

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?

LABEL &
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2

**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?

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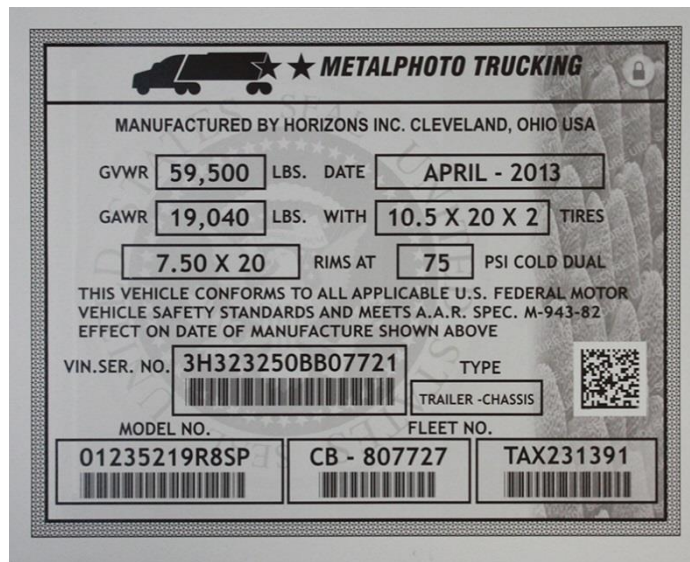
3

WILL IT
READ?

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



VS.



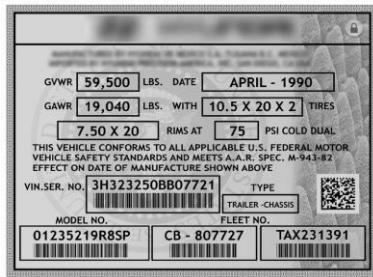
Identification Applications

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Data Plates



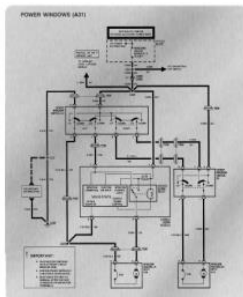
Barcode Labels



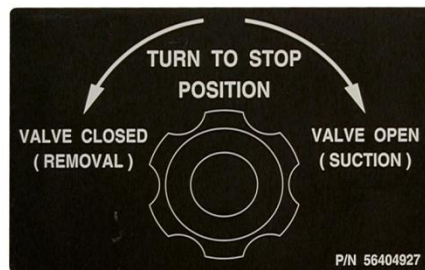
Control Panel Faceplates



Service/Process Schematics



Safety Diagrams/Signage



Nameplates



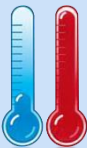




Let's cause a little mayhem...

DESTRUCTIVE TESTING – Q1 2015

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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

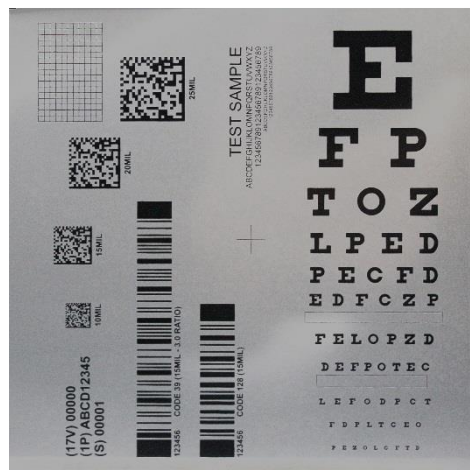
Meet the contenders – Common Durable ID Material for Variable Data Nameplates/Labels

WILL IT READ?

[illegible][illegible]

Laser Etched Black Anodized Aluminum



Etched Stainless Steel

NAMEPLATE & LABEL MATERIALS (DETAIL VIEW)

Get up-close and personal

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Metalphoto®



Thermal Printed Plastic



Etched Stainless Steel



Laser Etched Black Anodized
Aluminum



Laser Marked Acrylic

How Will We Measure
Success?

OBSERVED VARIABLE

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MEASURING SUCCESS: WILL IT READ?



DESTRUCTIVE TESTING

How much abuse can these labels take?

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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.

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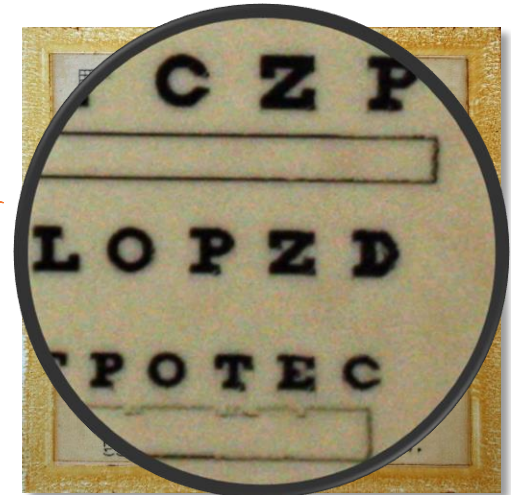
10

WILL IT
READ?

shrinking



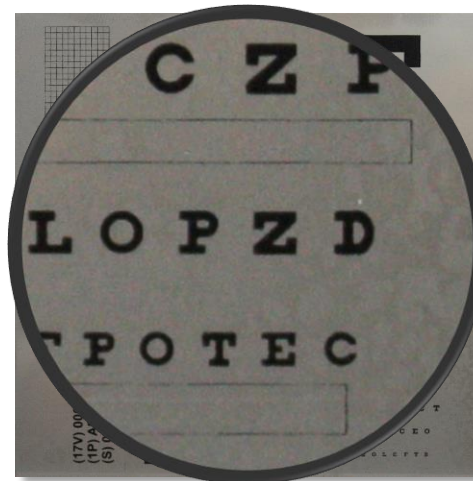
Metalphoto®



Thermal Printed Plastic **DAMAGE**



Laser Etched Black Anodized
Aluminum



Etched Stainless Steel

cracking



Laser Marked Acrylic **DAMAGE**

DESTRUCTIVE TESTING

How much abuse can these labels take?

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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.

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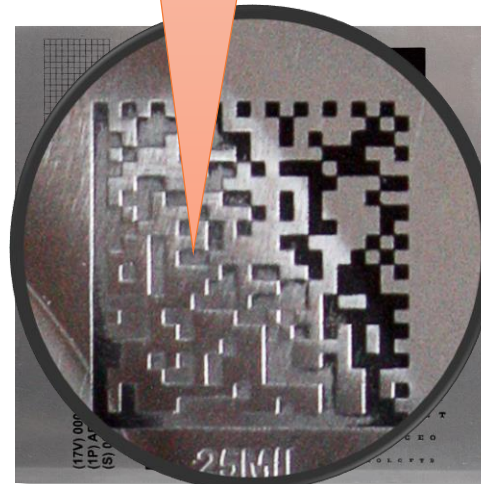
WILL IT
READ?

12



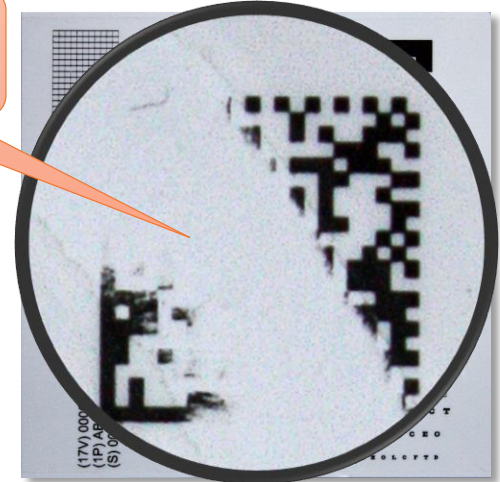
Metalphoto®

poor
contrast

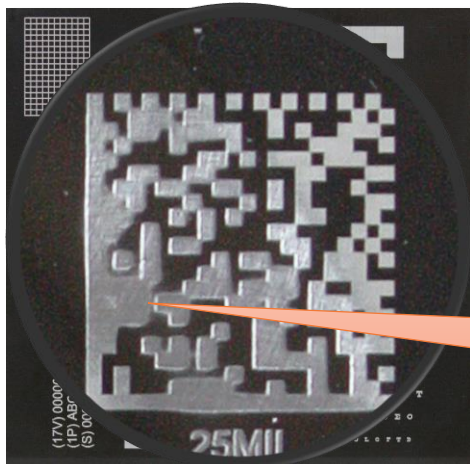


Etched Stainless Steel
FAILURE

mark
destroyed



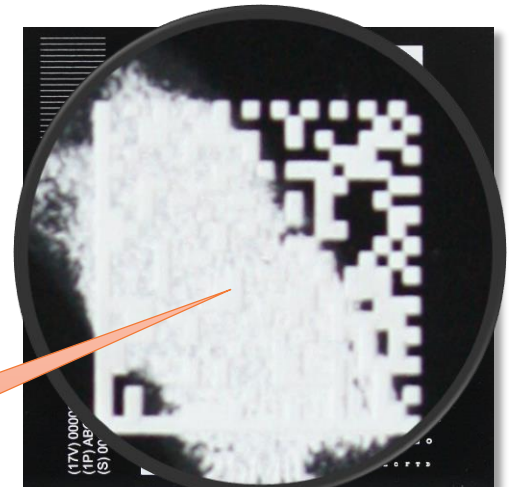
Thermal Printed Plastic **FAILURE**



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?

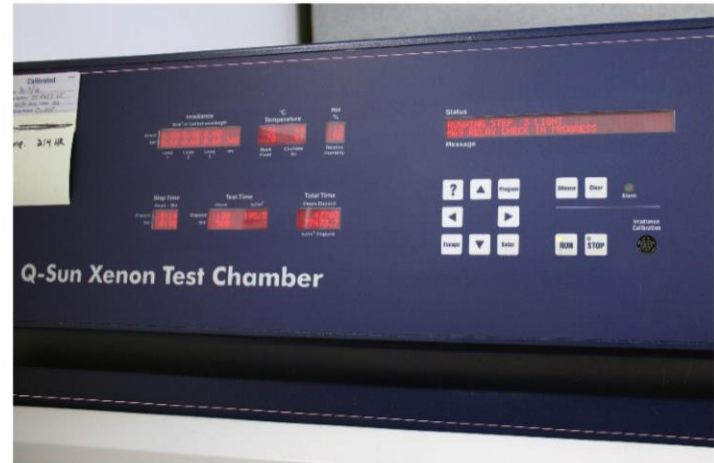
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READ?

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.

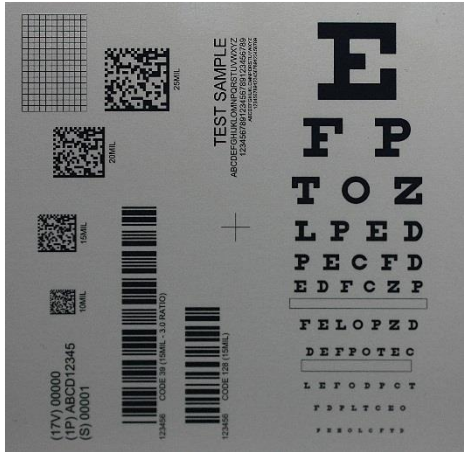
DESTRUCTIVE TEST RESULTS

Sunlight & weather exposure; 1,000 hours.

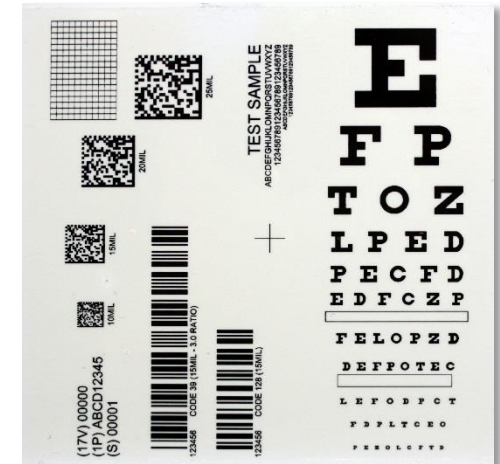
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READ?

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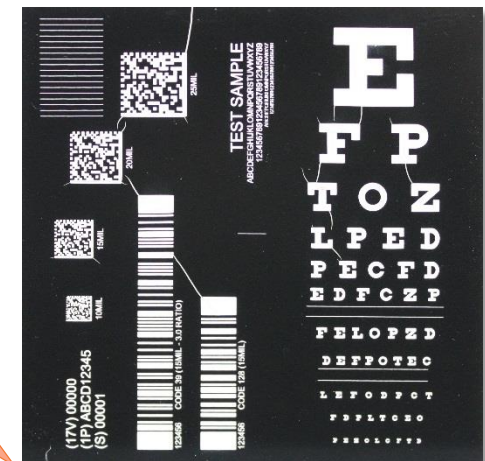
Metalphoto®



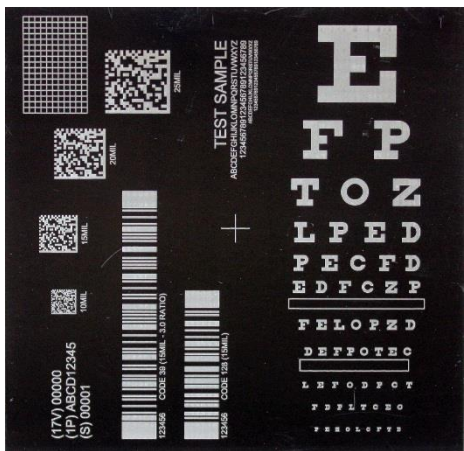
Thermal Printed Plastic



Etched Stainless Steel



Laser Marked Acrylic **DAMAGE**



Laser Etched Black Anodized
Aluminum

cracking

DESTRUCTIVE TESTING

How much abuse can these labels take?

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TEST #4: CHEMICAL RESISTANCE

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



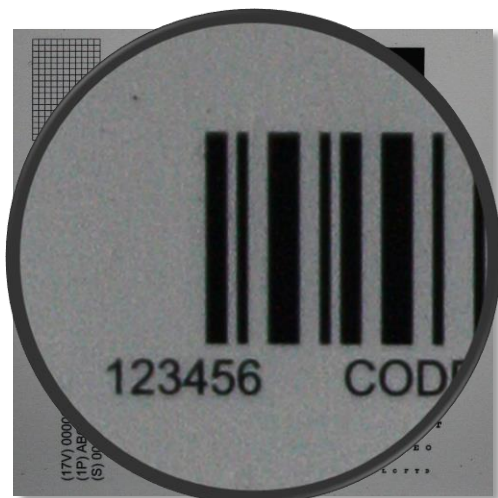
DESTRUCTIVE TEST RESULTS

Skydrol exposure; 72 hours.

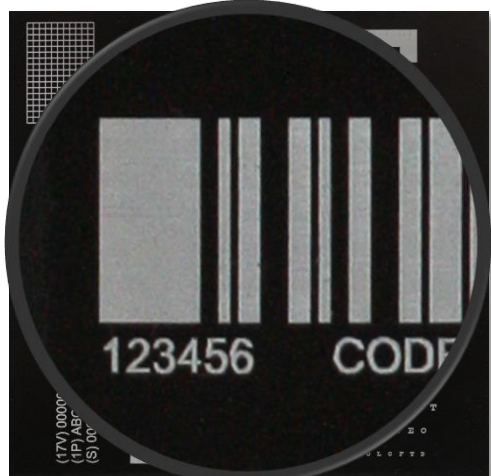
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Metalphoto®



Laser Etched Black Anodized
Aluminum

fill ink
destruction



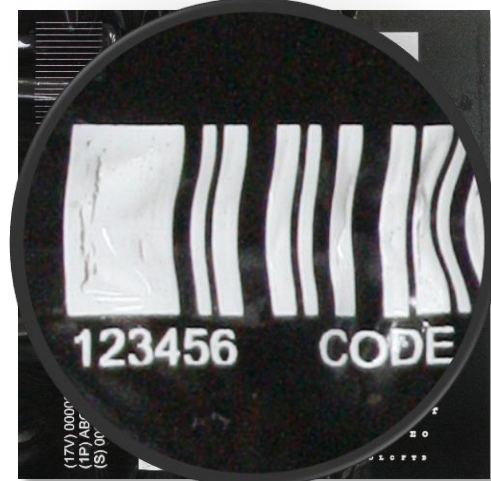
Etched Stainless Steel

DAMAGE

swelling



Thermal Printed Plastic



Laser Marked Acrylic **FAILURE**

DESTRUCTIVE TESTING

How much abuse can these labels take?

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TEST #5: SALTWATER RESISTANCE

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



DESTRUCTIVE TEST RESULTS

Saltwater exposure; 15 days.

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WILL IT
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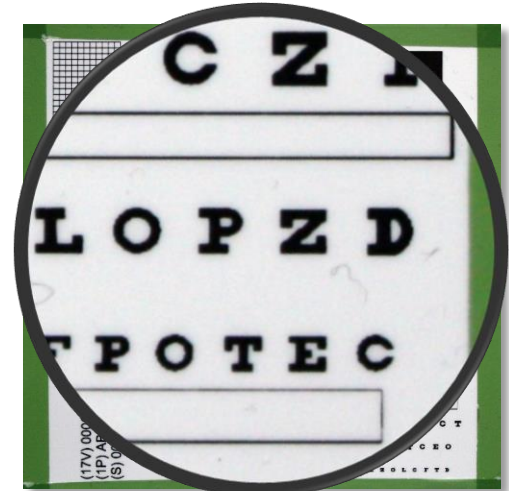
Metalphoto®

corrosion



Etched Stainless Steel

DAMAGE



Thermal Printed Plastic



Laser Etched Black Anodized

FAILURE

severe
corrosion



Laser Marked Acrylic

DESTRUCTIVE TESTING CONCLUSIONS

Why Did Metalphoto Perform So Well?

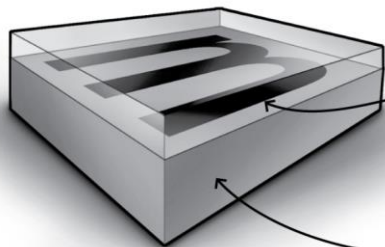
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WILL IT
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- Metalphoto is a specialized type of anodized aluminum used to make nameplates, labels and control panels. *Generically referred to as Photosensitive Anodized Aluminum.*
- Developed for 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

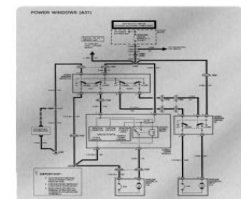
the glass-clear, sapphire-hard anodized layer resists chemicals, paint, abrasion and dirt.

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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- 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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READ?**

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



ISG Imaging Systems Group

metalphoto® *Photosensitive Anodized Aluminum*

David M. Kesic
Business Development Manager

18531 South Miles Road Cleveland, Ohio 44128 www.horizonsisg.com dkesic@horizonsisg.com	1-800-482-7758 x2307 direct - 216-587-7307 cell - 216-598-1981 fax - 216-475-6507
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