

# Resistance Test Results Thermo-Jet®

Test, Testing Medium	Evaluation:	Thermo-Jet® 312 Red			Thermo-Jet® 948 Black			according to DIN	Test-parameter	Temp.
		SKF (a)	Rigid PVC (b)	PMMA (c)	SKF (a)	Rigid PVC (b)	PMMA (c)			
<b>Printing substrate</b>										
<b>Fastness to saliva</b>		++	++	++	++	++	++	53160-1	2 h	37 °C / 99 °F
<b>Fastness to perspiration</b>		++	++	++	++	++	++	53160-2	2 h	37 °C / 99 °F
<b>Water resistance:</b>								ISO 2836	24 h	20 °C / 68 °F
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
<b>Solvent resistance:</b>								ISO 2836	5 min	20 °C / 68 °F
– Ethanol		++	++	++	++	++	++			
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
– Test mixture (d)		≈ (f)	≈ (f)	– (e,f)	≈ (f)	≈ (f)	– (e,f)			
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
<b>Fuel resistance:</b>								ISO 2836	5 min	20 °C / 68 °F
– Premium		+ (g)	++	++	+ (g,h)	+ (h)	+ (h)			
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
– Regular gas		+	++	++	+	++	++			
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
– Diesel		++	++	++	++	++	++			
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
<b>Alkali resistance:</b> – 2.5 % NaOH-solution								ISO 2836	10 min	20 °C / 68 °F
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
<b>Detergent resistance:</b> – 1 % Persil®-solution								ISO 2836	3 h	20 °C / 68 °F
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
<b>Resistance to vegetable fat:</b> – Sunflower oil								ISO 2836	24 h	20 °C / 68 °F
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
<b>Resistance to skin cream:</b> – Nivea®									24 h	20 °C / 68 °F
Visible change of ink film		++	++	++	++	++	++			
Coloring of testing medium		++	++	++	++	++	++			
<b>Conditioning cabinet</b> (95 % humidity)				++			++		5 h	80 °C / 176 °F
<b>Heat resistance</b>		++	+ (i)		++	+ (i)			30 min	120 °C / 248 °F
<b>Scrub resistance (j)</b>		++	+ P		++	+ P/S			200 shears	
<b>Level of gloss (k)</b>		70	73	74	69	75	74			
<b>Acid resistance:</b> – sulfuric acid, δ = 1.24 g/ml									5 min	20 °C / 68 °F
Visible change of ink film		++	++	++	++	++	++			
<b>Cross-hatch adhesion test (l)</b>			Gt 0	Gt 0		Gt 0	Gt 0	ISO 2409		

## Thinning:

20 % Thinner M 204

## Printing conditions:

Mesh 120-34 Y

Squeegee 70 Shore A

## Remarks:

- ++ good, no color-change
- + acceptable
- ≈ poor
- not recommended, resp. coloration
- S scratches
- P polishing

## Printing substrates:

- (a) PVC self-adhesive film white, glossy  
Type: Jac 72100
- (b) Rigid PVC white  
Type: Genotherm FE 85  
Manufacturer: Hoechst/Kalle
- (c) Plexiglas® GS  
Manufacturer: Evonik Röhm GmbH
- (d) Test mixture according to  
DIN ISO 2836  
30 % by volume ethyl acetate  
60 % by volume ethanol  
10 % by volume  
1-methoxy-propanol-2
- (e) Substrate material not resistant
- (f) Ink film redissolved, after  
drying scratch resistant again,  
gloss reduction
- (g) Slight blistering in the substrate  
material
- (h) Slight gloss reduction
- (i) Slight substrate material  
deformation
- (j) Quartant Scrub-Tester,  
Manufacturer: Prüfbau Company
- (k) micro-gloss, geometry 60°,  
Manufacturer: Byk Gardner  
average value of 5 measurements
- (l) Cross-hatch adhesion value

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