Making Sense of Laser Markable Metals

Instructor - Andrew Marvin

Introduction

Who we are: Horizons Imaging Systems Group (ISG) - a developer and manufacturer of unique, high-value aluminum based identification products. Including:

- ALUMA Mark
- DuraBlack
- ALUMA Jet

Non-Biased Approach: objective evaluation 12 leading laser-markable metals.

Where to buy materials mentioned today:
- USA: Bur-Lane, Inc., Johnson Plastics, Gravograph, LaserBits, Marco Awards Group, PDU Company, ID Plates
- Canada: Engraver’s Express, Techno Gestass, Canadian Engraver’s Supply
Course Objectives

2. What laser markable metals are available.
3. How to properly lase the metals.
4. When to use these metals.
5. How to choose the right metal.

Why Laser Markable Metals?
Why Laser Markable Metals?

Vs.

Making Sense of Laser Markable Metals

- More Profitable
- Higher Perceived Value
- More Durable
- Industrial/Military Specifications
- Unique

Making Sense of Laser Markable Metals
Why Laser Markable Metals?

A word about price. Although it is almost always the first bit of information we process when considering such a purpose, it really is not as important as we sometimes make it out to be. The question should be, “How much money can you make with it?” not “How much does it cost?”

Take some time and experiment a little. You may be surprised how easy it is. Best of all, you will be pleased with both the price that quality lasered metal will fetch and how excited your customer will be with the results.
ANDY: With a number of substrates available on the market today, how important are metals?

STEVE: “More important than ever. The new metals and the options they bring to the market place are phenomenal but often overlooked.

There are all kinds of options now we didn’t have a couple of years ago. These afford exterior applications, signage and a whole new world to high-end plaques and awards.

**Metal is metal.** There is no substitute for it. If you put (plastic) on a plaque in the place of real brass, the customer’s first comment is always the same, ‘It’s plastic!’”

**Why Laser Markable Metals?**

Making Sense of Laser Markable Metals

**What laser markable metals are available?**

Making Sense of Laser Markable Metals
But First, Factors to Consider

- Base Material
- Appearance
- Durability
- Imaging Process
- Price

Making Sense of Laser Markable Metals

Types of Laser Markable “Metals”

- Engravable Plastics
  - Metallic Paint
  - Etched Area
  - Black Acrylic

- Engravable Metals
  - Lacquer Paint
  - Etched Area
  - Metal

- Positive Transformation Metals
  - Clear Layer
  - Image Metal

- Bleachable Metals
  - Black Organic Layer
  - Bleached Mark
  - Metal

- Ceramic Bonding Metals
  - Bonded Ceramic
  - Metal

Making Sense of Laser Markable Metals
### Materials Covered Today

<table>
<thead>
<tr>
<th>Engravable Plastics</th>
<th>Engravable Metals</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPI LaserMetallic Brush</td>
<td>Gloss Black Brass</td>
</tr>
<tr>
<td>Rowmark Metalgraph Plus</td>
<td>Lacquered Aluminum</td>
</tr>
<tr>
<td>Rowmark FlexiColor</td>
<td>Laser Aluminum</td>
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<tr>
<td></td>
<td>Laser-It</td>
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<td></td>
<td>LazerBlak</td>
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<td></td>
<td>Laser Frost</td>
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<tr>
<td></td>
<td>DuraBlack</td>
</tr>
</tbody>
</table>

### Making Sense of Laser Markable Metals

<table>
<thead>
<tr>
<th>Positive Transformation Metals</th>
<th>Bleachable Metals</th>
<th>Ceramic Bonding Metals</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAMA</td>
<td>Black Anodized Aluminum</td>
<td>CerMark</td>
</tr>
<tr>
<td>AlumaMark</td>
<td></td>
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</tr>
</tbody>
</table>
Laser Engraving Techniques

CO₂ Laser 101

12-75 watt units

Making Sense of Laser Markable Metals

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Laser Engraving Techniques

CO₂ Laser 101 - Operation Variables

**Power**
How much power is the laser producing, percent of total power.

**Speed**
How fast is the laser traveling, percent of total speed.

**DPI**
How close each pass is to the previous in the “Y” direction.

**Tuning**
Typically an advanced setting on Universal Lasers, controls how current sweep of the laser lines up with the previous sweep.

Making Sense of Laser Markable Metals
Laser Engraving Techniques

• Composition of each substrate
• How to mark
• Results

How to properly lase the metals: DETAIL

Making Sense of Laser Markable Metals
Engravable Plastic
IPI LaserMetallic Brush

- Detail View -

Making Sense of Laser Markable Metals

Engravable Plastic
IPI LaserMetallic Brush - Results

Making Sense of Laser Markable Metals
Engravable Plastic
Rowmark Metalgraph Plus

- Detail View -

Making Sense of Laser Markable Metals

Engravable Plastic
Rowmark Metalgraph Plus - Results

Making Sense of Laser Markable Metals
Engravable Plastic
Rowmark FlexiColor

- Detail View -

- Metallic Paint
- Etched Area
- Black Acrylic

Making Sense of Laser Markable Metals

Engravable Plastic
Rowmark FlexiColor - Results

Making Sense of Laser Markable Metals
Engravable Metal
Gloss Black Brass

- Detail View -

- Lacquer Paint
- Etched Area
- Brass

Making Sense of Laser Markable Metals

Engravable Metal
Gloss Black Brass - Results

Making Sense of Laser Markable Metals
Engravable Metal

Lacquered Aluminum

- Detail View -

- Lacquer Paint
- Etched Area
- Aluminum

Making Sense of Laser Markable Metals
Engravable Metal
Laser Aluminum

- Detail View -

Making Sense of Laser Markable Metals

Engravable Metal
Laser Aluminum - Results

Making Sense of Laser Markable Metals
Engravable Metal
Laser-It

- Detail View -

- Paint
- Etched Area
- Steel

Making Sense of Laser Markable Metals

Engravable Metal
Laser-It - Results

Making Sense of Laser Markable Metals
Engravable Metal
LazerBlak

- Detail View -

Metallic Paint
Etched Area
Black Paint
Aluminum

Making Sense of Laser Markable Metals

Engravable Metal
LazerBlak - Results

Making Sense of Laser Markable Metals
Engravable Metal
Laser Frost

- Detail View -

- Metallic Paint
- Etched Area
- Steel

Making Sense of Laser Markable Metals

Engravable Metal
Laser Frost - Results

Making Sense of Laser Markable Metals
Positive Transformation Metal
LAMA

- Detail View -

- Clear Layer
- Thermal Mark
- Aluminum

Making Sense of Laser Markable Metals

Positive Transformation Metal
LAMA - Results

Making Sense of Laser Markable Metals
Positive Transformation Metal
AlumaMark

- Detail View -
- Clear Layer
- Thermal Mark
- Aluminum

Making Sense of Laser Markable Metals

Positive Transformation Metal
AlumaMark - Results

Making Sense of Laser Markable Metals
Bleachable Metal
Black Anodized Aluminum

- Detail View -

- Organic Black Layer
- Bleached Mark
- Aluminum

Results

Making Sense of Laser Markable Metals
CerMark

- Bonded Ceramic
- Any Base Material

Making Sense of Laser Markable Metals

CerMark - Results

Making Sense of Laser Markable Metals
### Summary of Laser Settings

<table>
<thead>
<tr>
<th>Product</th>
<th>Power</th>
<th>Speed</th>
<th>DPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPI LaserMetallic Brush</td>
<td>20</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>Rowmark Metalgraph Plus</td>
<td>20</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>Rowmark Flexibrass</td>
<td>20</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>Gloss Black Brass</td>
<td>20</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>Lacquered Aluminum</td>
<td>20</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>Laser Aluminum</td>
<td>20</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>Laser-It</td>
<td>20</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>LazerBlak</td>
<td>2</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>Laser Frost</td>
<td>20</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>DuraBlack</td>
<td>70</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>LAMA</td>
<td>30</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>AlumaMark</td>
<td>25</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>Black Anodized Aluminum</td>
<td>70</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>CerMark</td>
<td>70</td>
<td>80</td>
<td>600</td>
</tr>
</tbody>
</table>

*Summary of Laser Settings: Imaged on 35W Universal Versa Laser.*

### Summary of Materials

<table>
<thead>
<tr>
<th>Category</th>
<th>Product</th>
<th>Material</th>
<th>Cost Per 12”x24”</th>
<th>Durability</th>
<th>Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engravable Plastics</td>
<td>IPI LaserMetallic Brush</td>
<td>plastic</td>
<td>$19.88</td>
<td>indoor</td>
<td>white on metal</td>
</tr>
<tr>
<td></td>
<td>Rowmark Metalgraph Plus</td>
<td>plastic</td>
<td>$16.13</td>
<td>outdoor</td>
<td>black on metal</td>
</tr>
<tr>
<td></td>
<td>Rowmark Flexibrass</td>
<td>plastic</td>
<td>$15.45</td>
<td>indoor</td>
<td>black on metal</td>
</tr>
<tr>
<td></td>
<td>Gloss Black Brass</td>
<td>brass</td>
<td>$22.30</td>
<td>indoor</td>
<td>metal on black</td>
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<tr>
<td></td>
<td>Lacquered Aluminum</td>
<td>aluminum</td>
<td>$5.65</td>
<td>indoor</td>
<td>metal on black</td>
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<td></td>
<td>Laser Aluminum</td>
<td>aluminum</td>
<td>$11.20</td>
<td>indoor</td>
<td>metal on black</td>
</tr>
<tr>
<td></td>
<td>Laser-It</td>
<td>steel</td>
<td>$6.20</td>
<td>indoor</td>
<td>black on metal</td>
</tr>
<tr>
<td></td>
<td>LazerBlak</td>
<td>aluminum</td>
<td>$6.95</td>
<td>indoor</td>
<td>black on metal</td>
</tr>
<tr>
<td></td>
<td>Laser Frost</td>
<td>steel</td>
<td>$14.80</td>
<td>indoor</td>
<td>black on metal</td>
</tr>
<tr>
<td></td>
<td>DuraBlack</td>
<td>aluminum</td>
<td>$14.00*</td>
<td>outdoor</td>
<td>white on metal</td>
</tr>
<tr>
<td>Positive Transformation Metals</td>
<td>LAMA</td>
<td>aluminum</td>
<td>$10.30</td>
<td>indoor</td>
<td>white on metal</td>
</tr>
<tr>
<td></td>
<td>AlumaMark</td>
<td>aluminum</td>
<td>$13.00*</td>
<td>outdoor with overlam</td>
<td>black on metal</td>
</tr>
<tr>
<td>Bleachable Metal</td>
<td>Black Anodized Aluminum</td>
<td>aluminum</td>
<td>$10.90</td>
<td>limited duration outdoor</td>
<td>white on metal</td>
</tr>
<tr>
<td>Ceramic Bond Metal</td>
<td>CerMark</td>
<td>steel</td>
<td>$16.81</td>
<td>outdoor</td>
<td>black on metal</td>
</tr>
</tbody>
</table>


*Only available in 12x20” sheet.*
When to use these metals.

Market considerations & decision factors:

1. Low Cost/Low Margin Items
2. High Value, High Quality Appearance Items
3. High Value Durable Items
Markets & Applications

Market considerations & decision factors:

1. Low Cost/Low Margin Items
   - Trophy plates - cost
   - Child team/club sport awards - cost
   - Name Badges/pet tags - cost and appearance

2. High Value, Corporate Appearance Items
   - Awards/corporate awards - appearance
   - Newspaper & diploma reproductions - appearance
   - Donor Plaques - appearance
Market considerations & decision factors:

3. High Value Durable Items

- Interior/wayfinding signage - appearance
- Property Tags - durability and appearance
- Engineering Diagrams - durability
- Barcode & UID tags - durability

**How to choose the right metal.**
Products By Imaging Process

Making Sense of Laser Markable Metals

Products By Material

Making Sense of Laser Markable Metals
Products By Cost (per 12”x24” sheet)

- DuraBlack
- CerMark
- Metalgraph Plus
- Anodized Aluminum (limited)
- High: $22.30
- Medium: $19.88
- Low: $16.81

- LaserBlack
- IPI LaserMetallic Brush
- Rowmark FlexiColor
- Laser Frost
- Black Anodized Aluminum
- IPI LaserMetallic Brush
- AlumaMark
- Laser Aluminum
- Laser-It
- LazerBlak
- LAMA
- Laser Frost

* Only available in 12x20” sheets.
**Products By Image Appearance**

- **Black on Metal**
  - Rowmark Metalgraph Plus
  - Rowmark FlexiColor
  - Laser-It
  - LazerBlak
  - Laser Frost
  - AlumaMark
  - CerMark

- **White on Metal**
  - IPI LaserMetallic Brush
  - LAMA
  - Black Anodized Aluminum

- **Metallic on Black**
  - Gloss Black Brass
  - Lacquered Aluminum
  - Laser Aluminum
  - DuraBlack

**Substrate Selection Guide**

- **Black/Positive Graphic**
  - Outdoor
  - CerMark ($16.81)
  - AlumaMark ($13.00*)
  - Laser-It ($6.20)
  - LazerBlak ($6.95)
  - Laser Frost ($14.80)
  - DuraBlack ($14.00*)
  - Black Anodized Aluminum ($10.90)

  - Indoor
  - LAMA ($10.30)
  - Gloss Black Brass ($22.30)
  - Lacquered Aluminum ($5.65)
  - Laser Aluminum ($11.20)
  - Rowmark Metalgraph Plus ($16.13)
  - Rowmark FlexiColor ($15.45)
  - IPI LaserMetallic Brush ($19.88)

- **White/Negative Graphic**
  - Indoor
  - IPI LaserMetallic Brush ($19.88)

*Only available in 12x20" sheets.*
Conclusion

BUY!!!

ALUMA Mark®
Laser Markable Aluminum

DURA Black®
Laser Markable Aluminum

Making Sense of Laser Markable Metals

Thank you.

Questions?
Comments?

Visit me @ Booth #620 or email info@horizonsisg.com

Making Sense of Laser Markable Metals