



Material Performance Testing

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Definition of Material Performance Testing

Gerber's material performance testing helps users to quickly understand the characteristics of popular media brands. This testing process and the information obtained enables users to make informed decisions in selecting and using media to meet individual customer needs or requirements.

Gerber's material performance testing consists of the following:

1. Preliminary print test
2. Color profiling
3. Abrasion resistance (ASTM D3359)
4. Chemical resistance
5. Adhesion test

Each category has a corresponding rating and representative numerical level value. The higher the level value, the more desirable the material for application under the corresponding test conditions.

All performance test material prints were printed 360 4 Pass Unidirectional mode for the Solara ion™ and Production 1 Unidirectional mode for the Gerber CAT I UV™ using ONYX RIP software.

1. Preliminary print test

A print was made to determine if initial compatibility existed between ink/material.

2. Color profiling

Ink volume adjustments were made for optimization of color matching and density levels.





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3. Abrasion resistance (ASTM D3359)

A sample of each primary color (C,M,Y,K @100%) was printed and placed on a Taber Abrasion machine. This device spun the print sample while making contact with an abrasive surface. The number of revolutions achieved before visible wear was the determining factor in resistance to abrasion.

Rating	Level	Explanation
Excellent Resistance	5	Can tolerate high repeatable contact
Good Resistance	4	Can tolerate repeatable contact
Standard Resistance	3	Can tolerate some repeatable contact
Fair Resistance	2	Can tolerated limited repeatable contact
Poor Resistance	1	One time use item, cannot tolerate repeatable contact

4. Chemical resistance

A sample of each primary color (C,M,Y,K @100%) was printed and immersed in a variety of typically encountered chemicals such as motor oil, window cleaner, and gasoline. The ink density was measured after this exposure to determine overall chemical resistance.

Rating	Level	Explanation
Excellent Resistance	5	Can tolerate some repeatable contact
Good Resistance	4	Can tolerate contact
Standard Resistance	3	Can tolerate limited contact
Fair Resistance	2	Can tolerate limited short term contact
Poor Resistance	1	Cannot tolerate chemicals

Chemicals used in this test were as follows:

- windshield washer fluid
- distilled water
- motor oil (SAE 10W-30)
- naphtha
- dish washing detergent, 1% by mass (sodium lauryl sulfate)





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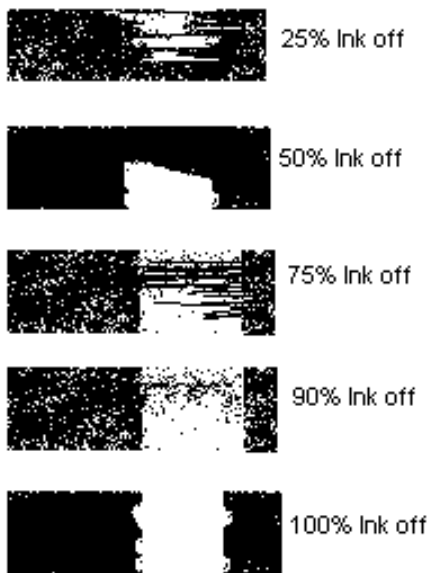
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- odorless mineral spirits
- antifreeze (composition: ethylene glycol 107-21-1, diethylene glycol 111-46-4)
- hydrochloric acid, 10 by vol%
- ammonium hydroxide (base), 10 by vol%
- reference fuel (mix of 15 vol% xylol and 85 vol% mineral spirits)
- ammonia cleaner (mix 1% by volume)
- artificial perspiration solution (sodium chloride 5%, acetic acid 5%, butyric acid 3%, valeric acid 3%, deionized water 84% by volume)

5. Adhesion test

A sample of each primary color (C,M,Y,K @100%) was printed and subjected to scoring with a multi bladed tool, followed by the application and lifting of transparent tape. The level of adhesion was measured by the amount of ink that is lifted off by the tape. Good adhesion was marked by very little ink lifting while poor adhesion removed more. Testing was done in intervals from 5 minutes to 24 hrs after the prints were completed (we did 5 min, 15 min, 24 hours). If good at 15 minutes, typically was well-cured and remained the same. If poorer at 15 min, either strengthened over 24 hours or remained poor.

Tape test key



Cross-hatch key

Classification	% of Area Removed	Surface of Cross-cut Area From Which Flaking has Occured for 6 Parrallel Cuts & Adhesion range by %
5B	0% None	
4B	Less than 5%	
3B	5 - 15%	
2B	15 - 35%	
1B	35 - 65%	
0B	Greater than 65%	



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Tape test

Rating	Level	Explanation
Excellent	5	25% removed
Good	4	50% removed
Standard	3	75% removed
Fair	2	90% removed
Poor	1	100% removed

Cross-hatch test

Rating	Level	Explanation
Excellent	5	0% removed
Very Good	4	< 5% removed
Good	3	5-15% removed
Standard	2	16-35% removed
Poor	1	36-65% removed
Very Poor	0	> 65% removed

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