Technical Data Sheet

Signage and Digital Printing ACM

Aluminium Composite Panel

SKYPANEL SIGN

202610-TDS | Rev 1.2 | 2026-10-30

SKYPANEL SIGN is an aluminium composite panel consisting of two aluminium skins bonded to a polyethylene core and is used for signage, display boards, film application and digital printing. This sheet summarizes the selection, performance, processing and use conditions of signage-grade and digital printing-grade products. Specific finishes, sizes and constructions are subject to the confirmed order.



Digital printed artwork in an airport corridor.

I Product Grades and Supply Range

Signage grade: Standard polyester (PE) coating; high-gloss, matte, vivid colors, etc. For signage, display, film application and decoration. Supplied for advertising applications; not a direct digital printing-grade product. For direct digital printing, select products clearly identified as digital printing grade.

Digital printing grade (Digital): Dedicated digital printing coating for direct digital printing. Print surface and color as confirmed in the order. Meets normal printing requirements for commonly used UV printers from mainstream brands and HP Latex series printers, subject to the processing conditions in this sheet.

This sheet covers the signage and digital printing series. RV/PVDF panels, architectural cladding panels, FR-core panels and other special configurations follow their own confirmed technical conditions; the performance data for the standard PE/LDPE configurations in this sheet do not apply to them.

Selection Guide

Skin thickness 0.10–0.12 mm: Economy option for indoor flat signs, displays and short-term promotional panels. Use full-surface support or an adequately supported frame. Routing and folding are not recommended. For Digital versions, take particular care with handling and printing heat.

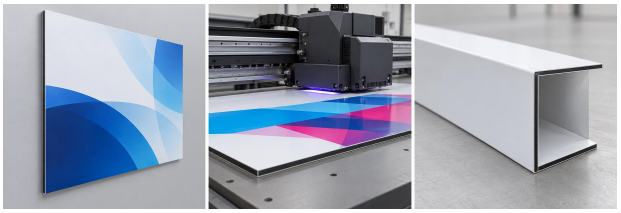
Skin thickness 0.15–0.18 mm: General-purpose option for flat signs, film application and display panels. For small to medium format direct printing, specify the Digital coating. Outdoor use requires a suitable finish, support and edge drainage.

Skin thickness 0.21 mm: Recommended starting configuration for digital printing: 3 mm total thickness with 0.21 mm skins and Digital coating. Consider for larger printed graphics and outdoor flat signs, subject to support and exposure conditions. Trial-confirm any routing and folding.

Skin thickness 0.30 mm: Preferred option for fabricated signs, routed and folded sign trays, and small sign boxes. Also consider for larger flat signs requiring greater resistance to deformation. Confirm groove depth, bend details and support on a representative trial piece.

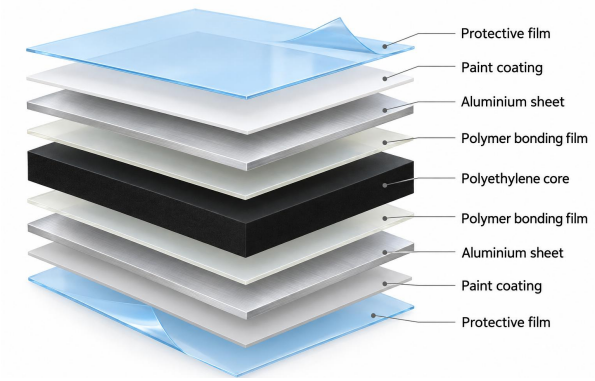
Total thickness: 2 mm for light indoor displays and small formats; 3 mm as the usual starting point; 4 mm or 6 mm where greater panel stiffness is required. Thickness alone does not establish an allowable span or free-standing stability; check panel size, loads, supports and fixings.

Selection basis: Select Signage or Digital coating first, then total and skin thickness. The skin options above assume comparable total thickness, core and support; they do not imply different flatness tolerances. Technical values apply only to their stated configurations; printing conditions apply to Digital versions. For confirmation, provide the panel size, indoor/outdoor location, fixing/support details and fabrication or printing process. For outdoor use, also check exposure, finish and drainage: keep cut edges free of standing water.



Flat graphic display | Direct digital printing | Small routed and folded component

Panel Construction and Supply Range



Layer structure shown schematically. Both faces have paint coating and protective film. Not to scale.

Supply range

Total panel thickness: 2, 3, 4, 6 mm; specific thickness and skin combination as confirmed in the order.

Nominal skin thickness: Common: 0.10, 0.12, 0.15, 0.18, 0.21, 0.30 mm; other thicknesses or asymmetric constructions as confirmed in the order.

Aluminum alloy and temper: AA1100, AA3003, etc., selected according to the product configuration and confirmed order; temper as agreed in the order.

Core and coating: Standard LDPE core; standard PE coating or dedicated digital printing coating. Special cores and finishes require separately confirmed technical requirements.

Panel width: 1220, 1500, 2000, 2050 mm; available skin thickness and size combinations as confirmed in the order.

Panel length: Common: 2440, 3050 mm; custom lengths from 2000 to 6800 mm, as confirmed by specification and order.

Color and finish: Subject to the samples agreed by both parties. Panels from the same batch and laid in the same direction should be used on one project.

II Dimensions and Appearance Basics

Thickness tolerance	±0.2 mm.
Nominal skin thickness tolerance	±0.02 mm.
Width tolerance	±2 mm.
Length tolerance	Standard ±3 mm; long lengths as agreed in the order, up to ±5 mm.
Diagonal difference	≤5 mm.
Flatness deviation	≤3 mm/m.

Support conditions, measuring length and positions for flatness inspection follow the applicable SKY RAINBOW inspection protocol. Appearance is assessed under the three-metre perpendicular viewing conditions in Section VII; this viewing method does not replace performance testing of the composite structure, coating adhesion or ink adhesion.

III Technical Performance of Standard Configurations

Reference weight and peel strength

Total (mm)	Each skin (mm)	Weight (kg/m²)	Peel (N/mm)
3	0.12	≈ 3.8	≥2
3	0.15	≈ 3.9	≥3
3	0.18	≈ 4.0	≥3
3	0.21	≈ 4.1	≥3
3	0.30	≈ 4.4	≥3

The above data apply to the listed 3 mm standard PE/LDPE configurations with equal skin thickness on both sides. The reference weight and peel strength of the 0.21/3 mm digital printing-grade standard configuration are the same as above. Other total thicknesses, skin thicknesses, cores or asymmetric combinations follow the confirmed specification and are not to be extrapolated from this sheet. Reference weights are calculated using an equivalent skin density of 2.75 g/cm³ (including coating, polymer film and protective film) and a core density of 1.15 g/cm³.

Coating and physical properties

Coating thickness: 16±1 μm. Standard PE finish; special coatings as confirmed in the order.

Pencil hardness: ≥2H. Standard PE finish.

Coating flexibility: ≤3T. Standard PE finish.

Coating adhesion: 100/100, no peeling. Test method and specimen conditions per the applicable inspection protocol.

Boiling water test: 2 h, no change. Laboratory test condition; not a condition of use for immersion of cut edges.

Acid and alkali resistance: 2% HCl / 2% NaOH, 24 h each, no change. Laboratory surface test; not a permission for acid or alkaline cleaning.

Solvent and cleaning resistance: Xylene rub 200 times, no change; cleaning resistance >1000 times, no change. Under the corresponding laboratory test conditions; not a permission to use any solvent.

Thermal expansion (reference): 2.4 mm/m at a temperature difference of 100℃. Allow for thermal movement when designing fixing holes, joints and supports.

Service temperature (reference): −25 to +80℃. Selection reference for the listed 3 mm standard configurations; not a protective-film storage or print-heating condition.

Weight and thermal expansion are reference values; coating performance applies only to the corresponding finish and test conditions. Test methods, specimen specifications and acceptance conditions should be confirmed before purchase or acceptance. Standard LDPE core is combustible; the fire rating is subject to valid test documents for the specific product, and this sheet does not constitute fire certification.

IV Digital Printing and Heating Conditions

HP certification scope: Certificate No. 53861, dated 2024-04-11, applicable to the 3 mm ACP listed in the certificate with HP Latex R1000/R2000 series printers and the specified print modes. This certification scope and the print-compatibility statements for commonly used equipment in this sheet apply separately; the certification status of other specifications is subject to the corresponding certificate.

Operating limits

Processing environment temperature: ≥15.5℃.

Printer drying temperature: <85℃.

Heating time: <10 min.

Temperature measurement locations and the method of timing heating are governed by the applicable SKY RAINBOW laboratory test protocol. Where equipment displays drying, curing or other heating parameters separately, check how each setting corresponds to the test conditions; the equipment set temperature is not necessarily the actual panel surface temperature.

With compatible inks, properly functioning equipment and compliance with the above processing conditions, digital printing-grade panels should provide normal print compatibility and ink adhesion. Thinner panels are more sensitive to high temperatures and prolonged heating. Before production printing, check the default temperature and heating time and carry out a small-scale trial with the actual panels and inks.

Print records: for production printing, record and retain the printer and ink models, print mode, drying temperature and heating time, together with the panel batch information. These records are required for any printing-related claim under the Limited Warranty.

V Storage, Handling and Protective Film

Storage and transport environment: Protective-film performance applies at temperatures ≤40℃. Keep dry and ventilated; avoid direct sunlight, moisture and water at panel edges.

Protective-film easy-peel period: Under the SKY RAINBOW laboratory test protocol, with storage and transport at ≤40℃ without sunlight exposure and removal by the specified method, the film remains easy to peel for 12 months from the factory dispatch date. These 12 months are the period over which the easy-peel condition is maintained, not a warranty period for the protective film. After 12 months, film adhesion increases somewhat; this is a normal characteristic of the film, not a quality defect, and the film should still be removed evenly in the specified direction. This period no longer applies once panels have been exposed to sunlight outdoors.

Film removal after installation: The protective film on signage panels is not UV-stabilized. Under sunlight, its adhesive and film age quickly, which can make removal difficult and leave adhesive residue or marks. For outdoor use, remove the film within 3 days of the panels' first exposure to sunlight; any outdoor storage or staging before installation counts toward this period. For indoor use without direct sunlight, remove the film as soon as possible after installation; do not leave it on long-term.

Effect of high temperature: Laboratory testing shows that film adhesion increases above 40℃. Avoid high-temperature storage and remove the film promptly before use.

Handling and stacking: Load and unload carefully. When handling manually, lift vertically along the long edge; avoid dragging, impact and excessive twisting. Store flat on fully supported pallets and keep surfaces between panels clean.

Preparation before printing: Remove the protective film evenly in the direction of the arrows printed on the film; do not pull forcefully. Make sure the panel surface is dry, clean and free of foreign matter; use compatible cleaning materials and let them evaporate fully before printing.

The protective film protects the surface during transport and before processing; the 12-month easy-peel period refers to the condition before use and does not mean the film may remain on panels after installation. Before printing, film application, fabrication and installation, check the panel surface and batch information. If an abnormality is found, suspend further processing of the affected material and retain samples.

VI Cut Edges, Drainage and Service Environment

Use tools suitable for ACM when cutting, drilling and routing; remove debris promptly and avoid damaging cut edges. Bending, bonding and fixing should be verified by trials or construction checks that take into account skin thickness, construction, support and thermal movement. Processing parameters for other specifications should not be applied directly to thin-skin panels.

Cut edges, holes, routed areas and lower panel edges should drain freely to avoid rainwater accumulation, repeated ponding, immersion or prolonged contact with damp sediment. Where water may collect, adopt drainage, isolation or edge-sealing measures compatible with the materials. These moisture conditions may cause edge corrosion, edge bond instability and skin separation. Normal cutting or exposed edges alone do not automatically affect other structural warranty coverage.

For environments with high salt exposure, locations 2,000 m or less from the coastline, acid rain or chemical pollution, confirm suitability and maintenance requirements in advance. Use mild, compatible cleaning materials; avoid strong acids, strong alkalis, abrasive cleaners and incompatible solvents. After cleaning, keep edges and joints free of residual water.

VII Visual Acceptance and Color Performance

Viewing basis: uniform frontal lighting, three metres from the panel, with the line of sight perpendicular to the panel. Banding, minor surface marks, marks visible after printing and impressions from printing on the protective film, on panel surfaces and printed graphics, are assessed under these conditions. There should be no readily noticeable defects that affect normal advertising display or printing results.

The ink layer of text printed on the protective film may leave a faint outline, gloss variation or impression on the coating surface. Minor effects visible only at close range, from an oblique angle, or under strong reflections or raking light, but not readily noticeable under the above conditions, are generally considered acceptable surface characteristics. Noticeable adhesive residue, contamination, or abnormal coating or ink adhesion are assessed separately against the conditions of use and test results.

Vivid colors and finishes such as high-gloss and matte may undergo some fading, gloss variation or natural aging under prolonged exposure to light and sunlight; this should be reasonably assessed in relation to the color characteristics, exposure period and service environment. Delivered color is subject to the confirmed samples; subsequent natural changes are not defects of the composite structure.

VIII Companion Warranty and Document Application

This series is covered by the Limited Warranty – ACM for Signage and Digital Printing (Document No. 202610), a three-year limited warranty that primarily covers the panel's composite structure. Commencement, conditions of use, quality assessment, remedies and cost scope are governed by that warranty. The protective film is subject to the conditions in Section V of this sheet; no separate commitment is made regarding the duration of color or gloss retention or the service life of printed graphics.

This sheet is used together with the confirmed order, the corresponding inspection protocol and the applicable fabrication and use guidelines; special configurations and additional guarantees must be confirmed in writing. Please inspect panels before production printing, cutting or installation.

Claims: notify us in writing within thirty days of discovering a problem, and provide the warranty, order or invoice, production batch, affected quantity, site or installation photographs and relevant processing records. Printing-related cases should include printer and ink models, temperatures and heating times; appearance-related cases should include a visual inspection record identifying the lighting, viewing distance and angle, with corresponding photographs. See Section V of the Limited Warranty for details.