

TECHNICAL SPECIFICATION FOR
SOLID COLOUR PVC HIGH GLOSS FOIL

ISSUED BY ; Rikentechnos Corporation, Quality Assurance Division
Dated on : January 20, 2009

1, INTRODUCTION

This Technical Specification is to define the technical specifications and parameters for the **Solid Colour PVC High Gloss Foils, Decorative PVC High Gloss Foils, and Decorative PVC SATIN Foils** (hereinafter referred to as “**PRODUCT**”) being currently supplied by Rikentechnos corporation (hereinafter referred to as “**SUPPLIER**”) to **XXXXXXXXXX** (hereinafter referred to as “**CONTRACTER**”) as per ATTACHMENT 4.1, 4.2, 4.3

In case PRODUCT not listed above is newly contracted between CONTRACTER and SUPPLIER (hereinafter collectively referred to as “**BOTH PARTIES**”), this specification shall be revised as may be necessary immediately after mutual agreement of **BOTH PARTIES**.

2. TECHNICAL SPECIFICATIONS AND PARAMETERS

Technical Specifications and Parameters to be defined in this Technical Specification shall be as per ATTACHMENT 1, ATTACHMENT 2 and ATTACHMENT 3. **BOTH PARTIES** hereby agree that any parameters not specified in ATTACHMENT 1 to 3 shall be discussed and may be included into this specification when it becomes necessary after mutual discussion.

3. TEST METHOD

Following test method has been applied respectively to define Technical Parameters as ATTACHMENT 1 and ATTACHMENT 2.

a) GLOSS LEVEL

Gloss level shall be measured with a gloss meter at 60 - 60 degree (Parallel to grain direction) using test method JIS Z 8741 and shall have to fall within the tolerances as per ATTACHMENT 3.

b) WEATHERABILITY

A light fastness test is carried out with **PRODUCT** being under Open-flame carbon-arc lamps for over 200 hours. The method of measuring the change is by observation under D65 light, CIE Lab, by 10 degrees (Instrument Geometry d/8), Open-flame carbon-arc lamps conditions are BPT : 63°C, HUM : 50%, Cycle : 120minutes(HUM.90%R.H. : 18minutes).

c) RESISTANCE TO CHEMICAL AGENTS

Test is carried out in accordance with DIN 68861- I Standard. The foil must pass level B with the exception of testing for Acetone and Ethyl, butyl acetate.

d) RESISTANCE TO SCRATCHES

Test is carried out in accordance with method JIS K 5400, i.e. Pencil Hardness Test, with a weight of 200g.

e) HEAT SHRINKAGE TEST

Test is carried out in accordance with test method JIS K 6734.

f) TENSILE PROPERTIES

Test is carried out in accordance with test method JIS K 7113, i.e. tensile strength at break, elongation at break.

g) ANTI-SCRATCH VARNISH

The outer surface of PRODUCT must be protected with an anti-scratch varnish that will not delaminate following a crosscut cellophane tape test. This test shall be executed as below;

- two parallel cuts are made with a cutter knife onto the surface of the film, then,
- cellophane tape is applied over the cuts and removed with one pull.
- This process is repeated three times.

h) WETTABILITY OF PRIMER

Test is carried out in accordance with test method JIS K 6768.

4. COMPENSATION FOR DAMAGES DUE TO THE FAULT OF THE PRODUCT QUALITY

Any quality of PRODUCT within the tolerance of specification defined under this Technical Specification shall be deemed to be acceptable to CONTRACTER. No compensation for damages, therefore, raised by CONTRACTER due to the fault of the PRODUCT within the range of this technical specification shall be considered.

However, SUPPLIER shall ensure to do his best effort to evaluate any claims raised by CONTRACTER soonest possible, and take effective measures in order to remedy such a quality fault for producing better level of PRODUCT for future production, as may be applicable.

IN WITNESS WHEREOF, BOTH PARTIES hereto has caused this Technical Specification to be executed by its duly authorized representative on the date signed below ;

NAME

RIKEN TECHNOS CORPORATION
Quality Assurance Division,
Research and Development Department

ATTACHMENT 1 : TECHNICAL PARAMETERS

ITEM	VALUE	UNIT	TEST METHOD
Weatherability (Colour stability, UV resistance)	$\Delta E \leq 5.0$	—	Open-Frame Carbon-Arc Lamps Test/ CIE Lab D / Standard Light
Resistance to chemical agents	As per ATTACHMENT 2	—	DIN 68861-I
Resistance to scratches	$\geq F$	—	JIS K 5400
Heat shrinkage test (Lengthwise /Crosswise)	within ± 5 within ± 5	% %	JIS K 6734
Tensile properties - Tensile strength at break - Elongation	over 30 over 100	MPa %	JIS K 7113
Anti-scratch varnish	No de-lamination	—	Cellophane tape Test
Wettability of primer	over 50	mN/m	JIS K 6768

ATTACHMENT 2:RESISTANCE TO CHEMICAL AGENT (DIN 68861-1)

Test agent	Exposure groups		Assessment
	IB		
	Ewd	Erg	
1. Acetic acid (Commercial vinegar)	60min	0	0
2. Citric acid	60min	0	0
3. Sodium carbonate	2min	0	0
4. Ammonia water	2min	0	0
5. Ethyl alcohol	60min	0	0
6. Red wine	5 h	0	0
7. Beer	5 h	0	0
8. Cola	16 h	0	0
9. Soluble coffee	16 h	0	0
10. Black tea	16 h	0	0
11. Blackcurrant juice	16 h	0	0
12. Condensed milk	16 h	0	0
13. Water	16 h	0	0
14. Petrol	2min	0	0
15. Acetone	10s	3	4
16. Ethyl butyl acetate	10s	3	4
17. Butter	16 h	0	0
18. Olive oil	16 h	0	0
19. Mustard	5 h	0	0
20. Common salt	5 h	0	0
21. Onions	5 h	0	0
22. Lipstick	16 h	3	1
23. Disinfectants (b)	10min	0	0
24. Black biro ink	16 h	3	0
25. Stamp dye	16 h	3	0
26. Cleaning agents	60min	0	0
27. Cleaning solutions	60min	0	0

Remarks:

The result of the tests shall be assessed as follows on the basis of visual comparison of exposed and unexposed surfaces :

- 0 : No visible changes
- 1 : Barely recognizable changes in brightness or colour
- 2 : Minor changes in brightness or colour, but no change in the structure of the test surface
- 3 : Severe visible marking, but the structure of the test surface is broadly undamaged
- 4 : Severe visible marking with changes in the structure of the test surface
- 5 : Serious modification or destruction of test surface

ATTACHMENT 3 : SPECIFICATION OF THE PRODUCT

PRODUCT shall be utilized for kitchen, bathroom, living room and bedroom furniture applications etc, using the method of membrane pressing and/or profile rapping. SUPPLIER can not obliged to any damage, claim or whatsoever due to the usage other than specified and advised by SUPPLIER.

ITEM	STANDARD	TEST METHOD / REMARKS
Thickness	within a variation of ± 0.05 mm compared to agreed thickness (measured by 1/1000 dial gauge)	—
Width	Total width : 1400 – 1440mm Usable width : 1350 – 1390mm	—
Roll length	Standard length per one roll shall be 300LM. Minimum and Maximum length to be accepted by CONTRACTER shall be 80LM and 350LM respectively	—
Paper core	Thickness : 15mm, Dimension : 79mm Width : 1550mm	—
Gloss level	80 \pm 8 (Solid color and decorative High Gloss foil) 25 \pm 4 (Decorative Satin foil)	JIS Z 8741 / 60° angle / gloss meter/Horiba/IG-320
Color	As per ATTACHMENT 4.1 for each solid color High Gloss foil. As per ATTACHMENT 4.2, 4.3 for each decorative foil standard Visual inspection between products and the standard is applied for judgment. (For all decorative products have difficulties to measure and define like solid color products.)	Solid color foil : CIE Lab D / Standard Light / d/8 Minolta / CM503i Decorative foil: Visual inspection
Surface condition	No significant difference compared to standard sample shall be appeared, which shall be decided and judged by visual inspection of both parties.	Standard sample per each color shall be agreed separately.
Reverse condition	No significant difference compared to standard sample shall be appeared, which shall be decided and judged by visual inspection of both parties.	—

ATTACHMENT 4.1 : SPECIFICATION OF THE PRODUCT COLOR FOR SOLID COLOR HIGH GLOSS PRODUCTS

Products	Standard Lot.	Color control DE \geq from standard	Remarks
AD Antique White2 HG (50P) W		0.5	
Aubergine HG (40P) W		1.2	
Blueberry HG (40P) W		1	
Dark Blue HG (50P) W		1	
FC 13510 HG (40P) W		0.5	
FC 13510 HG (50P) W		0.5	
Grau HG (50P) W		0.8	
New Vanilla HG (50P) W		0.5	
Olive HG (50P) W		1	
Orange 57144 HG (50P) W		0.8	
PG Black2 HG (40P) W		0.5	
PG Black2 HG (50P) W		0.5	
PG White N (40P) W		0.5	
PG White N (50P) W		0.5	
PG White P (50P) W		0.5	
Royal Blue HG (40P) W		0.7	
Ruby Red 38623 HG (50P) W		1.2	
Safari Beige HG (50P) W		0.5	
Sahara Beige HG (50P) W		0.6	
SB Van HG (50P) W		0.5	
Terra HG (40P) W		0.8	