



L & C

EXTERIOR FILM



***WELCOME
TO HYUNDAI
EXTERIOR FILM***





HYUNDAI L&C

Hyundai L&C is leading the global market as the company specialized in construction materials. For over half a century, Hyundai L&C has been making its name as one of Korea's prominent construction material manufacturers. Hyundai L&C innovative premium materials add elegance to your space and suggest energy-saving and eco-friendly function on your housing. Also, improved product functionally adds convenience to your life and creative designs lead market trend.



BUILDING MATERIALS



Residential Flooring



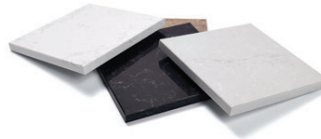
Commercial Flooring



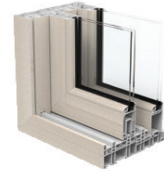
Wood Flooring



Wallpaper(Silk/Duplex)



Interior Stones



Windows and Doors

HIGH-FUNCTIONAL MATERIALS



Decorative Film for Furnitures



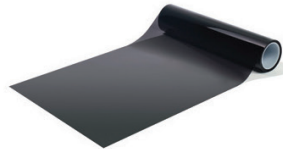
Decorative Film for Home Appliances



Interior Film



Rigid Film(PVC)



Exterior Film

HOME FURNISHING



Kitchen Furniture



Built-In Wardrobe



Shoe Closet



Dining Table





HYUNDAI FILM

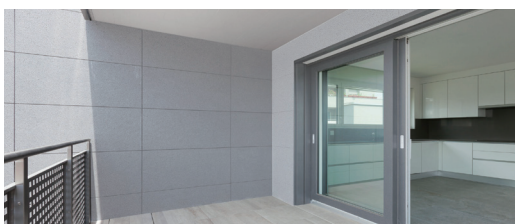
Since our first production of PVC film in 1998, we have continuously invested in calendaring, extruding, and laminating equipments.

And we are producing PVC, PP, PET film for versatile applications.

With diversity in specification and high technology support, Hyundai L&C is supplying comprehensive surface finishing materials to help customers meet economic and environmental goals. Whenever we are challenged by customer's need, we develop the best quality and innovative solution. When you use Hyundai decorative surface materials, you know it will perform on your machinery.

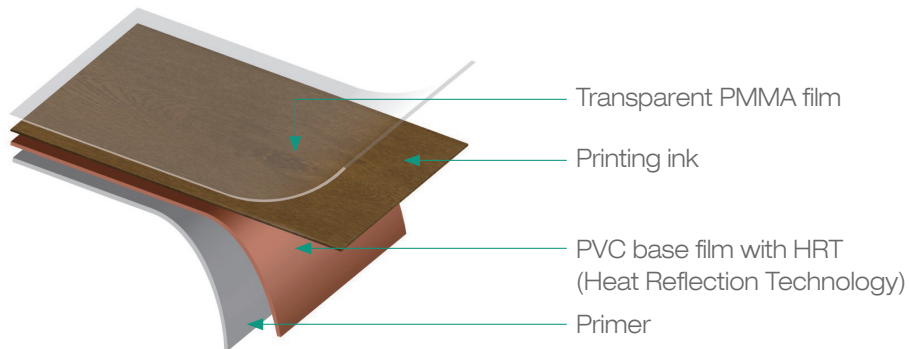


Hyundai Exterior Film protects the surface of window profile, panels, garage doors and entrance doors. It has strong weatherability against UV exposure and outside environment. The wide-spread design range offers many solid colors and woodgrains for customer's high demand of design.



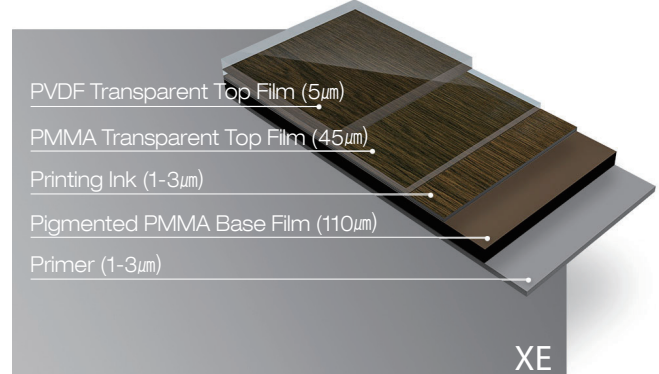
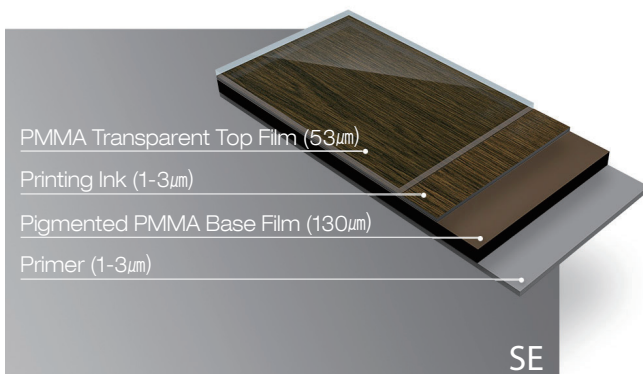
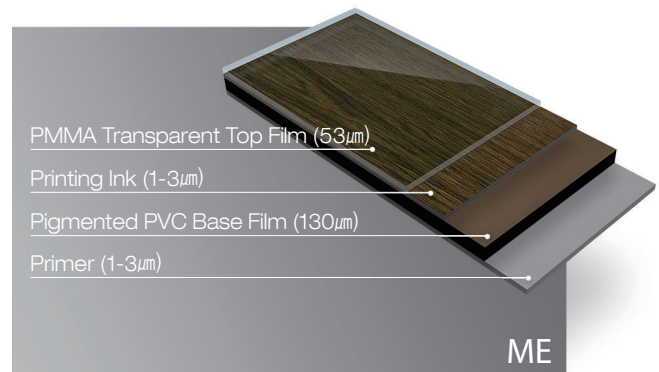
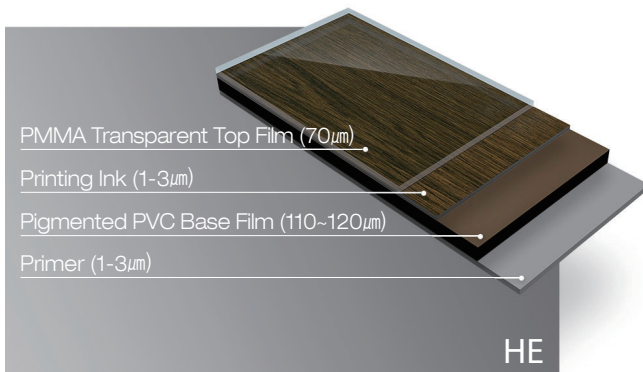
EXTERIOR FILM

Product Characteristic

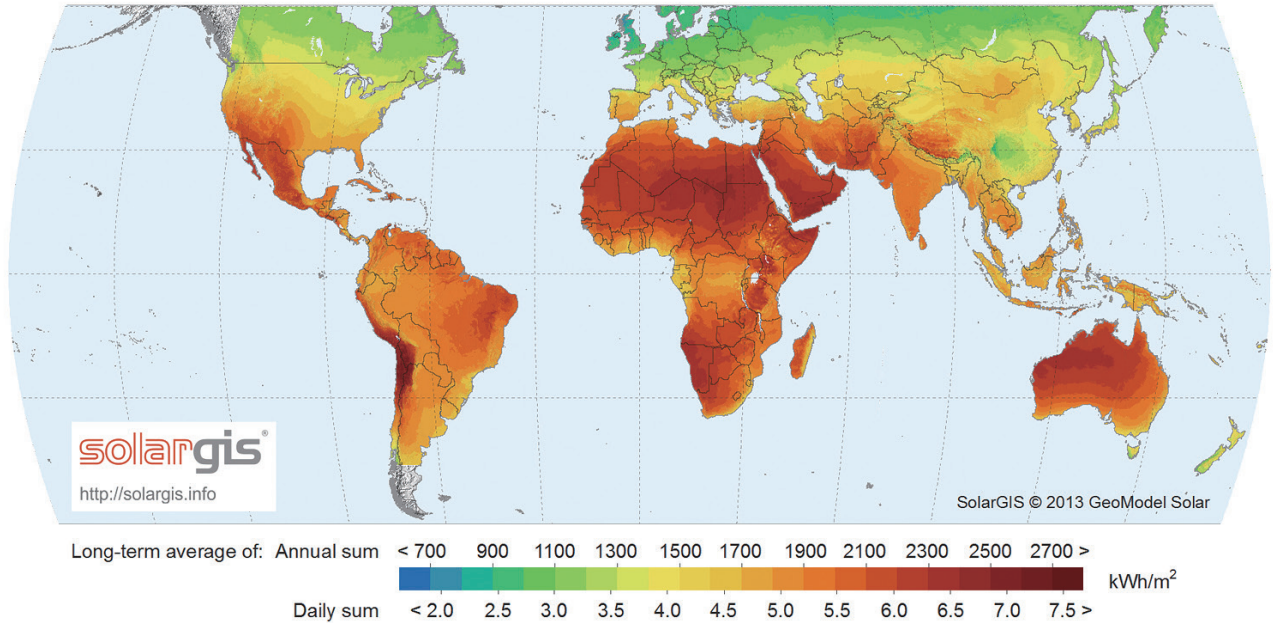


1. High weatherability resistance against exposure
2. RAL(RAL-Gütegemeinschaft) certified
3. No color change over 10,000 hours in the artificial weather-o-meter test
4. High-performance exterior film of Heat build-up
5. Various designs and options and we keep developing colors

Product Range



Warranty Period

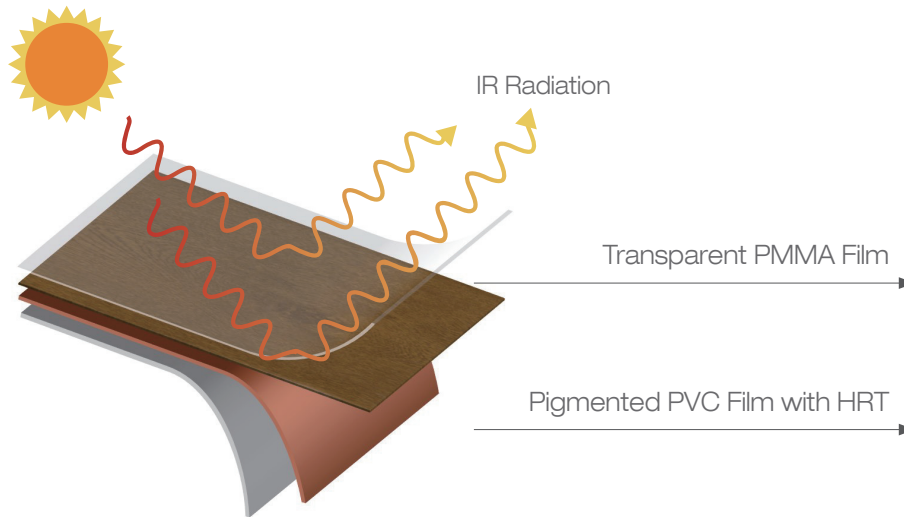


GRADE	Group					
	1	2	3	4	5	6
HE	10	10	7.5	5		
ME	10	10	7.5	5		
SE	15	15	10	10	10	
XE	20	20	20	20	20	20

- [Group 1] Iceland, Sweden, Finland, Norway, Denmark, Estonia, Ireland, Latvia, Lithuania, Belarus(White Russia), Belgium, Czech, Great-Britain, Luxembourg, Netherlands, Poland, Germany.
- [Group 2] Slovakia, Austria, Lichtenstein, Slovenia, Switzerland.
- [Group 3] Moldavia, Canada, Hungary, Romania, Ukraine, France(except for overseas territories and Corsica), Russia Federation, Serbia.
- [Group 4] Georgia, Bosnia/Herzegovina, Croatia, Korea, Montenegro, San Marino, Vatican, Albania, Andorra, Armenia, Azerbaijan, Bulgaria, Corsica, Macedonia, Monaco, EU part of Turkey(Incl, Istanbul), Italy, Portugal(continental), Spain(continental, Baleares), Greece(continental).
- [Group 5] Kazakhstan, Kyrgyzstan, Mongolia, Portugal(Azores and Madeira), Tadzhiistan, Turkmenistan, Uzbekistan, China(continental), AS part of Turkey, New Zealand, Japan, Uruguay, Malta, Tunisia, Israel, Lebanon, Algeria, Morocco, Oman, Greek islands.
- [Group 6] -All African states except for those in country group 5
 -All South-American states except for those in country group 5
 Bangladesh, Myanmar, Afghanistan, Brunei, Cambodia, Costa Rica, Cyprus, Democratic People's Republic of Laos, Malaysia, Maldives, Nicaragua, Palau, Papua-New Guinea, Philippines, Singapore, Solomon Islands, Sri Lanka, Thailand, Vietnam, Bahamas, Belize, Cuba, Darussalam, Guatemala, Mexico, Micronesia, Nauru, Nepal, Spain(Canary Islands), Syria, Tuvalu, Bahrain, Antigua and Barbuda, Barbados, Dominica, Dominican Republic, Dubai, El Salvador, Fiji, French overseas territories, Grenada, Haiti, Honduras, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kiribati, Kuwait, Marshall islands, Mauritius, Pakistan, Qatar, Samoa, Seychelles, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Timor-Leste, United Arab Emirates, Vanuatu, Australia, Saudi Arabia, Yemen, Bhutan, Taiwan, USA.

HRT(Heat Reflection Technology)

Heat Reflection Technology protects window and door profile from excessive heat build-up. Transparent PMMA film and PVC film with IR reflection pigment and additive make windows and doors remain tight even at strong solar irradiation.



HRT makes temperature down

HRT acts as a protective shield for the entire component. Pigments in the colored PVC film reflect infrared radiation, and extremely reducing the build-up of heat in the profile.

HRT protects all type of plastics

HRT protects both white and dark profiles. Additionally, it protects not only the film itself but also the adhesive and the profile.

We continuously work to improve our advanced technology, which is a special characteristic of our film.

HRT ensures longer lives for windows and doors

HRT reduces the heat absorption in windows and doors laminated with dark and woodgrains films.

The high functional film will reduce profile and board ageing and contribute to making extending window and door's service lives. Finally, it improves energy-efficiency.

**Polymer Service GmbH Merseburg
An-Institut an der Hochschule Merseburg**

Results of the spectral measurement

Table 3 shows the results of the spectral measurements for all films. In accordance with the test procedure P.3.22, the calculated temperature should be round down at 4 and at 5 it should be rounded up. In the context of this test report, the temperatures are additionally indicated with one decimal place for a better interpretation of the results.
The value for the heat build-up of the films must not exceed 66 °C and is classified according to RAL-GZ 716 in class 1 to 3 (Table 4) [4].

Table 3: Results of the calculation of the head build-up

Name	Results of the spectral analysis		Heat build-up class	
	PVC white	PVC black	PVC white	PVC black
FC01x-01, 19.04.01, FC-01 WBP	55,7 °C 56 °C	58,9 °C 59 °C	1	2
FC02x-02, 19.04.01, FC-02 WBP	55,2 °C 55 °C	57,3 °C 57 °C	1	1
GOR2S-01, 19.04.01, GO-01, MC2575	57,7 °C 58 °C	60,0 °C 60 °C	2	2
GOR2S-02, 19.04.01, GO-02, MC2515, WBP	57,6 °C 58 °C	59,8 °C 60 °C	2	2
GOR2X-01, 19.04.01, GO-01, PVDF	56,9 °C 57 °C	59,5 °C 60 °C	1	2
GOR2X-02, 19.04.01, GO-02, PVDF	57,0 °C 57 °C	58,8 °C 59 °C	1	2

Table 4: Heat build-up classes

Class	Requirement heat build-up
1	≤ 57 °C
2	≤ 62 °C
3 (Minimum requirement)	≤ 66 °C

Literature

[1] RAL-GZ 716 (2018-07): Technical Appendix – Quality and Test Requirements for Components and Procedures – Section P Test Methods – P.3.22 Determination the heat build-up of coloured surfaces.
 [2] ISO 11664-4 (2008-11): Colorimetry – Part 4: CIE 1976 L* a* b* Colour space.
 [3] ISO 2813 (2013-09): Paints and varnishes – Determination of gloss value at 20 degrees, 60 degrees and 85 degrees.
 [4] RAL-GZ 716 (2018-07): Technical Appendix – Quality and Test Requirements for Components and Procedures – Section D Films for the lamination of PVC-U window and door profiles – D.4.5 Heat build-up of the film

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Test report proves that temperature remains below 60°C even in the profiles laminated with dark film.

CERTIFICATES




Am Hofgarten 1-2 | D-53113 Bonn | gkfp.de

Hyundai L&C Europe GmbH
 Düsseldorf Straße 13, D-65760 Eschborn





RAL Gütegemeinschaft Kunststoff-Fensterprofilssysteme e.V. confirms the foils and patterns as listed on www.gkfp.de to be certified and regularly audited acc. to the relevant quality- and test requirements.

Bonn, 20.02.2019
 valid until: 31.12.2020


 Gerald Feigenbutz
 General Manager

The company may use the registered mark „SKZ“ as well as the icon “foils and patterns” as shown above, for marking and promoting their listed foils and patterns as part of their public relations work.

The company has committed to ensure compliance with the Technical Appendix and to subject the production of the registered foils and patterns to regular quality control by a neutral inspection body.
 The validity of this certificate can be verified on the website www.gkfp.de.



Das Kunststoff-Zentrum

SKZ - Testing GmbH · Friedrich-Bergius-Ring 22 · 97076 Würzburg

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 c.weck@skz.de

19 July 2017 / km

Final results of the weathering fastness test (colour fastness) according to RAL-GZ 716, technical appendix, section II, part II-a-3 on window profiles made of PVC-U laminated with foil

Test order no. 124153/17 (Continuation of order no. 114536/15)

Dear Mr. Lee,

Please find below the following results of the final assessment of the weathering fastness after the artificial weathering of approx. **15,278** hours:

Irradiation energy: approx. **30 GJ/m²**

Artificial weathering according to (DIN) EN 513: 1999-10, procedure 1 (simulation of a moderate climate zone M) up to an irradiation dose of **30 GJ/m²** in the wave length range between 300 nm and 800 nm.

1. Colourimetric assessment:

The sample colour was measured by means of a spectrophotometer of a wave length area of 360 - 750 nm, standard light type D65, gloss inclusion, 10° normal inspection. The colour distance ΔE^*_{ab} was determined according to DIN EN ISO 11664-4: 2012-06. Prior to and after artificial weathering, colour was measured at the same position on the sample to obtain reproducible results despite the structured surface.

Please note that the colourimetric assessment of the structured foils can only be taken as a guide value.

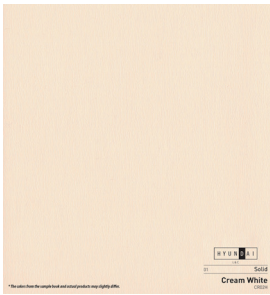
SKZ - Testing GmbH Prüfung, Überwachung, Zertifizierung Friedrich-Bergius-Ring 22 97076 Würzburg	Geschäftsführer: Dr.-Ing. Gerald Aengenheyster HRB 7840 Amtsgericht Würzburg	Tel.: +49 931 4104-0 Fax: +49 931 4104-477 testing@skz.de www.skz.de	Sparkasse Mainfranken Würzburg IBAN: DE59 7105 0000 0043 9937 08 SWIFT: BY LA DE 3301
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PATTERNS

Solid/Metal



01_CRO2H Cream White



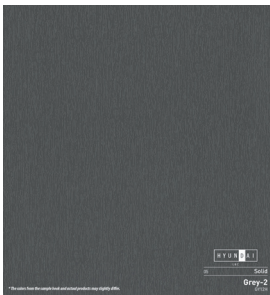
02_CRM6H Matt Cream



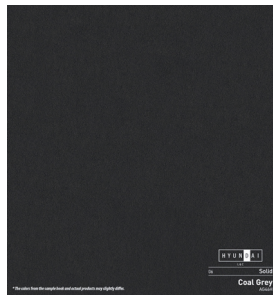
03_GM06H Grey Mink



04_GY02H Grey-1



05_GY12H Grey-2



06_AG46H Coal Grey



07_AG49H Painted Coal Grey



08_AG31H Anthracite Grey-1



09_AG32H Anthracite Grey-2



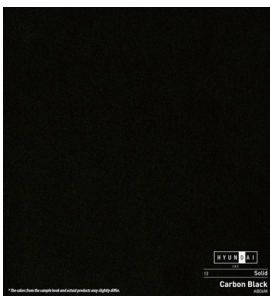
10_CB02H Chocolate Brown-1



11_CB12H Chocolate Brown-2



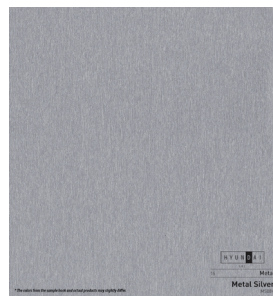
12_BK02H Black



13_AB06M Carbon black



14_ML08H Metal Light Silver



15_MS08H Metal Silver



16_MB08H Metal Black

Wood



17_NO03H Natural Oak



18_MP02H Mountain Pine



19_GO11H Golden Oak-1



20_GOH2H Golden Oak-2



21_GOR2H Golden Oak-3



22_GOS2H Golden Oak-4



23_GOZ2M Golden Oak-5



24_DW11H Dark Walnut-1



25_DWZ2H Dark Walnut-2



26_DWM2H Matt Dark Walnut



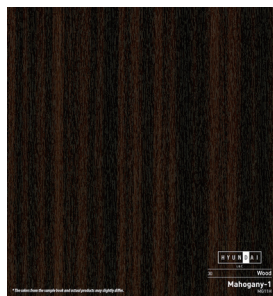
27_RO02H Vintage Oak



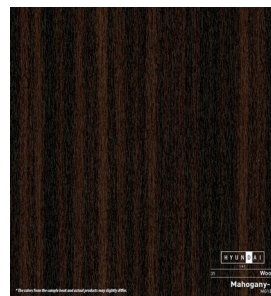
28_DOR2H Dark Oak-1



29_DO11H Dark Oak-2



30_MG11H Mahogany-1



31_MG12H Mahogany-2



32_SP02M Sapeli



33_SG04H Silk Grove



34_SW04H Silk Woodland



35_SF04H Silk Forest



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We are innovating your world.
Discover the nature, Discover the diversity.