

DNP

DNP Imagingcomm Europe B.V.

Durability Testing Report

Arjobex

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Overview test results

In this section the actual results of the durability tests on the substrates, which DNP Imagingcomm Europe received from Arjobex, are shown.

The results are the outcome of the abrasion tests, which have been conducted on a SANGYO AB-301 Crock Meter smudge machine, using a weight of 400 grams per rub over the printed substrate.

The presented numbers can be divided in two sorts of data:

1. **Number of Cycles**

Every cycle stands for two rubs

2. **ANSI value**

The ANSI value is determined with an LVS-9510 Barcode Verifier

ANSI values are rated from 0.0 till 4.0, where 0.0 stands for absolutely no barcode readability and 4.0 stands for a perfectly readable barcode print. The cut-off for most companies (in retail) is an ANSI-rate with a minimum of 1.5. When a Barcode is 1.5 or lower, a barcode scanner won't be able to read the printed data anymore. Above 1.5 a scan is readable.

Therefore, DNP used the following scale for presenting the ANSI-values in the tables:

| | |
|-----------|-----------|
| Poor | 0.0 - 1.5 |
| Average | 1.5 - 2.0 |
| Good | 2.1 - 2.6 |
| Excellent | 2.7 - 4.0 |

The results are presented per Arjobex substrate.

General observation of the results per product

General finding regarding **water resistance**: in quite a few cases, the water resistance of the material caused too much friction, so the label material tear apart. Although the label tore apart due to repetitive friction, the barcode usually looked fine and undamaged. As the occurred failures versus water happened with various label materials with different TTR combinations, the test was performed again to see if it would happen again. Sometimes it did, sometimes it did not, so DNP is not certain what causes this. DNP suspects that the top-coat of the label material is relatively more susceptible to repetitive water friction or immersion, causing it to break under the pressure.

Polyart Std 75

| Polyart Std 75 | TR4085plus® | | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | |
|----------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | | | 4,0 | | 4,0 | | 4,0 | |
| | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | |
| dry smudge | 100 | 3,8 | 100 | 4,0 | 100 | 4,0 | 100 | 3,2 | 100 | 4,0 | | | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| water | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 2,2 | 100 | 4,0 | | | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| olive oil | 20 | 2,3 | 100 | 4,0 | 100 | 4,0 | 20 | 0,0 | 100 | 4,0 | | | 100 | 4,0 | 100 | 3,3 | 100 | 4,0 |
| fish oil | 20 | 2,9 | 50 | 3,3 | 100 | 3,8 | 20 | 0,0 | 100 | 4,0 | | | 100 | 4,0 | 100 | 3,2 | 100 | 4,0 |
| liquid butter | 20 | 0,6 | 50 | 3,2 | 100 | 4,0 | 20 | 2,2 | 100 | 4,0 | | | 100 | 4,0 | 100 | 4,0 | 100 | 2,4 |
| bleach | 30 | 1,5 | 100 | 2,3 | 60 | 4,0 | 30 | 1,5 | 40 | 3,6 | | | 100 | 4,0 | 70 | 3,8 | 60 | 4,0 |
| detergent | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | | | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| bacon | 20 | 0,3 | 15 | 0,0 | 100 | 4,0 | 20 | 0,3 | 10 | 2,4 | | | 100 | 4,0 | 100 | 4,0 | 100 | 3,6 |
| vinegar | 100 | 2,2 | 100 | 4,0 | 100 | 4,0 | 100 | 2,2 | 100 | 4,0 | | | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| IPA | 5 | 0,0 | 10 | 0,0 | 5 | 4,0 | 5 | 0,0 | 5 | 0,0 | | | 5 | 0,0 | 5 | 0,0 | 5 | 0,8 |

Printability: excellent, apart from R510

Wax/Resin: M265 best in class

Resin: R550 best in class

Polyart 80 C1S

| Polyart 80 C1S | TR4085plus® | | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | |
|----------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | | | 4,0 | | 3,6 | | 4,0 | |
| | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | |
| dry smudge | 100 | 3,4 | 100 | 3,0 | 100 | 4,0 | 100 | 3,1 | 100 | 4,0 | | | 100 | 3,2 | 100 | 3,5 | 100 | 4,0 |
| water | 100 | 2,5 | 100 | 4,0 | 100 | 0,0 | 100 | 2,9 | 100 | 4,0 | | | 100 | 4,0 | 100 | 3,6 | 100 | 4,0 |
| olive oil | 20 | 2,4 | 100 | 3,3 | 100 | 4,0 | 20 | 3,4 | 100 | 3,7 | | | 100 | 3,5 | 100 | 2,8 | 100 | 4,0 |
| fish oil | 20 | 2,8 | 50 | 3,4 | 100 | 4,0 | 20 | 3,0 | 100 | 3,9 | | | 100 | 3,2 | 100 | 3,1 | 100 | 4,0 |
| liquid butter | 20 | 2,5 | 50 | 4,0 | 100 | 4,0 | 20 | 2,5 | 100 | 3,6 | | | 100 | 2,7 | 100 | 2,5 | 100 | 2,8 |
| bleach | 30 | 2,6 | 70 | 0,0 | 20 | 0,0 | 30 | 2,6 | 20 | 0,0 | | | 20 | 3,6 | 20 | 0,0 | 10 | 0,0 |
| detergent | 90 | 4,0 | 100 | 3,1 | 60 | 0,0 | 80 | 4,0 | 60 | 0,0 | | | 80 | 0,0 | 80 | 0,0 | 35 | 0,0 |
| bacon | 18 | 0,2 | 20 | 0,2 | 100 | 3,1 | 20 | 0,2 | 100 | 4,0 | | | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| vinegar | 100 | 0,4 | 100 | 2,7 | 100 | 4,0 | 100 | 0,4 | 100 | 3,9 | | | 100 | 3,5 | 100 | 3,9 | 100 | 4,0 |
| IPA | X | 0 | 10 | 0,6 | X | 4,0 | X | 0,0 | X | 0,0 | | | 100 | 3,0 | X | 0,0 | X | 0,0 |

Printability: excellent, apart from R510

Wax/Resin: M255 best in class

Resin: R300 best in class

Polyart SR

| Polyart SR | TR4085plus® | | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | |
|---------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | |
| | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | |
| dry smudge | 100 | 3,2 | 100 | 3,8 | 100 | 3,8 | 100 | 2,4 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| water | 100 | 4,0 | 100 | 4,0 | 100 | 3,3 | 100 | 2,9 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| olive oil | 20 | 2,9 | 65 | 3,1 | 100 | 3,0 | 20 | 1,8 | 100 | 3,7 | 100 | 4,0 | 100 | 4,0 | 100 | 3,9 | 100 | 2,7 |
| fish oil | 20 | 2,7 | 65 | 2,6 | 100 | 3,4 | 20 | 1,9 | 100 | 3,4 | 100 | 4,0 | 100 | 4,0 | 100 | 3,7 | 100 | 2,6 |
| liquid butter | 20 | 2,4 | 80 | 2,7 | 100 | 3,7 | 20 | 0,7 | 100 | 3,2 | 100 | 4,0 | 100 | 4,0 | 100 | 3,7 | 100 | 2,0 |
| bleach | 100 | 2,4 | 100 | 3,8 | 20 | 3,9 | 100 | 2,4 | 100 | 3,9 | 100 | 4,0 | 100 | 4,0 | 25 | 0,0 | 100 | 3,6 |
| detergent | 100 | 4,0 | 100 | 4,0 | 100 | 3,6 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| bacon | 40 | 1,6 | 30 | 0,2 | 100 | 2,8 | 35 | 1,6 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| vinegar | 100 | 4,0 | 100 | 3,8 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| IPA | X | 0,0 | 8 | 2,0 | X | 0,0 | X | 0,0 | 8 | 1,5 | 10 | 3,5 | 10 | 0,0 | 3 | 0,0 | 5 | 0,0 |

Printability: excellent, apart from R510

Wax/Resin: M265 best in class

Resin: R510 best in class

Polyart TE 60

| Polyart TE 60 | TR4085plus® | | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | |
|---------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 2,5 | | 4,0 | | 4,0 | | 4,0 | |
| | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | |
| dry smudge | 100 | 3,5 | 100 | 2,7 | 100 | 4,0 | 100 | 2,8 | 100 | 4,0 | 100 | 2,5 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| water | 100 | 3,7 | 100 | 4,0 | 100 | 4,0 | 100 | 3,2 | 100 | 4,0 | 100 | 2,1 | 100 | 4,0 | 100 | 3,3 | 100 | 4,0 |
| olive oil | 20 | 4,0 | 100 | 4,0 | 100 | 4,0 | 20 | 0,7 | 100 | 4,0 | 100 | 1,5 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| fish oil | 20 | 3,3 | 100 | 4,0 | 100 | 4,0 | 20 | 2,7 | 100 | 4,0 | 100 | 1,5 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| liquid butter | 20 | 3,7 | 100 | 4,0 | 100 | 4,0 | 20 | 2,1 | 100 | 4,0 | 100 | 1,5 | 100 | 4,0 | 100 | 4,0 | 100 | 3,9 |
| bleach | 60 | 3,6 | 30 | 3,5 | 30 | 4,0 | 60 | 3,6 | 60 | 3,3 | 100 | 0,0 | 100 | 1,3 | 50 | 0,0 | 80 | 3,1 |
| detergent | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 40 | 0,8 | 100 | 0,0 | X | 0,0 | 100 | 3,3 |
| bacon | 20 | 0,4 | 15 | 0,0 | 100 | 4,0 | 18 | 0,4 | 100 | 4,0 | 70 | 2,8 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| vinegar | 100 | 2,8 | 100 | 4,0 | 100 | 4,0 | 100 | 2,8 | 100 | 4,0 | 100 | 0,0 | 100 | 4,0 | X | 3,8 | 100 | 4,0 |
| IPA | X | 0,0 | 10 | 0,0 | X | 0,0 | X | 0,0 | X | 0,0 | 5 | 1,5 | 10 | 0,0 | X | 0,0 | 5 | 1,3 |

Printability: excellent, apart from R510

Wax/Resin: M265 best in class

Resin: R300 and V300 are best in class

Polyart HS 130

| Polyart HS 130 | TR4085plus® | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | | |
|----------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-----|-----|
| | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | | |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | |
| dry smudge | 100 | 4,0 | 100 | 4,0 | 100 | 3,8 | 100 | 3,9 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| water | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 3,4 | 100 | 4,0 | 100 | 4,0 | 100 | 0,0 | 100 | 4,0 | 100 | 4,0 |
| olive oil | 20 | 0,0 | 50 | 3,3 | 100 | 4,0 | 20 | 1,7 | 100 | 4,0 | 100 | 4,0 | 100 | 3,7 | 100 | 4,0 | 100 | 4,0 |
| fish oil | 20 | 0,0 | 50 | 2,3 | 100 | 3,9 | 20 | 1,1 | 100 | 4,0 | 100 | 4,0 | 100 | 3,8 | 100 | 4,0 | 100 | 4,0 |
| liquid butter | 20 | 0,0 | 50 | 2,2 | 100 | 3,5 | 20 | 1,9 | 100 | 4,0 | 100 | 4,0 | 100 | 3,8 | 100 | 4,0 | 100 | 3,7 |
| bleach | 70 | 3,5 | 100 | 4,0 | 30 | 3,4 | 70 | 3,5 | 100 | 4,0 | 100 | 4,0 | 20 | 4,0 | 100 | 0,0 | 100 | 3,6 |
| detergent | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 20 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| bacon | 50 | 0,1 | 30 | 3,1 | 100 | 4,0 | 50 | 0,1 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| vinegar | 100 | 4,0 | 100 | 3,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 40 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| IPA | X | 0,0 | 10 | 2,0 | X | 0,0 | X | 0,0 | 100 | 4,0 | 100 | 4,0 | 60 | 0,0 | 2,00 | 0,0 | 100 | 0,0 |

Printability: excellent

Wax/Resin: M265 best in class

Resin: R300, R510, TR7541 and V300 were equal in providing the best resistance, also against IPA

Polyart PSL 50

| Polyart PSL 50 | TR4085plus® | | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | |
|----------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | |
| | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | |
| dry smudge | 100 | 3,5 | 100 | 3,3 | 100 | 4,0 | 100 | 3,3 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| water | 100 | 4,0 | 100 | 3,8 | 100 | 4,0 | 100 | 3,8 | 100 | 4,0 | 100 | 4,0 | 100 | 0,0 | 100 | 4,0 | 100 | 4,0 |
| olive oil | 20 | 1,0 | 80 | 3,8 | 100 | 4,0 | 20 | 1,9 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| fish oil | 20 | 1,1 | 60 | 1,0 | 100 | 4,0 | 20 | 2,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| liquid butter | 20 | 1,9 | 80 | 1,5 | 100 | 4,0 | 20 | 1,7 | 100 | 4,0 | 100 | 4,0 | 100 | 3,1 | 100 | 4,0 | 100 | 4,0 |
| bleach | 25 | 4,0 | 100 | 4,0 | 60 | 3,6 | 20 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 0,0 | 100 | 4,0 |
| detergent | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 60 | 0,0 | 100 | 4,0 | 100 | 4,0 |
| bacon | 15 | 0,0 | 20 | 2,7 | 100 | 3,2 | 10 | 0,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| vinegar | 100 | 3,6 | 100 | 4,0 | 100 | 4,0 | 100 | 3,6 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 | 100 | 4,0 |
| IPA | X | 0,0 | X | 0,0 | X | 0,0 | X | 0,0 | 100 | 3,5 | 40 | 4,0 | 100 | 4,0 | 2 | 0,0 | 70 | 2,8 |

Printability: excellent

Wax/Resin: M265 best in class

Resin: R300, R510 and V300 were equal in providing the best resistance, whereas R510 had the best IPA resistance

MDV Robuskin

| MDV Robuskin | TR4085plus® | | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | |
|---------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 3,6 | | 4,0 | | 4,0 | | 4,0 | |
| | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | |
| dry smudge | 100 | 2,5 | 100 | 2,7 | 100 | 2,6 | 100 | 2,7 | 100 | 3,4 | 100 | 2,9 | 100 | 2,9 | 100 | 2,9 | 100 | 2,7 |
| water | 100 | 3,2 | 100 | 2,9 | 100 | 2,9 | 100 | 2,9 | 100 | 3,3 | 100 | 3,3 | 100 | 3,2 | 100 | 3,0 | 100 | 2,8 |
| olive oil | 20 | 0,9 | 60 | 1,5 | 100 | 2,5 | 20 | 0,9 | 100 | 3,0 | 100 | 3,1 | 100 | 2,8 | 100 | 2,7 | 100 | 2,2 |
| fish oil | 20 | 0,8 | 60 | 0,9 | 100 | 2,2 | 20 | 0,0 | 100 | 2,8 | 100 | 3,3 | 100 | 3,0 | 100 | 2,8 | 100 | 3,1 |
| liquid butter | 20 | 0,9 | 60 | 1,6 | 100 | 2,3 | 20 | 1,1 | 100 | 2,8 | 100 | 2,2 | 100 | 1,2 | 100 | 3,0 | 100 | 2,7 |
| bleach | 40 | 2,6 | 100 | 2,7 | 40 | 1,9 | 40 | 2,6 | 100 | 3,2 | 100 | 3,5 | 100 | 2,9 | 100 | 2,2 | 100 | 2,0 |
| detergent | 100 | 3,2 | 100 | 3,1 | 100 | 3,2 | 100 | 3,2 | 100 | 3,2 | 100 | 3,6 | 70 | 0,0 | 100 | 3,3 | 100 | 2,6 |
| bacon | 15 | 1,9 | 35 | 0,0 | 100 | 2,0 | 15 | 1,9 | 100 | 2,8 | 100 | 3,5 | 100 | 3,1 | 100 | 3,3 | 100 | 2,6 |
| vinegar | 100 | 2,9 | 100 | 3,2 | 100 | 3,1 | 100 | 2,9 | 100 | 3,2 | 100 | 3,4 | 100 | 2,9 | 100 | 3,2 | 100 | 3,0 |
| IPA | X | 0,0 | 15 | 0,0 | X | 0,0 | X | 0,0 | 100 | 2,5 | 100 | 3,5 | 100 | 3,2 | X | 0,0 | 100 | 2,4 |

Printability: fairly equal for all grades

Wax/Resin: M265 best in class

Resin: R510 provided the best resistance, also against IPA

Sanitex HLS2

| Sanitex HLS2 | TR4085plus® | | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | |
|---------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 3,9 | | 4,0 | | 4,0 | | 4,0 | |
| | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | |
| dry smudge | 100 | 2,8 | 100 | 2,9 | 100 | 3,1 | 100 | 2,6 | 100 | 3,2 | 100 | 2,9 | 100 | 3,5 | 100 | 2,2 | 100 | 3,3 |
| water | 100 | 3,6 | 100 | 3,0 | 100 | 3,2 | 100 | 2,8 | 100 | 3,0 | 100 | 3,3 | 100 | 3,5 | 100 | 1,3 | 100 | 2,8 |
| olive oil | 20 | 0,8 | 50 | 1,4 | 100 | 2,7 | 20 | 0,0 | 100 | 2,8 | 100 | 3,5 | 100 | 3,5 | 100 | 3,0 | 100 | 2,7 |
| fish oil | 20 | 0,0 | 50 | 1,2 | 100 | 2,8 | 20 | 0,0 | 100 | 3,0 | 100 | 3,6 | 100 | 3,7 | 100 | 0,0 | 100 | 3,0 |
| liquid butter | 20 | 0,0 | 50 | 1,8 | 100 | 2,5 | 20 | 0,0 | 100 | 3,2 | 100 | 2,8 | 100 | 3,3 | 100 | 0,0 | 100 | 2,5 |
| bleach | 50 | 2,7 | 100 | 3,3 | 80 | 2,8 | 45 | 2,7 | 100 | 3,7 | 100 | 3,5 | 100 | 3,7 | 80 | 0,0 | 100 | 3,6 |
| detergent | 100 | 3,2 | 100 | 3,4 | 100 | 3,3 | 100 | 3,2 | 100 | 3,5 | 100 | 3,5 | 100 | 2,5 | 100 | 3,0 | 100 | 3,6 |
| bacon | 20 | 0,0 | 20 | 0,5 | 100 | 1,1 | 15 | 0,0 | 100 | 2,9 | 100 | 3,5 | 100 | 3,6 | 90 | 0,0 | 100 | 2,9 |
| vinegar | 100 | 0,0 | 100 | 3,4 | 100 | 2,8 | 100 | 3,0 | 100 | 3,6 | 100 | 3,9 | 100 | 3,6 | 100 | 0,0 | 100 | 3,6 |
| IPA | X | 0,0 | 12 | 0,2 | X | 0,0 | X | 0,0 | 100 | 2,8 | 100 | 3,8 | 100 | 3,5 | X | 0,0 | 100 | 2,8 |

Printability: fairly equal for all grades

Wax/Resin: M265 best in class

Resin: R510 and R550 provided the best resistance, also against IPA

Sanitex Std

| Sanitex Std | TR4085plus® | | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | |
|---------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after | | ANSI after |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 3,4 | | 4,0 | | 4,0 | | 4,0 | |
| | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | | # of cycles | |
| dry smudge | 100 | 2,1 | 100 | 2,7 | 100 | 2,3 | 100 | 2,5 | 100 | 3,0 | 100 | 3,0 | 100 | 2,8 | 100 | 2,9 | 100 | 3,0 |
| water | 100 | 2,4 | 100 | 3,1 | 100 | 3,1 | 100 | 2,8 | 100 | 2,4 | 100 | 3,1 | 100 | 3,1 | 100 | 2,7 | 100 | 2,7 |
| olive oil | 20 | 0,0 | 50 | 1,9 | 100 | 2,8 | 20 | 0,0 | 100 | 2,8 | 100 | 2,9 | 100 | 3,1 | 100 | 2,8 | 100 | 2,0 |
| fish oil | 20 | 0,0 | 50 | 2,4 | 100 | 2,4 | 20 | 0,0 | 100 | 3,0 | 100 | 2,9 | 100 | 2,8 | 100 | 2,5 | 100 | 2,8 |
| liquid butter | 20 | 0,0 | 50 | 1,2 | 100 | 2,2 | 20 | 0,8 | 100 | 2,8 | 100 | 1,7 | 100 | 2,4 | 100 | 1,9 | 100 | 2,2 |
| bleach | 100 | 2,9 | 100 | 3,2 | 100 | 2,3 | 100 | 2,9 | 100 | 3,2 | 100 | 3,3 | 100 | 3,0 | 70 | 2,0 | 100 | 3,2 |
| detergent | 100 | 2,9 | 100 | 3,2 | 100 | 3,1 | 100 | 2,9 | 100 | 3,2 | 100 | 3,4 | 100 | 2,8 | 100 | 3,0 | 100 | 3,1 |
| bacon | 25 | 0,0 | 20 | 0,2 | 100 | 1,8 | 20 | 0,0 | 100 | 2,5 | 100 | 3,4 | 100 | 3,2 | 100 | 1,9 | 100 | 2,4 |
| vinegar | 100 | 2,4 | 100 | 3,0 | 100 | 3,1 | 100 | 2,4 | 100 | 3,0 | 100 | 3,2 | 100 | 2,9 | 100 | 2,8 | 100 | 3,3 |
| IPA | X | 0,0 | X | 0,0 | X | 0,0 | X | 0,0 | 100 | 2,5 | 100 | 3,2 | 100 | 3,0 | X | 0,0 | 50 | 2,1 |

Printability: fairly equal for all grades

Wax/Resin: M265 best in class

Resin: R510 provided the best resistance, also against IPA

Sanitex X-Tear

| Sanitex X-Tear | TR4085plus® | | M255 | | M265 | | TR5080 | | R300 | | R510 | | R550 | | TR7541 | | V300 | |
|----------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after | # of cycles | ANSI after |
| ANSI before | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | | 4,0 | |
| dry smudge | 100 | 3,6 | 100 | 3,0 | 100 | 3,0 | 100 | 3,7 | 100 | 3,7 | 100 | 2,5 | 100 | 1,3 | 100 | 3,7 | 100 | 3,7 |
| water | 100 | 4,0 | 100 | 3,6 | 100 | 3,0 | 100 | 3,9 | 50 | 0,0 | 100 | 3,7 | 100 | 1,9 | 100 | 3,7 | 100 | 3,5 |
| olive oil | 20 | 0,9 | 100 | 1,8 | 100 | 3,4 | 20 | 1,7 | 100 | 2,8 | 100 | 3,8 | 100 | 2,1 | 100 | 3,5 | 100 | 3,7 |
| fish oil | 20 | 0,6 | 100 | 0,9 | 100 | 3,3 | 20 | 1,1 | 100 | 2,0 | 100 | 3,7 | 100 | 0,0 | 100 | 3,5 | 100 | 3,7 |
| liquid butter | 20 | 0,0 | 70 | 2,1 | 100 | 2,9 | 20 | 1,4 | 100 | 1,7 | 100 | 2,5 | 100 | 2,4 | 100 | 3,3 | 100 | 3,4 |
| bleach | 100 | 3,7 | 100 | 3,8 | 70 | 2,1 | 100 | 3,7 | 50 | 2,5 | 100 | 4,0 | 100 | 2,3 | 5 | 0,0 | 100 | 3,9 |
| detergent | 100 | 3,9 | 100 | 3,8 | 100 | 3,8 | 100 | 3,9 | 50 | 3,2 | 100 | 2,8 | 60 | 0,0 | 100 | 3,9 | 100 | 4,0 |
| bacon | 25 | 0,0 | 15 | 0,9 | 100 | 2,2 | 20 | 0,0 | 100 | 3,0 | 100 | 4,0 | 100 | 2,9 | 100 | 3,3 | 100 | 3,4 |
| vinegar | 100 | 3,6 | 100 | 3,9 | 100 | 3,6 | 100 | 3,6 | 30 | 0,0 | 100 | 2,8 | 100 | 1,8 | 100 | 3,8 | 100 | 4,0 |
| IPA | 0 | 0 | X | 0,0 | X | 0,0 | X | 0,0 | 100 | 3,1 | 100 | 4,0 | 100 | 3,3 | X | 0,0 | 60 | 2,9 |

Printability: excellent

Wax/Resin: M265 best in class

Resin: V300 provided the best resistance, although R510 has the best resistance against IPA

DNP Thermal Transfer Ribbon - General observation of the results per thermal transfer ribbon

Wax Thermal Transfer Ribbons

MP Wax - Standard Wax

Overall printability is excellent

The resistance has not been measured, as MP Wax is not made to have any resistance apart from rub resistance. MP Wax is designed for printing on goods, of which the print is no longer required within a few days (e.g., logistic labelling).

TR4085plus® - Resin Enhanced Wax

Overall printability is excellent

The overall resistance with Polyart grades is better than the other grades

Overall dry smudge, water and detergent resistance is good

Most other resistance is limited to bad

Wax/Resin Thermal Transfer Ribbons

M255 - Premium Wax / Resin

Overall printability is excellent

Overall resistance with Polyart grades is good

Overall dry smudge, water and detergent resistance is good

Most other resistance is limited to bad

M265 - Ultra-Durable Wax / Resin

Overall printability is excellent

Overall resistance is best in the wax/resin range

TR5080 - Standard Wax / Resin

Overall printability is excellent

The overall resistance is not expected from this wax/resin

Resin Thermal Transfer Ribbons

R300 - General Purpose Resin

Overall printability and resistance is good to excellent

R510 - Ultra-Durable Resin

R510 requires a very smooth surface to print on, so apart from Polyart 75, 80 and TE60, the printability is good to excellent

Apart from Polyart TE60, the overall resistance is excellent

R550 - Extremely Durable Resin

Overall printability and resistance is good to excellent

Overall resistance is usually good to excellent, however on Tech Folien it lacks resistance

TR7541 - Boiling Resistant Resin

Overall printability and resistance is good to excellent

Lacking resistance against bleach, the resistance is usually good to excellent

V300 - Versatility Defined

Overall printability and resistance is good to excellent