

# Resistance Test Results NORIPHAN® N2K with Hardener

Test, Testing Medium	Evaluation:	NORIPHAN® N2K 308 Red		NORIPHAN® N2K 952 Black HF		according to DIN	Test- parameter	Temp.
		PC (a)	PET (b)	PC (a)	PET (b)			
<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 in ink film	++	++	++	++			
	Coloring of testing medium	++	++	++	++			
<b>Solvent resistance:</b>						ISO 2836	5 min	20 °C / 68 °F
– Ethanol	Visible change in ink film	++	++	++	++			
	Coloring of testing medium	++	++	++	++			
– Test mixture (c)	Visible change in ink film	++	++	++	++			
	Coloring of testing medium	++	++	++	++			
<b>Fuel resistance:</b>						ISO 2836	5 min	20 °C / 68 °F
– Premium	Visible change in ink film	≈ (d)	≈ (d)	≈ (d)	≈ (d)			
	Coloring of testing medium	++	++	++	++			
– Regular gas	Visible change in ink film	≈ (d)	≈ (d)	≈ (d)	≈ (d)			
	Coloring of testing medium	++	++	++	++			
– Diesel	Visible change in ink film	++	++	++	++			
	Coloring of testing medium	++	++	++	++			
<b>Alkali resistance:</b> – 2.5 % NaOH-solution						ISO 2836	10 min	20 °C / 68 °F
	Visible change in ink film	++	++	++	++			
	Coloring of testing medium	++	++	++	++			
<b>Detergent resistance:</b> – 1 % Persil®-solution						ISO 2836	3 h	20 °C / 68 °F
	Visible change in ink film	++	++	++	++			
	Coloring of testing medium	++	++	++	++			
<b>Resistance to vegetable fat:</b> – Sunflower oil						ISO 2836	24 h	20 °C / 68 °F
	Visible change in ink film	++	++	++	++			
	Coloring of testing medium	++	++	++	++			
<b>Resistance to skin cream:</b> – Nivea®							24 h	20 °C / 68 °F
	Visible change in ink film	++	++	++	++			
	Coloring of testing medium	++	++	++	++			
<b>Conditioning cabinet</b> (95 % humidity)		++	++	++	++		5 h	80 °C / 176 °F
<b>Heat resistance</b>		++	++	++	++		30 min	120 °C / 248 °F
<b>Scrub resistance (e)</b>		+ S / P	+ S / P	+ P	++		200 shears	
<b>Level of gloss (f)</b>		96	96	86	86			
<b>Acid resistance:</b> – sulfuric acid, δ = 1.24 g/ml							5 min	20 °C / 68 °F
	Visible change in ink film	++	++	++	++			
<b>Cross-hatch adhesion test (g)</b>		Gt 0	Gt 1	Gt 0	Gt 1	ISO 2409		

## Addition of Catalyst:

3 % Hardener 001

## Thinning:

15 % Thinner M 206

## Printing conditions:

2x printed

Mesh 100-40 Y

Squeegee 70 Shore A

## Drying:

Jet-Drying 70 °C / 158 °F, 5 m/min

## Post curing conditions:

3 h 80 °C / 176 °F

## Remarks:

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

## Printing substrates:

- (a) PC film Makrofol® DE 1-1 250 µm
- (b) PET film Autoflex® EBG 180 L
- (c) Test mixture according to DIN ISO 2836  
30 % by volume ethyl acetate  
60 % by volume ethanol  
10 % by volume  
1-methoxy-propanol-2
- (d) Ink film redissolved, after drying  
scratch resistant again
- (e) Quartant Scrub-Tester,  
Manufacturer: Prüfbau Company
- (f) micro-gloss, geometry 60°,  
Manufacturer: Byk Gardner  
average value of 5 measurements
- (g) Cross-hatch adhesion value

**When processing NORIPHAN® N2K according to the IMD/FIM technology, please note that the ink layer is encapsulated between film and injection molding material.**

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