original condition.



EVERYDAY CLEANING

Wipe clean with a damp cloth or sponge.
For basic stains, clean with mild detergents or general all purpose non-abrasive cleaners.



HEAT DAMAGE

The innate feature of HANEX® gives it excellent heat resistant properties compared to other surfacing materials. However never place hot items directly onto the surface.



CHEMICAL DAMAGE

Avoid contact with strong chemicals that can cause damage to the surface such as oven cleaners, acetone, paint removers and other strong chemicals. If exposed, promptly rinse with water. Remember, prolonged contact with harsh chemicals can cause serious damage to the benchtop.



SIMPLE STEPS TO AVOID DAMAGE

Avoid cutting directly on HANEX®, always using a cutting board.
Never place hot pans directly on the benchtop. Even though HANEX® can withstand high temperatures, prolonged periods of extreme heat could cause permanent damage.



REMOVING STAINS

To remove stains or scratches use mild liquid cleanser.
For deep scratches and/or other damages requiring professional repair, please contact 0845-603-7811 to locate a Certified HANEX® Fabricator & Installer.



HANEX® Solid Surface products come with a 10-year Limited Warranty. HANEX® can only be fabricated and installed by Approved HANEX® Fabricators, so you have the assurance of quality product and expert installation.

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Tel: 359-0755



Property Specifications

Properties	Unit	Result	Test Standard
Specific Gravity	g/cm ³	1.8	
Tensile Strength	Psi	5,400	ASTM D 638
Tensile Modulus	Psi	1.4x10 ⁶	ASTM D 638
Elongation	% min	0.42	ASTM D 638
Flexural Strength	Psi	9,200	ASTM D 790
Flexural Modulus	Psi	1.38x10 ⁵	ASTM D 790
Hardness (Rockwell)		92	ASTM D 785
Thermal Expansion	Mm/m c	3.04x10 ⁻⁵	ASTM D 696
Gloss (60° Gardner)		5 ~ 20	ANSI Z124
Color Stability		No change	NEMA LD3
Wear & Cleanability		Passes	ANSI Z124
Boiling Water Surface Resistance		No change	NEMA LD3
High Temperature Resistance		No change	NEMA LD3
Stain Resistance		Passes	NEMA LD3
Impact Resistance		No fracture	NEMA LD3
IZOD Impact Strength	Ft.lbs/in	0.28	ASTM D256
Water Absorption Weight	% max	0.03	ASTM D 570
Fungi & Bacteria		No attack	ANSI Z124
Wetherability		No change	ASTM D 1499
NSF 51	Listed	All Colors	NSF

*** Above data represent general properties of products and shall not be regarded as legal basis*

*** Above data can be changed without preliminary notice by reason of request from customer and improvement of product quality*

Chemical Composition

Material Name	Remark
MMA (Methyl Methacrylate)	Resin
PMMA (Polymethyl Methacrylate)	Resin
AL (OH) ₃ – Alumina Trihydrate	Filler
UV Absorbers, Cross Linking Agents, Stabilisers, Curing Agents, Etc.	Additives

Early Fire Hazard indices*

Indices	Results	Range
Ignitability Index	9	0~20
Spread of Flame Index	0	0~10
Heat Evolved Index	1	0~10
Smoke Density Index	0	0~10

*** Indices when tested to ASTM E-84-01 in SGS U.S. Testing Company Inc. 2-2003*

*** Note: Test results may vary due to color and particulate siz. However, result changes will only be minor.*

Test Result of Hanex® Reaction to Fire

1. SGS U.S. Testing Company Inc. (U.S.A. Feb 2003)
 - ✓ Class A according to the national Fire Protection Association, ANSI/NFPA NO. 101, "Life Safety Code", 1994 Edition
 - ✓ Class A according to the Uniform Building Code, 1994 Edition, Chapter 8, Interior Finishes, Section 801-07
2. Centre Scientifique Et Techniques Du Batiment (France. Jun 2001)
 - ✓ Class MI according to the N° RA01-290B
3. Materialprüfungsamt Nordrhein-westfalen (Germany, May 2003)
 - ✓ Class BI according to the DIN 4102-01 (May 1998)

Certifications

- NSF 51 (National Sanitation Foundation) for Food Preparation and Handling Area
- ISO 9001 (Quality Management System)
- ISO 14001 (Environment Management System)
- UL (Universal Laboratory)

NSF International

RECOGNIZES

HANWHA L&C CORP.

Facility: CHUNGNAM, KOREA, REPUBLIC OF

AS COMPLYING WITH NSF/ANSI 51 AND ALL APPLICABLE REQUIREMENTS.

PRODUCTS APPEARING IN THE NSF OFFICIAL LISTING ARE
AUTHORIZED TO BEAR THE NSF MARK.



This certificate is the property of NSF International and must be returned upon request. For the most current and complete information, please access NSF's website (www.nsf.org).

A handwritten signature in black ink, appearing to read "Joseph L. Phillips".

May 21, 2009
Certificate# C0035542 - 01

Joseph L. Phillips, General Manager
Food Equipment

National Sanitation Foundation (NSF 51 for Food Zone)

CERTIFICATE

ENVIRONMENTAL MANAGEMENT SYSTEM



Valid Date 2007. 10. 26 ~ 2010. 7. 23
Issue Date 2007. 10. 26
Initial Registration Date 2001. 7. 24
Certificate Number EAC-02779

HANWHA L&C BUKANG PLANT

- FIRST PLANT : 801, Bugang-ri, Buyong-myeon, Cheongwon-gun, Chungcheongbuk-do, Korea
- SECOND PLANT : 229, Geumho-ri, Buyong-myeon, Cheongwon-gun, Chungcheongbuk-do, Korea

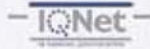
*Korean Foundation for Quality certifies that
The Environmental Management System of the above
organization has been audited and has complied
with the requirements of the following standard*

Standard

KS A ISO 14001:2004 ISO 14001:2004

Scope of certification

- FIRST PLANT : PRODUCTION OF FLOORING, WINDOW-PROFILE, WINDOW SETS, DOOR SETS, SMC(SHEET MOLDING COMPOUND), PVC-RIGID FILM, PVC TILE AND CARPET TILET
- SECOND PLANT : PRODUCTION OF GMT(GLASS FIBER MAT REINFORCED THERMOPLASTIC), GMT MOLDING PRODUCTION, EPP(EXPANDED POLYPROPYLENE), BUMPER CORE, ARTIFICIAL ACRYLIC MARBLE, FCCL(FLEXIBLE COPPER CLAD LAMINATE), CL(COVERLAY) AND KHANSTONE(ENGINEERED STONE)



Joe Ryong Kim
President & CEO, KFAQ

The use of Accreditation Mark indicates accreditation in respect of those activities covered by the Accreditation Certificate Number KAB-EC-01 13F, Wolim-Leri's Valley Bldg. 5, 371-26, Geom-Dong, Geumcheon-Gu, Seoul 153-766, Korea www.kfaq.or.kr

Quality Management System (ISO14001)

CERTIFICATE

QUALITY MANAGEMENT SYSTEM



HANWHA L&C CO., LTD HEAD OFFICE AND BUKANG PLANT

- HEAD OFFICE : 1, Janggyo-dong, Jung-gu, Seoul, Korea
- FIRST PLANT : 801, Bugang-ri, Buyong-myeon, Cheongwon-gun, Chungcheongbuk-do, Korea
- SECOND PLANT : 229, Geumho-ri, Buyong-myeon, Cheongwon-gun, Chungcheongbuk-do, Korea

Valid Date 2009. 09. 28 ~ 2010. 07. 29
Issue Date 2009. 09. 28
Initial Registration Date 1995. 07. 30
Certificate Number AC-00100

*Korean Foundation for Quality certifies that
The Quality Management System of the above
organization has been audited and has complied
with the requirements of the following standard*

Standard

KS Q ISO 9001:2009 / ISO 9001:2008

Scope of certification

- FIRST PLANT : DESIGN, DEVELOPMENT, PRODUCTION AND SALES OF FLOORING, WINDOW-PROFILE, WINDOW SETS, DOOR SETS, SMC(SHEET MOLDING COMPOUND), PVC-RIGID FILM, PVC TILE AND CARPET TILE
- SECOND PLANT : DESIGN, DEVELOPMENT, PRODUCTION AND SALES OF GMT(GLASS FIBER MAT REINFORCED THERMOPLASTIC), GMT MOLDING PRODUCTION, EPP(EXPANDED POLYPROPYLENE), BUMPER CORE, ARTIFICIAL ACRYLIC MARBLE, FCCL(FLEXIBLE COPPER CLAD LAMINATE), CL(COVERLAY) AND KHANSTONE(ENGINEERED STONE)



Jaeyoung
Jae Young Kim
President & CEO, KFQ

The use of Accreditation Mark indicates accreditation in respect of those activities covered by the Accreditation Certificate Number KAB-QC-01 13F, Wodin-Lion's Valley 6 Bld., 371-26, Gasan-Dong, Gumi-Gu, Seoul 153-756, Korea

www.kfq.or.kr

Quality Management System (ISO9001)



THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and
KFQ
hereby certify that the organization

HANWHA L&C BUKANG PLANT

- FIRST PLANT : 801, Bugang-ri, Buyong-myeon, Cheongwon-gun, Chungcheongbuk-do, Korea
 - SECOND PLANT : 229, Geumho-ri, Buyong-myeon, Cheongwon-gun, Chungcheongbuk-do, Korea
- for the following field of activities

- FIRST PLANT : PRODUCTION OF FLOORING, WINDOW-PROFILE, WINDOW SETS, DOOR SETS, SMC(SHEET MOLDING COMPOUND), PVC-RIGID FILM, PVC TILE AND TILE CARPET
- SECOND PLANT : PRODUCTION OF GMT(GLASS FIBER MAT REINFORCED THERMOPLASTIC), GMT MOLDING PRODUCTION, EPP(EXPANDED POLYPROPYLENE), BUMPER CORE, ARTIFICIAL ACRYLIC MARBLE, FCCL(FLEXIBLE COPPER CLAD LAMINATE), CL(COVERLAY) AND KHANSTONE(ENGINEERED STONE)

has implemented and maintain a

Environmental Management System

which fulfills the requirements of the following standard

ISO 14001:2004

Issued on : 2007. 10. 26
Validity date : 2010. 7. 23

Registration Number : KR - 02779



René Wasmer
President of IQNet

Jae Ryong Kim
President & CEO of KFQ



IQNet Partners*:

AENOR Spain AFAQ AFNOR France AIB-Vincotte International Belgium ANCE Mexico APCER Portugal CISO Italy CQC China
 CQM China CQS Czech Republic Cro Cert Croatia DQS Germany DS Denmark ELOT Greece FCAV Brazil
 FONDONORMA Venezuela HKQAA Hong Kong China ICONTEC Colombia IMNC Mexico Inspecia Certification Finland
 IRAM Argentina JQA Japan KFQ Korea MSZT Hungary Nemko AS Norway NSAI Ireland PCBC Poland QMI Canada
 Quality Austria Austria RR Russia SAI Global Australia SII Israel SIQ Slovenia SIRIM QAS International Malaysia
 SQS Switzerland SRAC Romania TEST St Petersburg Russia YUQS Serbia

IQNet is represented in the USA by: AFAQ AFNOR, AIB-Vincotte International, CISO, DQS, NSAI Inc., QMI and SAI Global

* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

Quality Management System (ISO14001)



THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and
KFO

hereby certify that the organization

HANWHA L&C CO., LTD HEAD OFFICE AND BUKANG PLANT

- HEAD OFFICE : 1, Janggyo-dong, Jung-gu, Seoul, Korea
- FIRST PLANT : 801, Bugang-ri, Buyong-myeon, Cheongwon-gun, Chungcheongbuk-do, Korea
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has implemented and maintain a

Quality Management System

which fulfills the requirements of the following standard

ISO 9001:2008

Issued on : 2009. 09. 28

Validity date : 2010. 07. 29

Registration Number: KR - 00100



René Wasmer
President of IQNet

Jae Ryong Kim
President & CEO of KFO



IQNet Partners*:

AENOR Spain AFAQ APNOR France AIB-Vincotte International Belgium ANCE Mexico APCER Portugal CISO Italy CQC China
 CQM China CQS Czech Republic Cro Cert Croatia DQS Germany DS Denmark ELOT Greece FCAV Brazil
 FONDONORMA Venezuela HKQAA Hong Kong China ICONTEC Colombia IMNC Mexico Inspecta Certification Finland
 IRAM Argentina JQA Japan KFO Korea MSZT Hungary Nemko AS Norway NSAI Ireland PCBC Poland
 Quality Austria Austria RR Russia SAI Global Australia SII Israel SIQ Slovenia SIRIM QAS International Malaysia
 SQS Switzerland SRAC Romania TEST St Petersburg Russia YUQS Serbia
 IQNet is represented in the USA by: AFAQ APNOR, CISO, DQS, NSAI Inc. and SAI Global

* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

Quality Management System (ISO9001)



Certificate of Compliance

Hanex
Hanwha L&C USA LLC

This product has been certified according to the GREENGUARD Indoor Air Quality (IAQ) Certification Program for Low Emitting Products

Certification Details:

Certificate No: S10Sm9004811-2

Status: Certified

Period: 10/2007 - 10/2010

Restrictions: NONE

Reference Standard: GGPS.001 GREENGUARD IAQ Standard for Building Materials, Finishes, and Furnishings

Product Type: Furniture Components/Materials, Seating, and Free Standing Furniture and Furnishing Units

Criteria	Allowable Limits
TVOC ¹	< 0.25 mg/m ³
Formaldehyde	< 0.025 ppm
Total Aldehydes ²	< 0.05 ppm
Individual VOCs ³	< 0.1 TLV
4-phenylcyclohexene	< 0.0033 mg/m ³

Listing of measured carcinogens and reproductive toxins as identified by California Proposition 65, the U.S. National Toxicology Program (NTP), and the International Agency on Research on Cancer (IARC) must be provided.

Any pollutant regulated as a primary or secondary outdoor air pollutant must meet a concentration that will not generate an air concentration greater than that promulgated by the National Ambient Air Quality Standard (U.S. EPA, code of Federal Regulations, Title 40, Part 50).

See referenced standard for a complete technical explanation.

¹Defined to be the total response of measured VOCs falling within the C₆-C₁₆ range, with responses calibrated to a toluene surrogate.

²Defined to be the total response of a target list of aldehydes (2-butenal; acetaldehyde; benzaldehyde; 2, 5-dimethylbenzaldehyde, 2-methylbenzaldehyde; 3-and/or 4-methylbenzaldehyde; butanal; 3-methylbutanal; formaldehyde; hexanal; pentanal; propanal), with each individually calibrated to a compound specific standard.

³Any pollutant not listed must produce an air concentration level no greater than 1/10 the Threshold Limit Value (TLV) industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438).

GREENGUARD Certification affirms that products meet the criteria of the referenced standard and the requirements of the specific certification program. Certification testing is conducted according to a consistent, defined protocol. The testing does not evaluate emissions under usage conditions other than those defined in the protocol and does not address potential environmental impact other than chemical and particle emissions.

The GREENGUARD Environmental Institute (GEI) is an industry independent, third-party certification organization that qualifies products for low chemical emissions. GREENGUARD Certification programs use defined product standards, test methodologies, product sample collection and handling procedures, program application processes and on-going verification procedures. GREENGUARD standards, methods, and procedures are available at www.GREENGUARD.org.



Certificate of Compliance

Hanex
Hanwha L&C USA LLC

This product has been certified according to the GREENGUARD Children & Schools Certification Program for Low Emitting Products

Certification Details:

Certificate No: S10Sm9004811-2

Status: Certified

Period: 10/2007 - 10/2010

Restrictions: NONE

Reference Standard: GGPS.002 GREENGUARD Children & SchoolsSM Standard

Product Type: All Products

Criteria	Allowable Limits
Individual VOCs ¹	< 1/100 TLV and < 1/2 CA chronic REL
Formaldehyde	< 0.0135 ppm /13.5 ppb
TVOC ²	< 0.22 mg/m ³
Total Aldehydes ³	< 0.043 ppm /43 ppb
Total Phthalates ⁴	< 0.01 mg/m ³
Total Particles ⁵	< 0.02 mg/m ³

See referenced standard for a complete technical explanation.

Complies with California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers" (CA section 01350)

¹Any VOC not listed must produce an air concentration level no greater than 1/100 the Threshold Limit Value (TLV) industrial work place criterion (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438) and no greater than 1/2 the CA Chronic Reference Exposure Level (CREL) http://www.oehha.ca.gov/air/chronic_rels/AIIChrels.html - (CRELs) Adopted by the State of California Office of Environmental Health Hazard Assessment (OEHHA), December 2008).

²Defined to be the total response of measured VOCs falling within the C₆-C₁₆ range, with responses calibrated to a toluene surrogate.

³Defined to be the total response of a target list of aldehydes (2-butenal; acetaldehyde; benzaldehyde; 2, 5-dimethylbenzaldehyde, 2-methylbenzaldehyde; 3-and/or 4-methylbenzaldehyde; butanal; 3-methylbutanal; formaldehyde; hexanal; pentanal; propanal), with each individually calibrated to a compound specific standard.

⁴Total phthalates include dibutyl (DBP), diethylhexyl (DEHD), diethyl (DEP), butylbenzyl (BBP), di-octyl (DOP), and dimethyl (DMP) phthalates.

⁵Particles are only applicable to fibrous, particle-releasing products with exposed surface area in air streams.

GREENGUARD Certification affirms that products meet the criteria of the referenced standard and the requirements of the specific certification program. Certification testing is conducted according to a consistent, defined protocol. The testing does not evaluate emissions under usage conditions other than those defined in the protocol and does not address potential environmental impact other than chemical and particle emissions.

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© 2010 GREENGUARD Environmental Institute

GGPC.002



Certificate of Compliance

Brionne
Hanwha L&C USA LLC

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Certification Details:

Certificate No: S10Sm9004811-1

Status: Certified

Period: 10/2007 - 10/2010

Restrictions: NONE

Reference Standard: GGPS.001 GREENGUARD IAQ Standard for Building Materials, Finishes, and Furnishings

Product Type: Furniture Components/Materials, Seating, and Free Standing Furniture and Furnishing Units

Criteria	Allowable Limits
TVOC ¹	< 0.25 mg/m ³
Formaldehyde	< 0.025 ppm
Total Aldehydes ²	< 0.05 ppm
Individual VOCs ³	< 0.1 TLV
4-phenylcyclohexene	< 0.0033 mg/m ³

Listing of measured carcinogens and reproductive toxins as identified by California Proposition 65, the U.S. National Toxicology Program (NTP), and the International Agency on Research on Cancer (IARC) must be provided.

Any pollutant regulated as a primary or secondary outdoor air pollutant must meet a concentration that will not generate an air concentration greater than that promulgated by the National Ambient Air Quality Standard (U.S. EPA, code of Federal Regulations, Title 40, Part 50).

See referenced standard for a complete technical explanation.

¹Defined to be the total response of measured VOCs falling within the C₆-C₁₆ range, with responses calibrated to a toluene surrogate.

²Defined to be the total response of a target list of aldehydes (2-butenal; acetaldehyde; benzaldehyde; 2, 5-dimethylbenzaldehyde, 2-methylbenzaldehyde; 3-and/or 4-methylbenzaldehyde; butanal; 3-methylbutanal; formaldehyde; hexanal; pentanal; propanal), with each individually calibrated to a compound specific standard.

³Any pollutant not listed must produce an air concentration level no greater than 1/10 the Threshold Limit Value (TLV) Industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438).

GREENGUARD Certification affirms that products meet the criteria of the referenced standard and the requirements of the specific certification program. Certification testing is conducted according to a consistent, defined protocol. The testing does not evaluate emissions under usage conditions other than those defined in the protocol and does not address potential environmental impact other than chemical and particle emissions.

The GREENGUARD Environmental Institute (GEI) is an industry independent, third-party certification organization that qualifies products for low chemical emissions. GREENGUARD Certification programs use defined product standards, test methodologies, product sample collection and handling procedures, program application processes and on-going verification procedures. GREENGUARD standards, methods, and procedures are available at www.GREENGUARD.org.



Certificate of Compliance

Brionne
Hanwha L&C USA LLC

This product has been certified according to the GREENGUARD Children & Schools Certification Program for Low Emitting Products

Certification Details:

Certificate No: S10Sm9004811-1

Status: Certified

Period: 10/2007 - 10/2010

Restrictions: NONE

Reference Standard: GGPS.002 GREENGUARD Children & SchoolsSM Standard

Product Type: All Products

Criteria	Allowable Limits
Individual VOCs ¹	< 1/100 TLV and < 1/2 CA chronic REL
Formaldehyde	< 0.0135 ppm /13.5 ppb
TVOC ²	< 0.22 mg/m ³
Total Aldehydes ³	< 0.043 ppm /43 ppb
Total Phthalates ⁴	< 0.01 mg/m ³
Total Particles ⁵	< 0.02 mg/m ³

See referenced standard for a complete technical explanation.

Complies with California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers" (CA section 01350)

¹Any VOC not listed must produce an air concentration level no greater than 1/100 the Threshold Limit Value (TLV) industrial work place criterion (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438) and no greater than 1/2 the CA Chronic Reference Exposure Level (CREL) http://www.oehha.ca.gov/air/chronic_rels/AIIChrels.html - (CRELs) Adopted by the State of California Office of Environmental Health Hazard Assessment (OEHHA), December 2008).

²Defined to be the total response of measured VOCs falling within the C₆-C₁₆ range, with responses calibrated to a toluene surrogate.

³Defined to be the total response of a target list of aldehydes (2-butenal; acetaldehyde; benzaldehyde; 2, 5-dimethylbenzaldehyde, 2-methylbenzaldehyde; 3-and/or 4-methylbenzaldehyde; butanal; 3-methylbutanal; formaldehyde; hexanal; pentanal; propanal), with each individually calibrated to a compound specific standard.

⁴Total phthalates include dibutyl (DBP), diethylhexyl (DEHD), diethyl (DEP), butylbenzyl (BBP), di-octyl (DOP), and dimethyl (DMP) phthalates.

⁵Particles are only applicable to fibrous, particle-releasing products with exposed surface area in air streams.

GREENGUARD Certification affirms that products meet the criteria of the referenced standard and the requirements of the specific certification program. Certification testing is conducted according to a consistent, defined protocol. The testing does not evaluate emissions under usage conditions other than those defined in the protocol and does not address potential environmental impact other than chemical and particle emissions.

The GREENGUARD Environmental Institute (GEI) is an industry independent, third-party certification organization that qualifies products for low chemical emissions. GREENGUARD Certification programs use defined product standards, test methodologies, product sample collection and handling procedures, program application processes and on-going verification procedures. GREENGUARD standards, methods, and procedures are available at www.GREENGUARD.org.

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GGPC.002

Fungal Resistance Test Result

- Test Method:

- ASTM G 21
(Determining Resistance of Synthetic Polymeric Material to Fungi)

- Test Organism

Aspergillus Niger (ATCC 9642)

Chaetomium Globosum (ATCC 6205)

Penicillium Pinophilum (ATCC 11797)

Gliocladium Virens (ATCC 9645)

Aureobasidium Pullulans (ATCC 15233)

- Rating in Accordance to ASTM G 21

<i>Rating</i>	<i>Growth Ratio</i>
0	None (No Growth)
1	Trace of Growth (Less than 10%)
2	Light Growth (10% - 30%)
3	Medium Growth (30% - 60%)
4	Heavy Growth (60% - Complete Coverage)

- Test Result:

Zero traces of growth

<i>Culture Time</i>	<i>Week 1</i>	<i>Week 2</i>	<i>Week 3</i>
Result	0	0	0

Bacterial Resistance Test Result

- Test Method:
 - ASTM G22
(Determining Resistance of Plastics to Bacteria)
 - Test Organism
Pseudomonas Aeruginosa (ATCC 13388)
 - Rating in Accordance to ASTM G 22

<i>Rating</i>	<i>Growth Ratio</i>
0	None (No Growth)
1	Trace of Growth (Less than 10%)
2	Light Growth (10% - 30%)
3	Medium Growth (30% - 60%)
4	Heavy Growth (60% - Complete Coverage)

- Test Result:
Zero traces of growth

<i>Culture Time</i>	<i>Week 1</i>	<i>Week 2</i>	<i>Week 3</i>
Result	0	0	0