

metalphoto[®]

presents

LABEL & NAMEPLATE
WEBINAR SERIES



1



WILL IT READ?

Destructive Testing of Label & Nameplate Materials



BROUGHT TO YOU BY:
Horizons Imaging Systems Group

WELCOME AND THANK YOU FOR JOINING US

Ready to destroy some labels?

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WILL IT
READ?

AGENDA

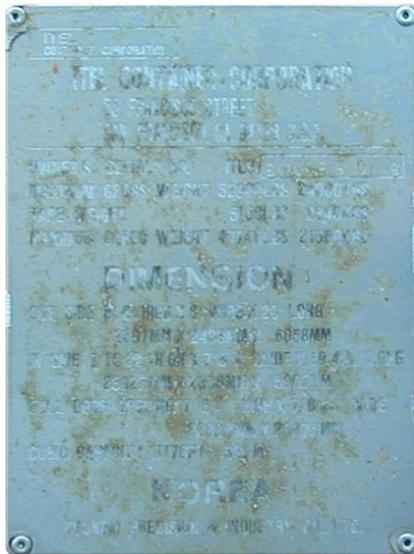
- Introductions
- Why Legibility Matters
- Test Materials (5)
- Accelerated Testing Methods (5)
- Destructive Testing Results
- Q & A



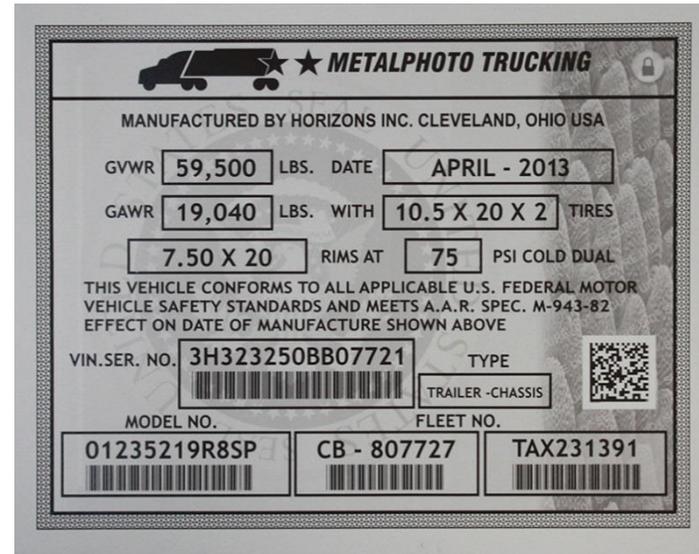
WHY DOES LABEL/NAMEPLATE LEGIBILITY MATTER?

WILL IT READ?

1. Regulations
2. Operator Instructions
3. Brand Recognition
4. Computer Assisted Tracking



VS.



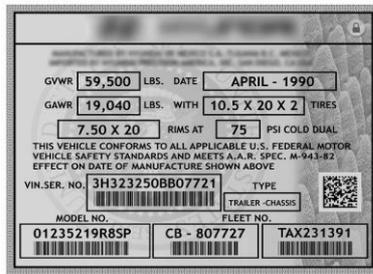
Identification Applications

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WILL IT
READ?

Data Plates



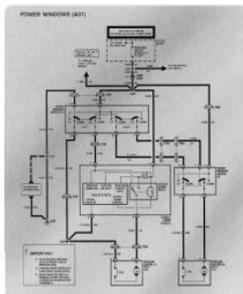
Barcode Labels



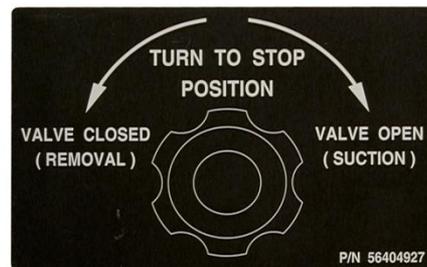
Control Panel Faceplates



Service/Process Schematics



Safety Diagrams/Signage



Nameplates



Let's cause a little mayhem...

DESTRUCTIVE TESTING – Q1 2015

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WILL IT
READ?

CONDITION	ACCELERATED TEST
 Heat	<i>Oven @ 500°F for 1 hour</i>
 Abrasion	<i>Tabor® @ 5,000 rotations on 1 KG wheel</i>
 Weather	<i>Q-Sun® Weatherometer @ 1,000 hours</i>
 Chemical	<i>Skydrol® Hydraulic Fluid @ 72 hours</i>
 Corrosion	<i>Salt Spray @ 15 days</i>

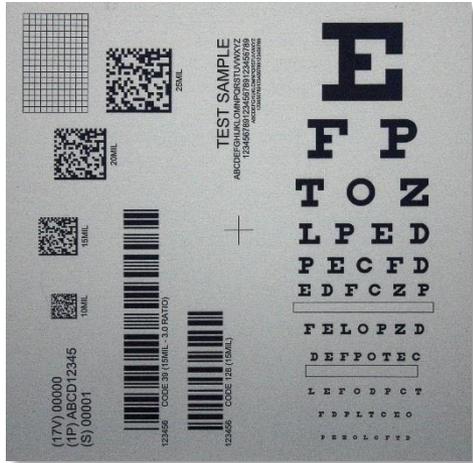
- ❖ Tests **Accelerated** Version of Real-Life Conditions
- ❖ **Healthy Gamut** of Conditions Evaluated (represents most operations and specifications)
- ❖ Allows the **Relative Comparison** (i.e. side-by-side) of Material Performance

NAMEPLATE & LABEL MATERIALS TO BE TESTED

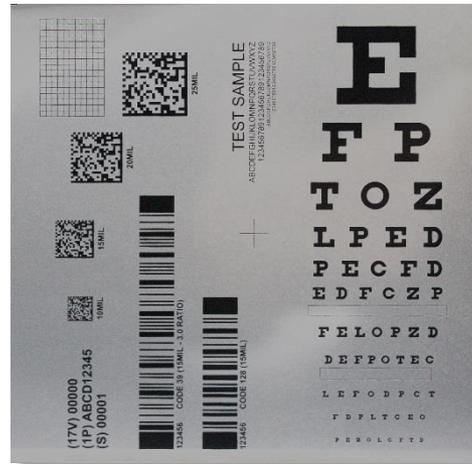
Meet the contenders – Common Durable ID Material for Variable Data Nameplates/Labels

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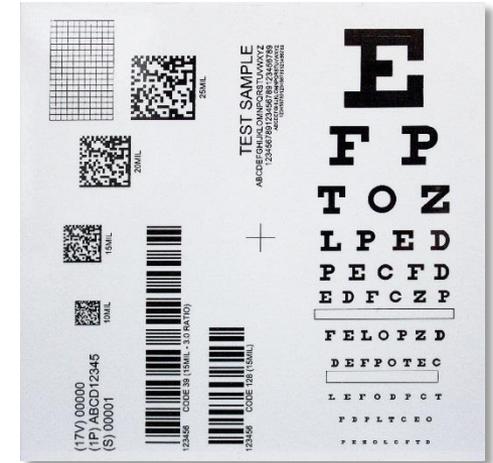
WILL IT READ?



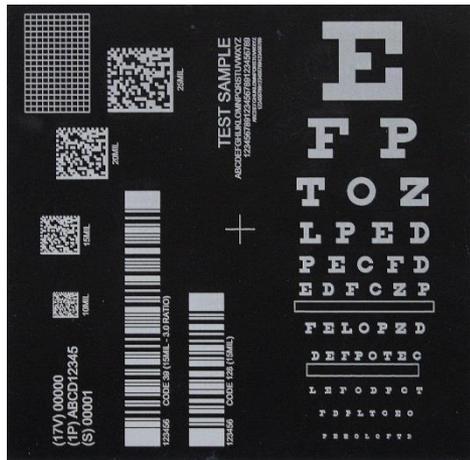
Metalphoto®



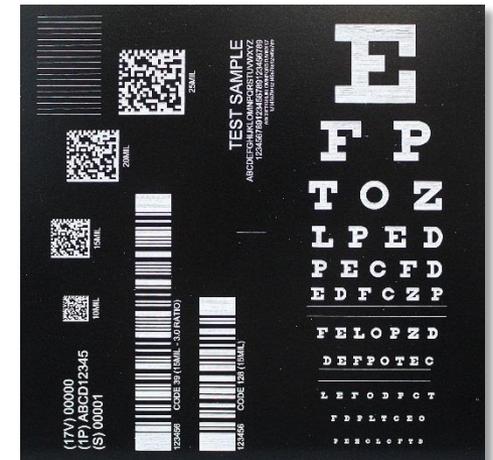
Etched Stainless Steel



Thermal Printed Plastic



Laser Etched Black Anodized Aluminum



Laser Marked Acrylic

NAMEPLATE & LABEL MATERIALS (DETAIL VIEW)

Get up-close and personal

WILL IT
READ?



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Etched Stainless Steel



Thermal Printed Plastic



Laser Etched Black Anodized
Aluminum



Laser Marked Acrylic

How Will We Measure Success?

OBSERVED VARIABLE

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WILL IT
READ?

MEASURING SUCCESS: WILL IT READ?



DESTRUCTIVE TESTING

How much abuse can these labels take?

**WILL IT
READ?**

TEST #1: HEAT RESISTANCE

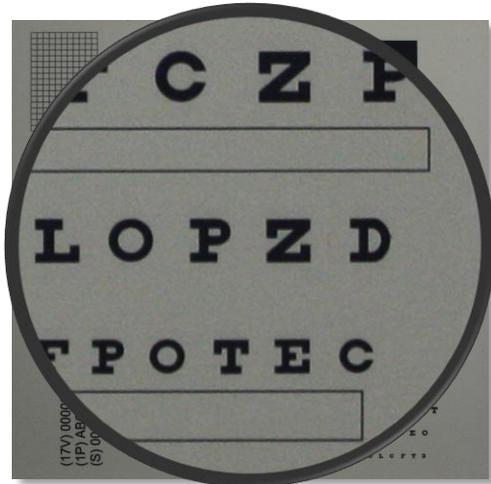
All samples were
heated in an oven to
500°F for 1 hour.



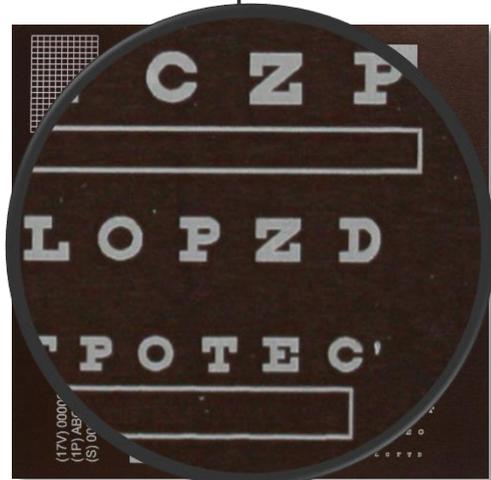
DESTRUCTIVE TEST RESULTS

Heat results; 500°F for 1 hour.

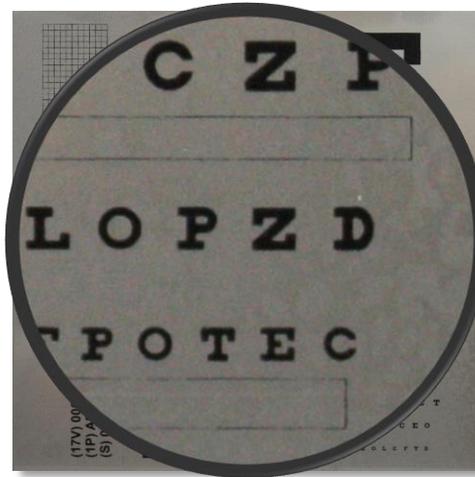
WILL IT
READ?



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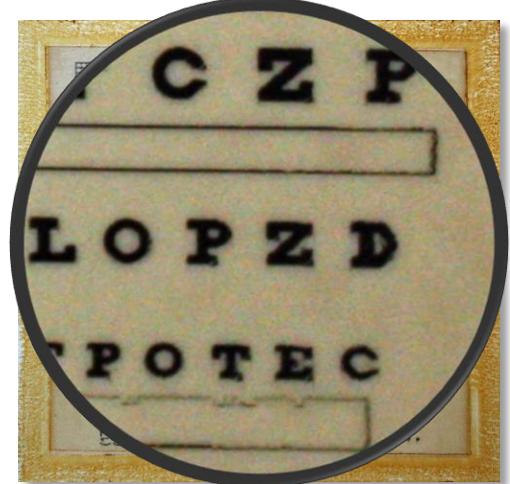
Laser Etched Black Anodized
Aluminum



Etched Stainless Steel



Laser Marked Acrylic **DAMAGE**



Thermal Printed Plastic **DAMAGE**

DESTRUCTIVE TESTING

How much abuse can these labels take?

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WILL IT
READ?

TEST #2: ABRASION RESISTANCE

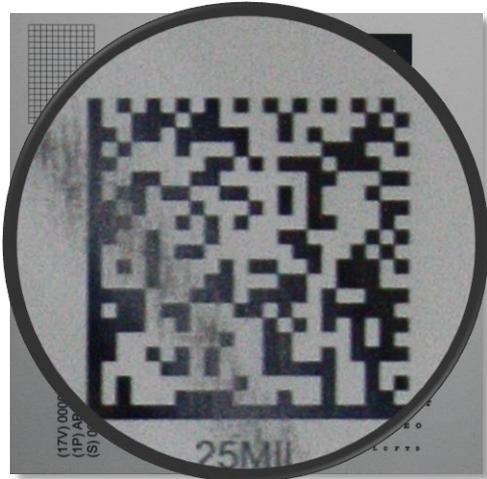
All samples run through a Tabor Abraser @ interval of 1,000 rotations, then checked for readability and repeated up to 5,000 rotations total.



DESTRUCTIVE TEST RESULTS

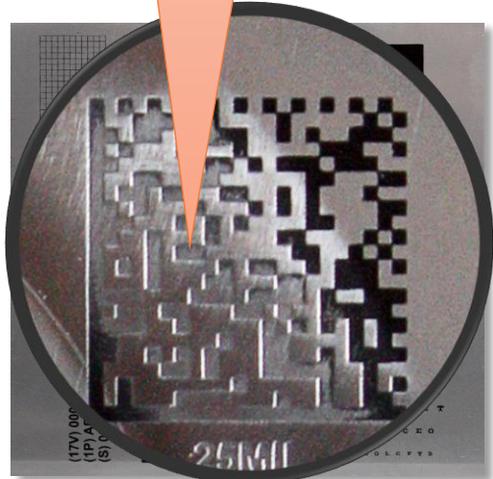
Abrasion results; 5,000 cycles.

WILL IT
READ?



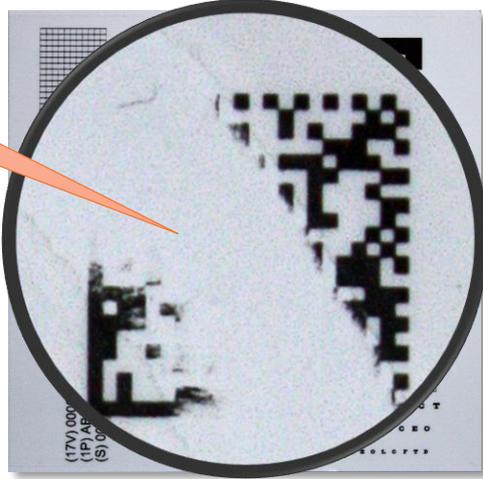
Metalphoto®

poor
contrast

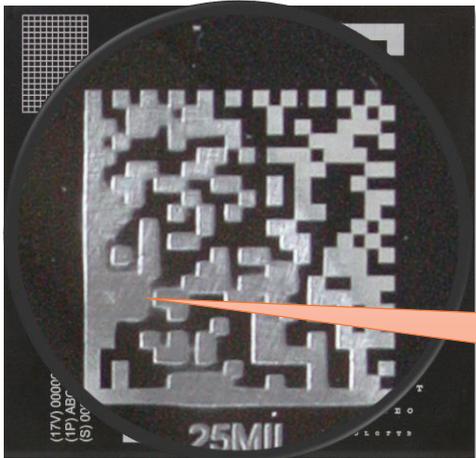


Etched Stainless Steel
FAILURE

mark
destroyed



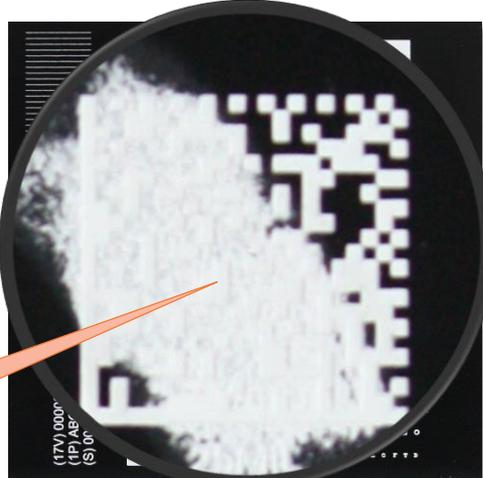
Thermal Printed Plastic **FAILURE**



mark
removed

Laser Etched Black Anodized **DAMAGE**

mark
destroyed



Laser Marked Acrylic **FAILURE**
@ 1,000 cycles

DESTRUCTIVE TESTING

How much abuse can these labels take?

WILL IT READ?

TEST #3: WEATHER RESISTANCE

All samples were exposed for 1,000 hours in the Q-Sun Xenon weathering test chamber.



Weather exposure cycle:

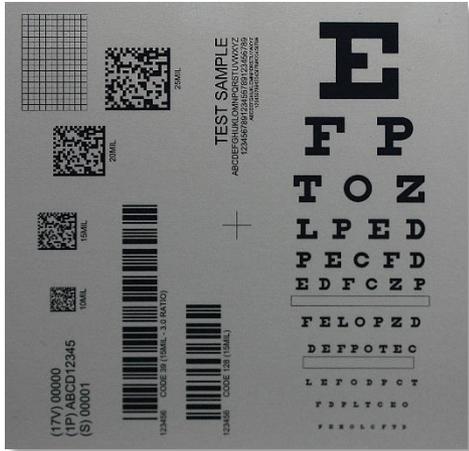
- 40 min light (0.60W/m²) @47°C(117° F)/50% R.H.
- 40 min light (0.60W/m²) + water spray
- 40 min light (0.60W/m²) @47°C(117° F)/50% R.H.
- 40 min dark + water spray @38°C(100° F)/95% R.H.

DESTRUCTIVE TEST RESULTS

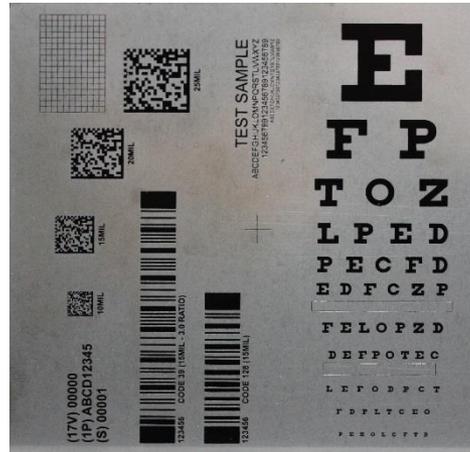
Sunlight & weather exposure; 1,000 hours.

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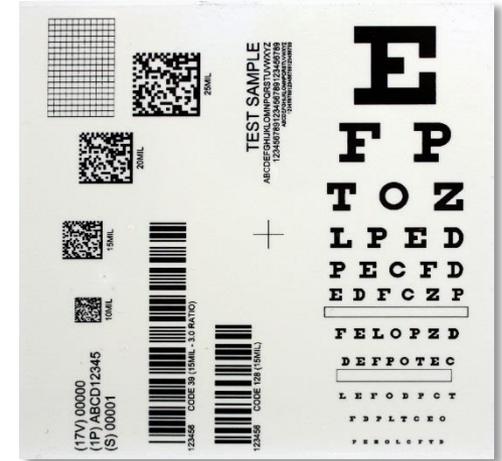
WILL IT READ?



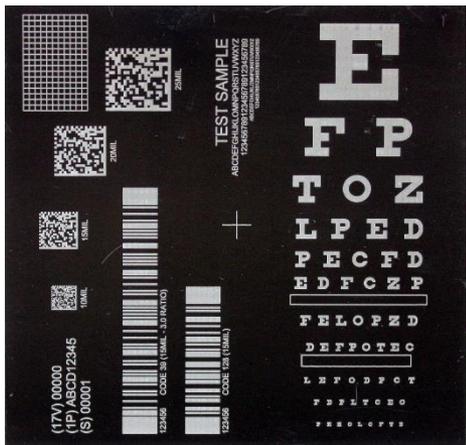
Metalphoto®



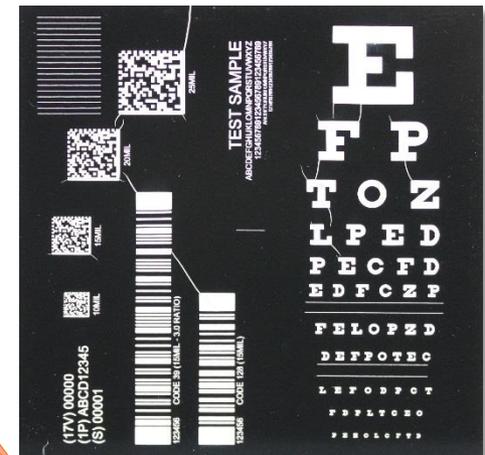
Etched Stainless Steel



Thermal Printed Plastic



Laser Etched Black Anodized Aluminum



Laser Marked Acrylic **DAMAGE**

cracking

DESTRUCTIVE TESTING

How much abuse can these labels take?

WILL IT
READ?

TEST #4: CHEMICAL RESISTANCE

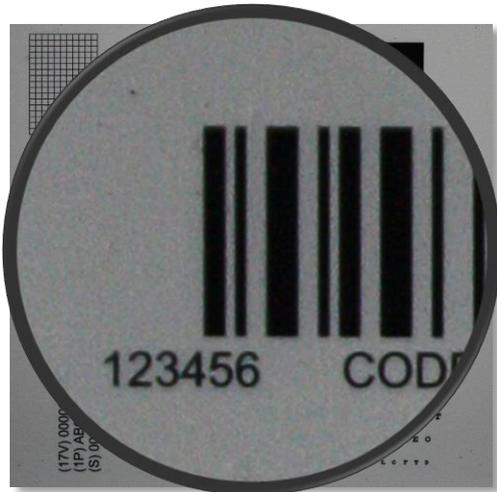
All the samples were immersed for 72 hours in Skydrol[®], a commonly used industrial hydraulic fluid.



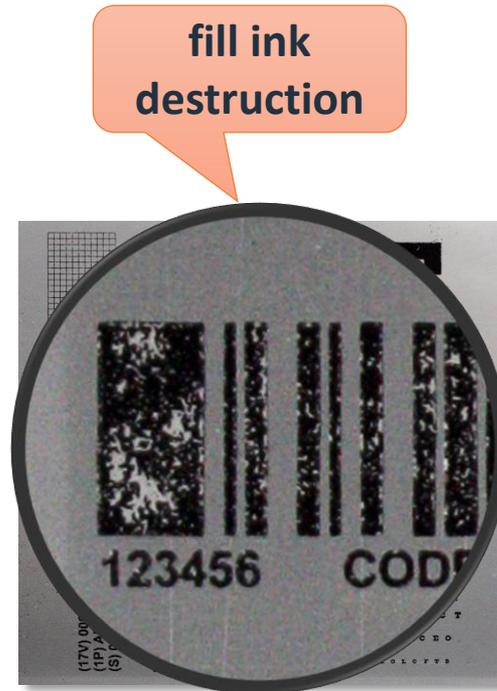
DESTRUCTIVE TEST RESULTS

Skydrol exposure; 72 hours.

WILL IT
READ?



Metalphoto®

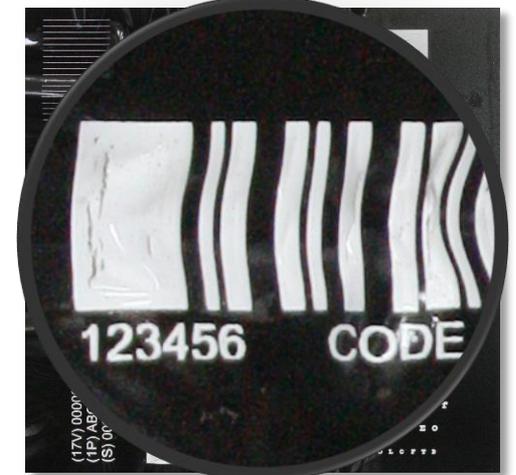


Etched Stainless Steel

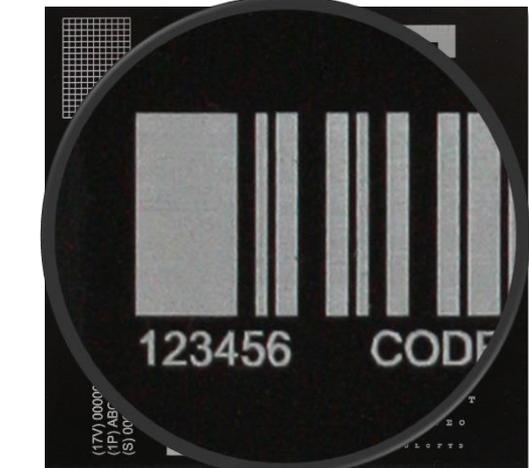
DAMAGE



Thermal Printed Plastic



Laser Marked Acrylic **FAILURE**



Laser Etched Black Anodized
Aluminum

DESTRUCTIVE TESTING

How much abuse can these labels take?

**WILL IT
READ?**

TEST #5: SALTWATER RESISTANCE

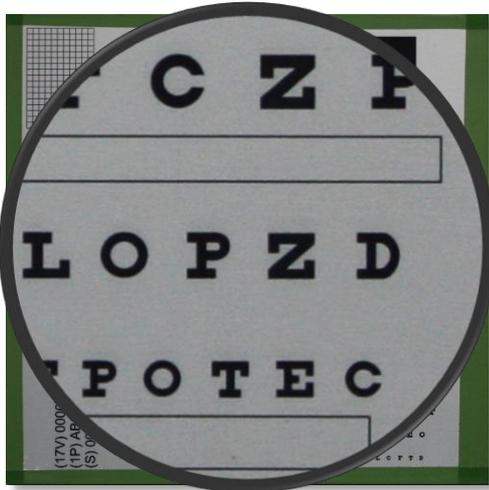
All samples were
immersed in a saltwater
fog for 15 days.



DESTRUCTIVE TEST RESULTS

Saltwater exposure; 15 days.

WILL IT
READ?

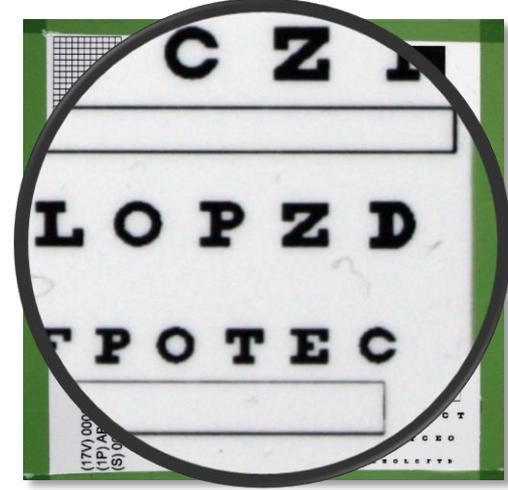


Metalphoto®

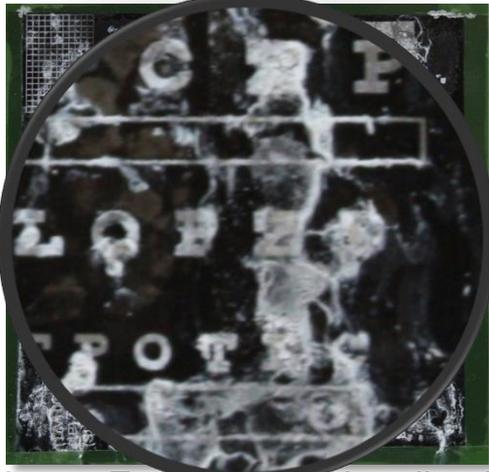
corrosion



Etched Stainless Steel
DAMAGE

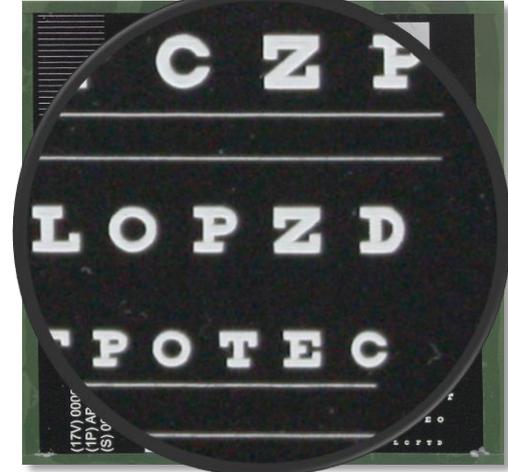


Thermal Printed Plastic



Laser Etched Black Anodized
FAILURE

severe
corrosion

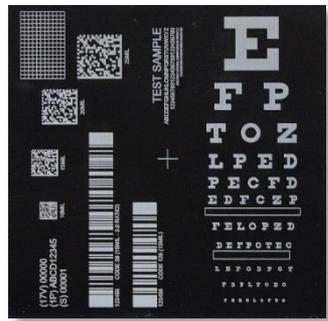


Laser Marked Acrylic

DESTRUCTIVE TESTING CONCLUSIONS

What did we learn?

Laser Etched
Black Anodized
Aluminum



Results

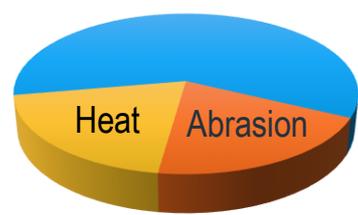


FAILED
1 OF 5
TESTS

Thermal Printed
Plastic

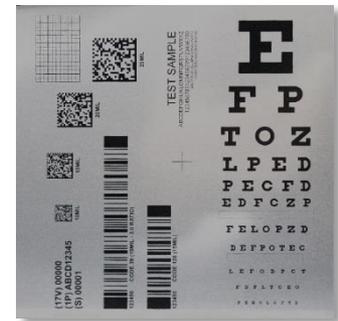


Results

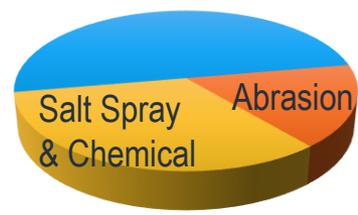


FAILED
1 OF 5
TESTS

Etched Stainless
Steel

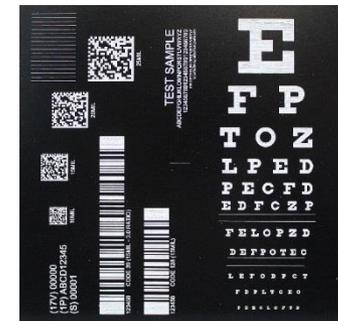


Results

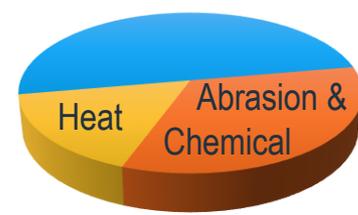


FAILED
1 OF 5
TESTS

Laser Marked
Acrylic

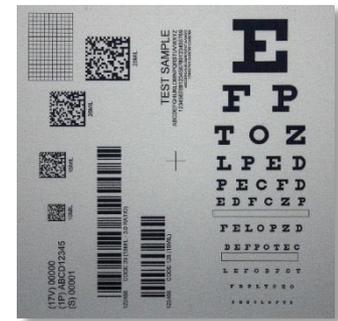


Results

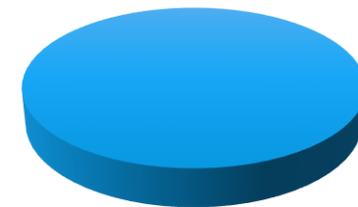


FAILED
2 OF 5
TESTS

Metalphoto®



Results



PASSED
ALL 5
TESTS

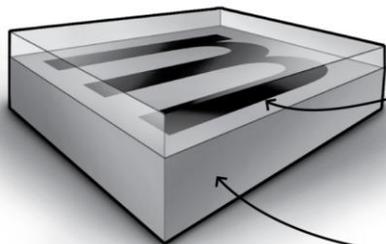
DESTRUCTIVE TESTING CONCLUSIONS

Why Did Metalphoto Perform So Well?

WILL IT READ?

- Metalphoto is a specialized type of anodized aluminum used to make nameplates, labels and control panels. *Generically referred to as Photosensitive Anodized Aluminum.*
- Developed for the US Navy in 1958 and specified by most major OEMs, Metalphoto® is one of the most durable, high-resolution, variable information identification materials available.
- Metalphoto gets its durability through its silver-based image which is sealed inside of the anodized aluminum and resistant to corrosion, sunlight/UV degradation, abrasion, high-temperatures and chemical exposure.

metalphoto® Cross-section



anodic layer

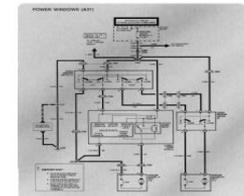
the glass-clear, sapphire-hard anodized layer resists chemicals, paint, abrasion and dirt.

sealed image

black graphics are metallic silver particles that hold up to extreme heat and sunlight exposure.

aluminum layer

the rigid aluminum base will not peel, crack or delaminate.



DESTRUCTIVE TESTING CONCLUSIONS

Call To Action / Next Steps

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WILL IT
READ?

- Are you using Metalphoto® today? ... **great.**
- Are you using Metalphoto in some cases, but are there others where it could help in terms of the four pitfalls of illegibility (*regulator compliance, operator compliance, brand recognition or computer tracking (barcodes)*)?
- Let us make you a custom label or nameplate for you to evaluate & test.
- To Learn more, request a sample pack at www.metalphoto.com.

Watch for Future LABEL & NAMEPLATE WEBINARS

- *Pros & Pitfalls of On-Site Nameplate and Label Production (NEXT SCHEDULED WEBINAR)*
- *Do You Comply? Understanding Label & Nameplate Specifications & Certifications*
- *Adding Value to OEM Products with Item Unique Identification*
- *Cradle to Grave Traceability Through Barcode Labels*

DESTRUCTIVE TESTING CONCLUSIONS

Call To Action / Next Steps

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**WILL IT
READ?**

- For a custom sample, on-site facility assessment or additional information contact:

Horizons Incorporated
ISG Imaging Systems Group

metalphoto *Photosensitive Anodized Aluminum*

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Business Development Manager

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