LASERSHARP®

FLEXIBLE PACKAGING SOLUTIONS

by

FlexPak
LaserSharp Services, LLC

LaserSharp FlexPak Services

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LaserSharp Services, LLC

www.flexpakservices.com

FlexPak Overview

- LaserSharp FlexPak Services, LLC a sister company of LasX Industries, opened dedicated facility in May 2008

Reasons for opening LFS:

- Focused on providing contract or toll services to the Flexible Packaging Industry
- Supports LasX and Customers with application and process development
- Change Customer perception
- Increase Capacity both Warehouse and Production
- Improve efficiency and Product Safety
- Become a Clean environment and food grading facility

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LaserSharp FlexPak Services

- 12,000 SQF state of the art Facility with in house Storage for 300+ Pallets
- 4 Production Shifts available, for a total of 152 Hrs/week
- 5 ***LaserSharp®*** Flexible Packaging Systems for scoring and perforating flexible films.
- Climate controlled Facility
- ISO9001:2008 Certified
- AIB Certification (Expected June12)

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Services Provided

- Confidential Product & Package Development
- Scale Up or Prototype Production Runs
- In House Laser Contract "toll" Manufacturing
- Microscopic Analysis
- Tensile Strength Testing
- Gas & Vapor Transmission Analysis
- Cross Section Imaging
- Assistance with Air Flow Measurement & Calculations
- Pouch Production (Currently being outsource)
- Slitting (Currently being outsource)

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Common Packaging Materials

- PVDC Barrier and Polyolefin Shrink Films
- Polyester
- Polypropylene
- Polyethylene
- Nylon
- Metalized-Films

LASER (Light Amplification by Stimulated Emission of Radiation)


Light
Amplification by
Stimulated
Emission of
Radiation
LASER

3 Main Laser Processes:

- Laser Scoring or etching
- Perforating or Drilling
- Thru or complete cut

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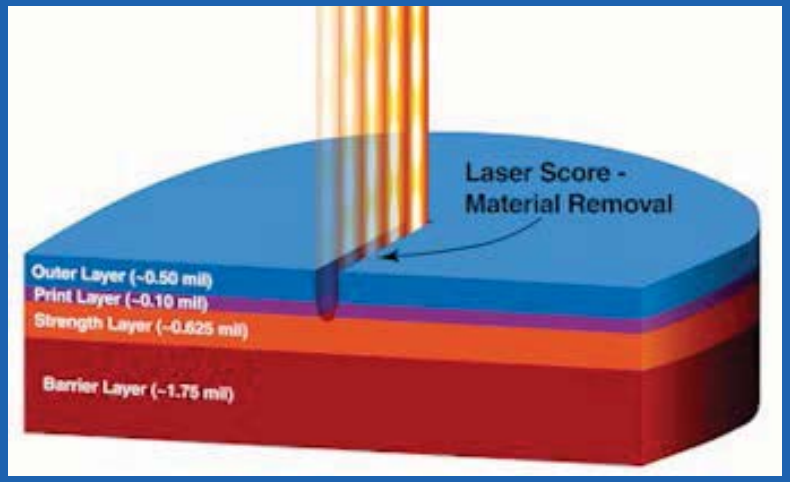
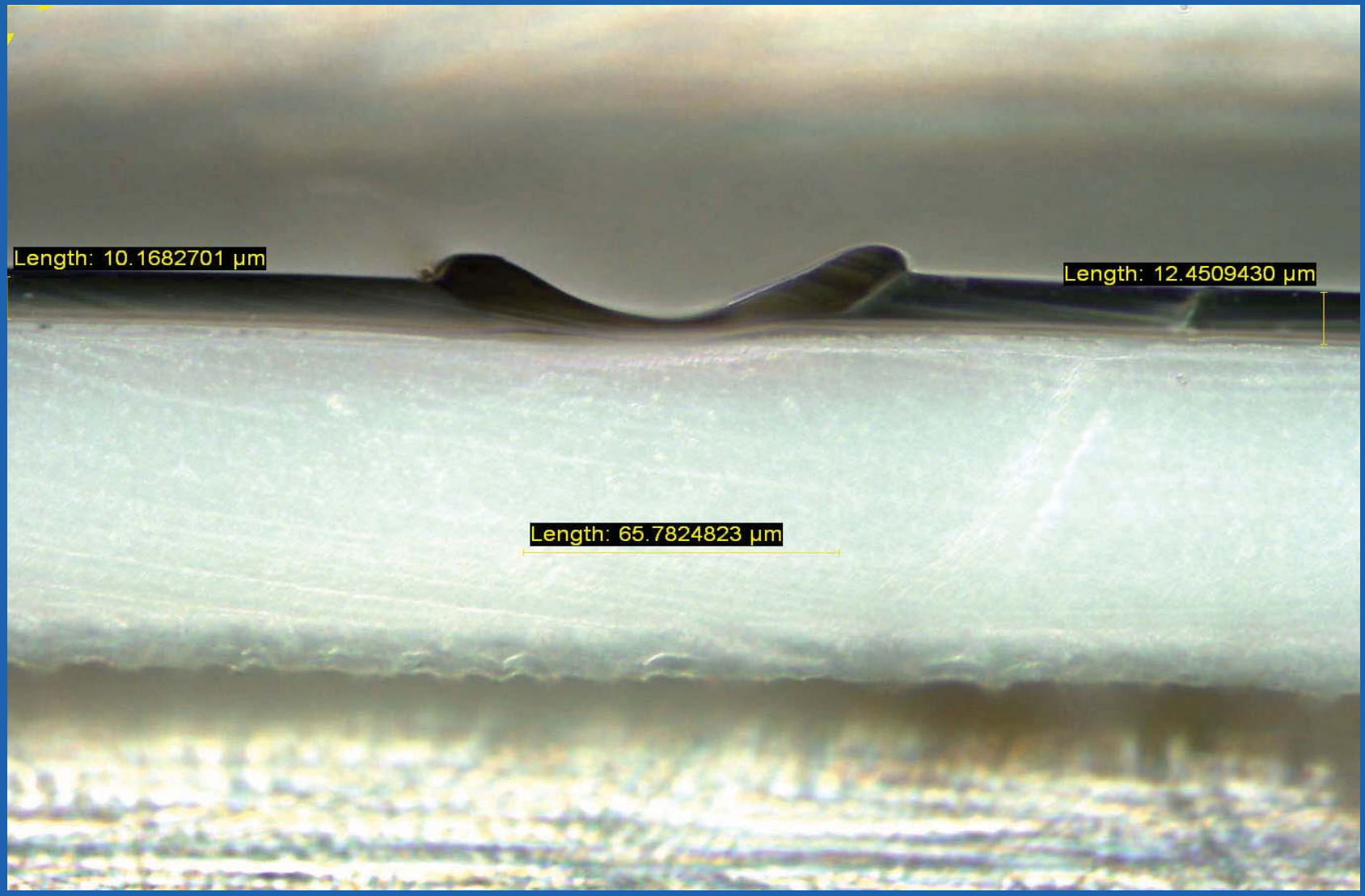
Laser Scoring for Flexible Packaging

Laser scoring weakens select areas or layers of the package to provide features without compromising barrier properties applications include:

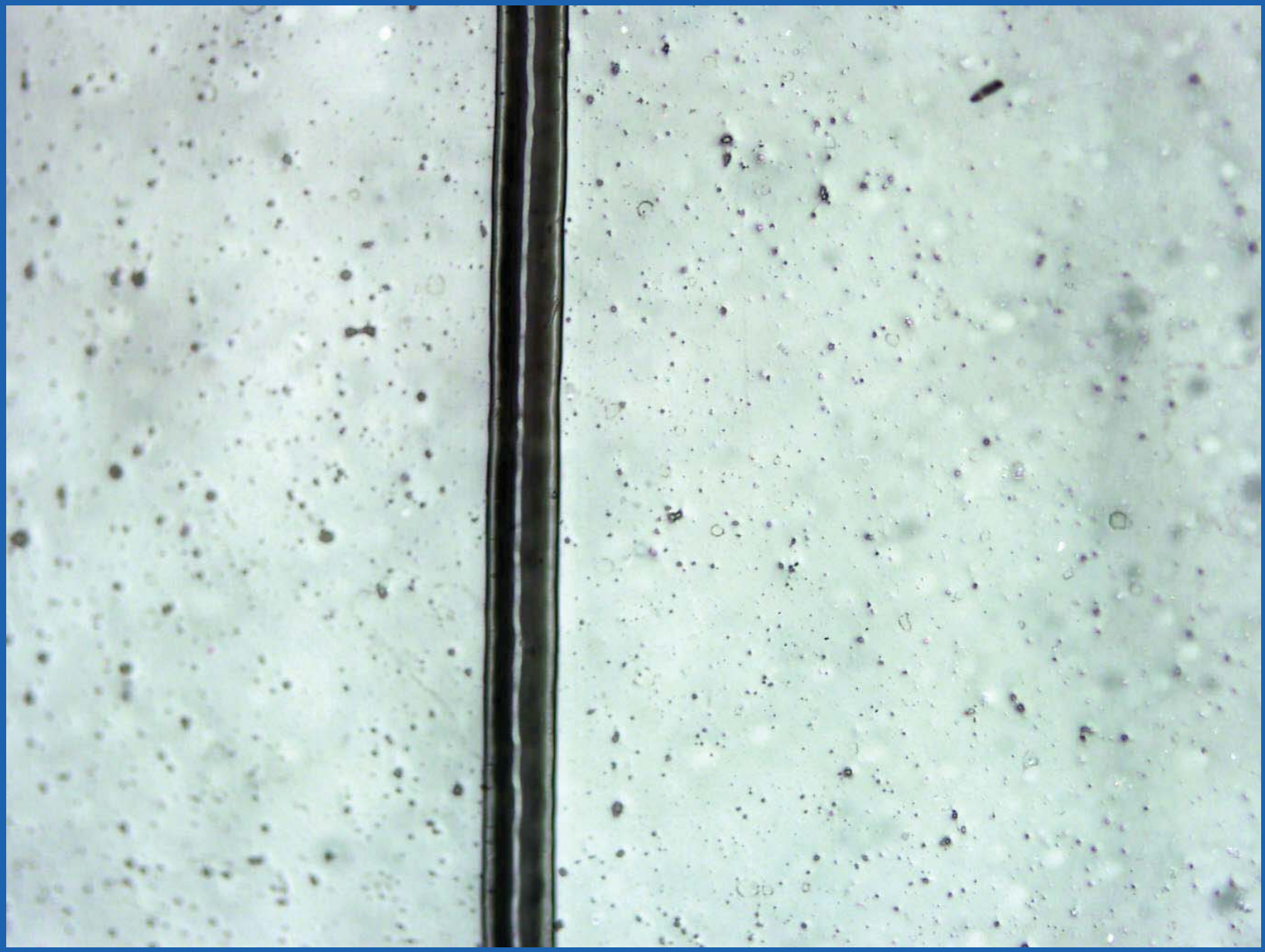
- Easy Open
- Microwave: steam release & venting
- Etch for personalization
- Engraving of security features



Cross Section of Scored Film



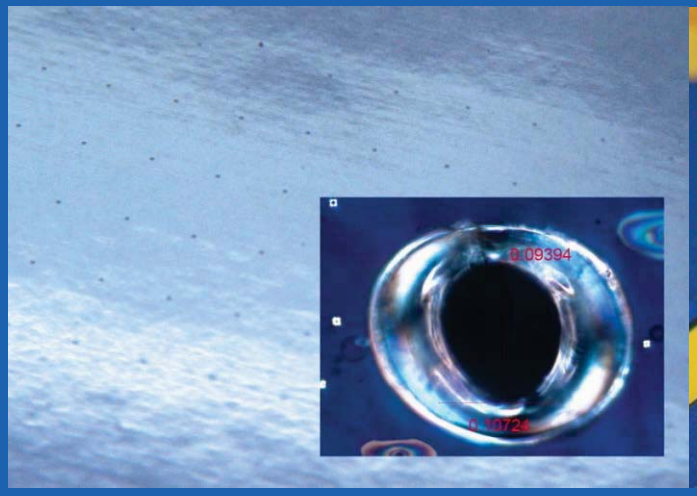
Top View of Scored Film

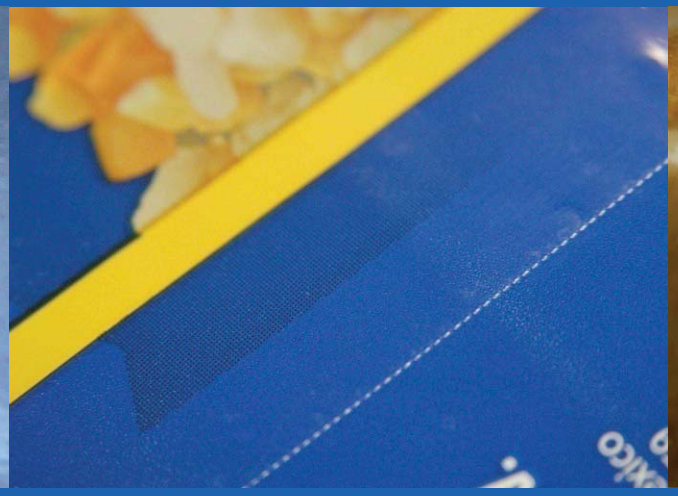


Flexible Packaging
Laser Perforating

Laser perforating select areas or layers of the package to provide features for applications including:

- Breathable packaging:
  - Controlled gas & vapor exchange
  - Control condensation
- Microwavable applications
- Rapid fill packaging or venting
- Partial perforation for maintaining a hermetic seal





Why Perforate Packages?

- To provide controlled exchange of gases and vapors or ventilation for rapid filling.
- To Reduce Condensation and moisture inside the bag that could react with CO2 to form carbonic acid
- To Extend shelf life of produce by modifying the relative humidity 'comfort zone'
- To Reduce Bacteria Growth
- To Keep the produce fresh with better flavor for longer
- To Prevent build-up of gases inside the package

OTR Requirements

Very Low < 300cc/m2/Day

- Apples, Celery sticks, green peppers, baby carrots

Low 300 - 500cc/m2/Day

- Carrots, cabbage, kale, berries

Mid 500cc/m2/Day

- Carrots coins, cauliflower, peas, radishes, Potatoes

High 1000 - 2000cc/m2/Day

- Vegetables including peas in the pod, asparagus, broccoli, corn, mushroom

Very high 10000cc/m2/Day

- Fish, red meat, cut Pineapple

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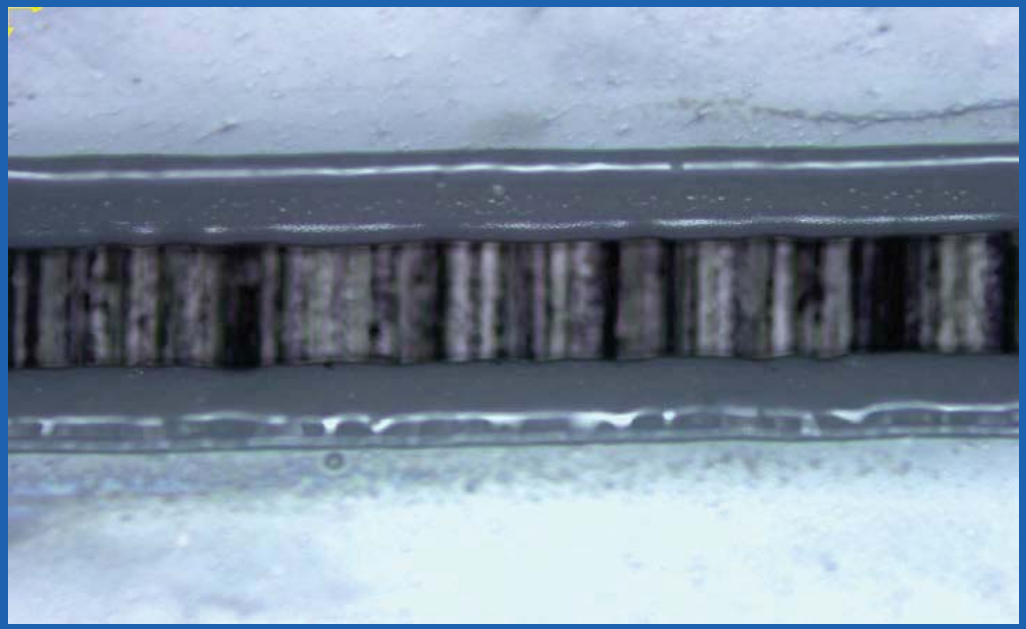
Laser Die cutting

- Laser Die Cutting select areas of the package to provide features for Flexible Packaging applications including:

- Microwavable applications
- Tear Notch and easy open
- Opening for Hang out
- Slitting



Choosing the Right Laser and or wavelength

- Dependent on the process and material.
- Common CO2 Laser Wavelengths

  9.2um, 9.4um, 10.2um, 10.6um

  Laser wavelength is selected based on absorption band of material to be processed.
- Fiber Lasers for Cutting of Metallic films

Why Replace Traditional ways with Laser?

Traditional methods:

- Labor intense and hard to make changes to the process
- It takes Longer to setup or Change over
- Contact process
- High waste % due to longer setups
- Process is not reliable, due to Inconsistency of the score depth or hole size
- Sharp cuts that could result in package propagating in the wrong direction or involuntarily
- Not a clean process with risk of contamination
- Need for replace tooling when trying different processes
- Impossible to make small features or intricate patterns

Laser Converting:

- Flexible and easily adjustable by a single operator
- Minimum down time that allows for quick setup
- Non-Contact processing
- Low waste % thru production process
- Controlled features that result in a reliable package with controlled score depth or hole size.
- Thermally sealed edges that prevent package from breaking involuntarily and that are easy to open.
- Fast and Clean of residues
- Multiple Processes with same tooling (Easy Open Package, Peel-Reclose Packages, Microwavable Packages, Personalized Packaging, Breathable Packages, etc.)
- Smallest features possible

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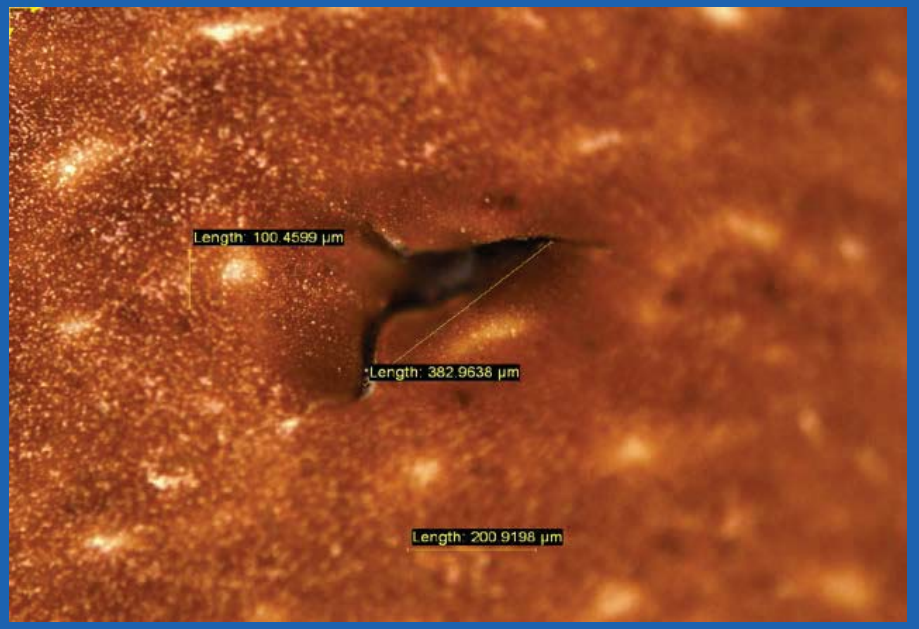
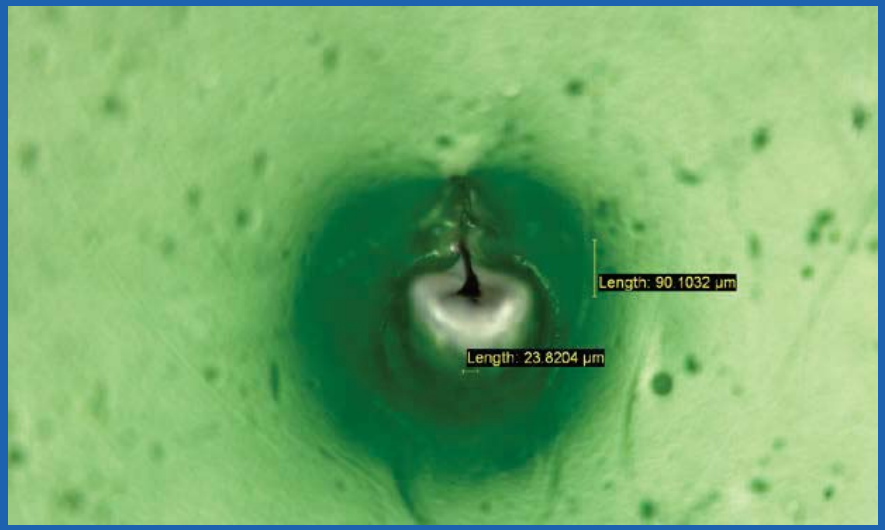
Micro-perforation

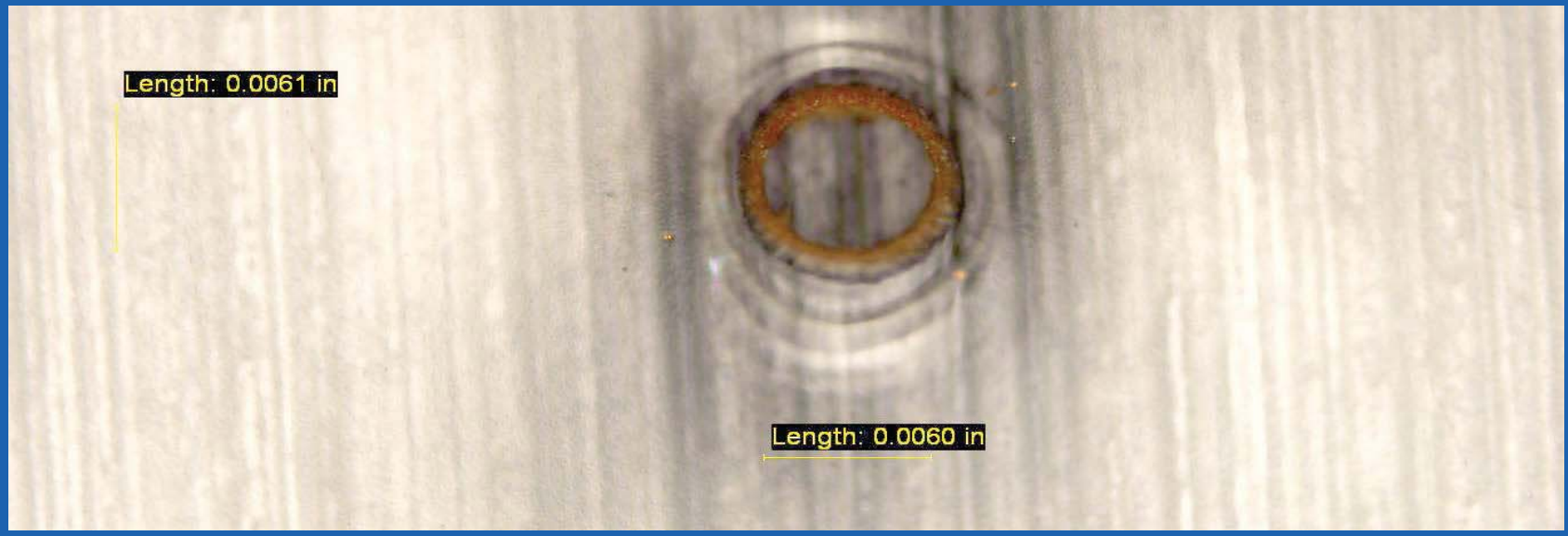
Mechanical

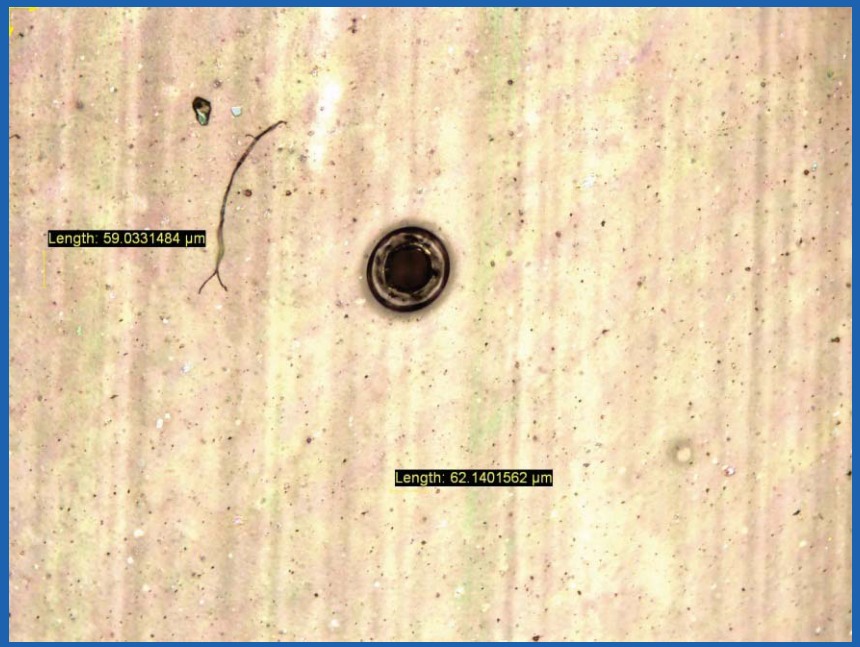


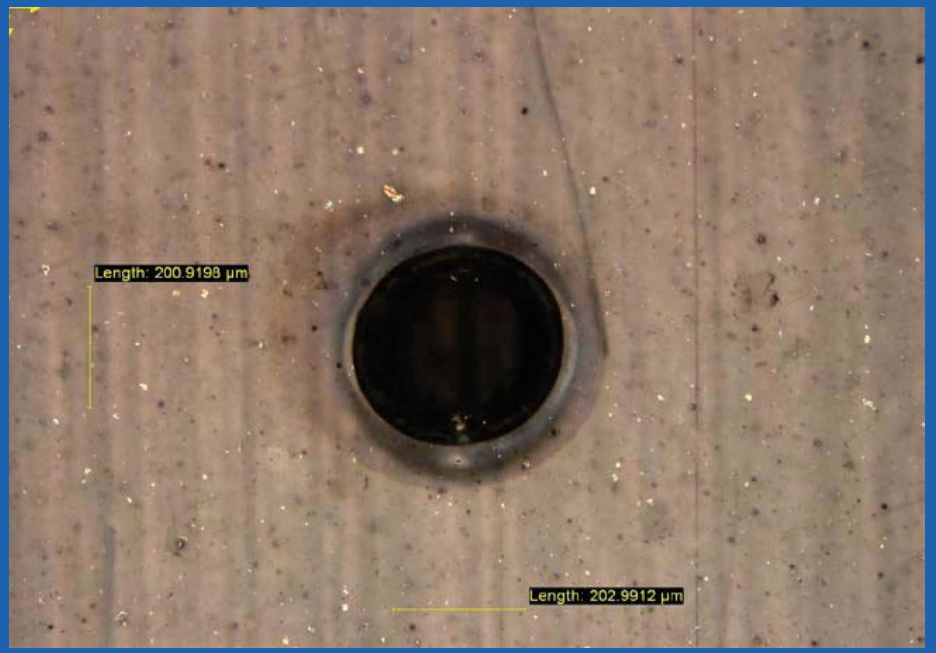


Micro-perforation

Laser







Our Commitment

- Competitive pricing
- Personalized attention
- CANDO attitude
- Quick turn around and guaranteed on-time delivery
- Highest Quality and reliability thru our Quality Management System
- Highly qualified staff of professionals and experts dedicated to process your products
- Know-How and high level of expertise to enable your applications from developmental stages to Commercial
- Innovative Laser solutions to accomplish your unique projects.

Thank you!

Juan Carlos Tinoco
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