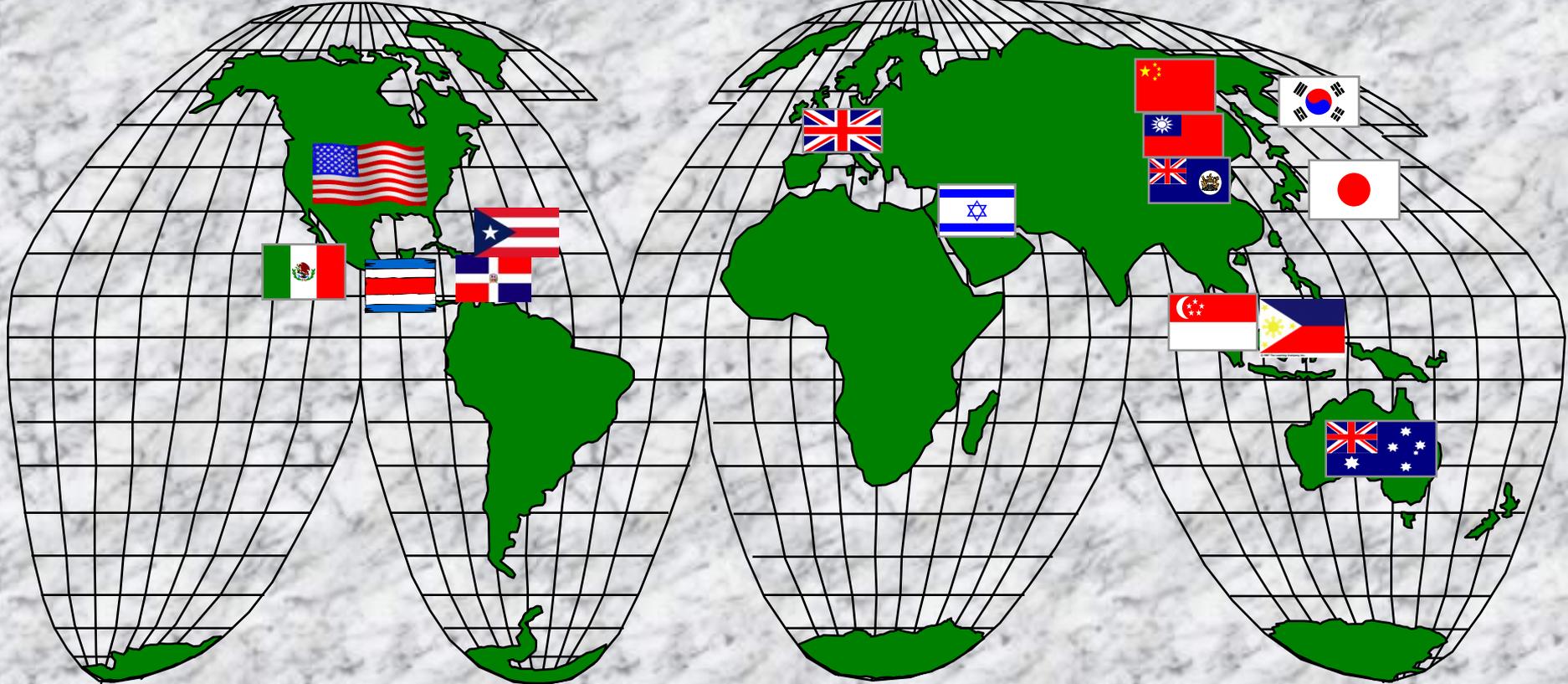
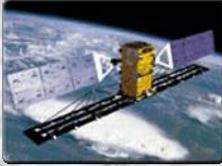


# MICROCOAT TECHNOLOGIES



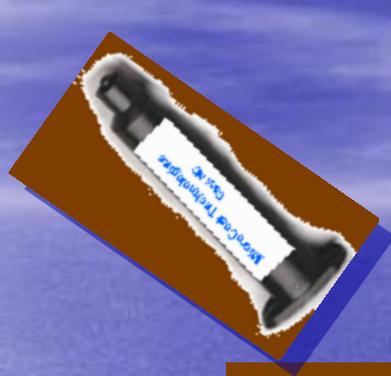
McKinney, Texas, Cheshire, CT, Morrisville, NC USA

<http://www.m-coat.com>



# Just like an old friend, we can do it all

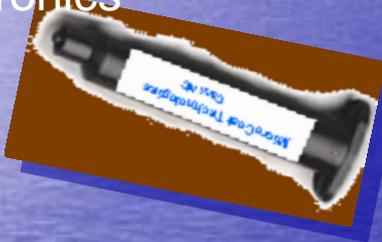
Military



Microelectronics



Electronics



Medical



Conductive silvers



Encapsulants



Optically clear



Conformal coatings



Glass Bonders





MicroCoat Technologies

Environmental  
Responsibility  
&  
Demonstrable Cost  
Savings



# THE 3 MAJOR FACTORS EFFECTING COSTS ARE .....

**APPLICATION SPECIFIC COSTS**

**TANGIBLE COSTS**

**INTANGIBLE COSTS**

# APPLICATION SPECIFIC COSTS

- ◆ Likely to Increase Product Performance, Durability, & User Safety
- ◆ Higher Productivity, as in WIP (Cycle Time)
- ◆ Regulatory Compliant Materials per OSHA, EPA, FDA
- ◆ Lower Energy Costs

# Tangible Costs

- ◆ **No Solvents and VOC (Volatile Organic Compounds) Treatment**
- ◆ **Less Downtime and Maintenance**
- ◆ **Lower Energy Costs**
- ◆ **Less Scrap**
- ◆ **Less Waste & Waste Disposal**
- ◆ **Lower Tooling & Fixturing Costs**
- ◆ **Lower Labor Rates**
- ◆ **Lower Overhead**
- ◆ **May Lower Insurance Rate**
- ◆ **Lower Operating Costs**

# Intangible Costs

## Intangible Costs Can Be More Compelling Than Tangible Costs

### Regulatory Compliant

- -OSHA (Health)
- -FDA (Safety)
- -EPA (Waste Disposal)
- -No Solvent Handling
- -May Improve Quality
- -Higher Capacity Utilization
- -A Process Not Achieved by Another Method

# Maximizing a Plant's Real Estate

- Plant managers (our customers), restructure and reconfigure every square inch of the "real estate" under their care to increase throughput, output and quality, reducing labor and waste as much as possible in the process. Capital improvements focus not so much on expanding plant size as on wringing as much production as is mechanically and humanly possible from existing capacity.
- One 6-10 foot UV conveyor will replace ~100-500 sq. ft. of conventional ovens and save an enormous amount of energy dollars and real estate

# SHORTENING CYCLE TIME

**REDUCES**

**WIP (Work in Process)**

**Labor per Part**

**Overhead per Part**

**THE RESULT!**

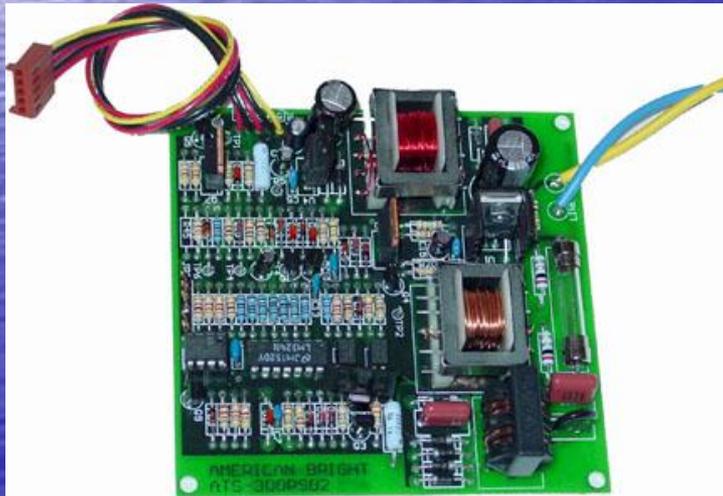
**PRODUCTIVITY INCREASES**

# The Complete UV/Visible Light Adhesive Assembly Package

- ◆ Glob Tops and Underfills for COB & Flip Chips (Clear & Opaque)
- ◆ Wire Tacking
- ◆ Peelable & Water Soluble Masks
- ◆ Potting & Encapsulating
- ◆ Conformal Coatings
- ◆ Conductive & Resistive Materials

# Conformal Coatings

UV, Dark Cure & Heat Cure



# UV Cured Peelable & Water Soluble Solder Masks

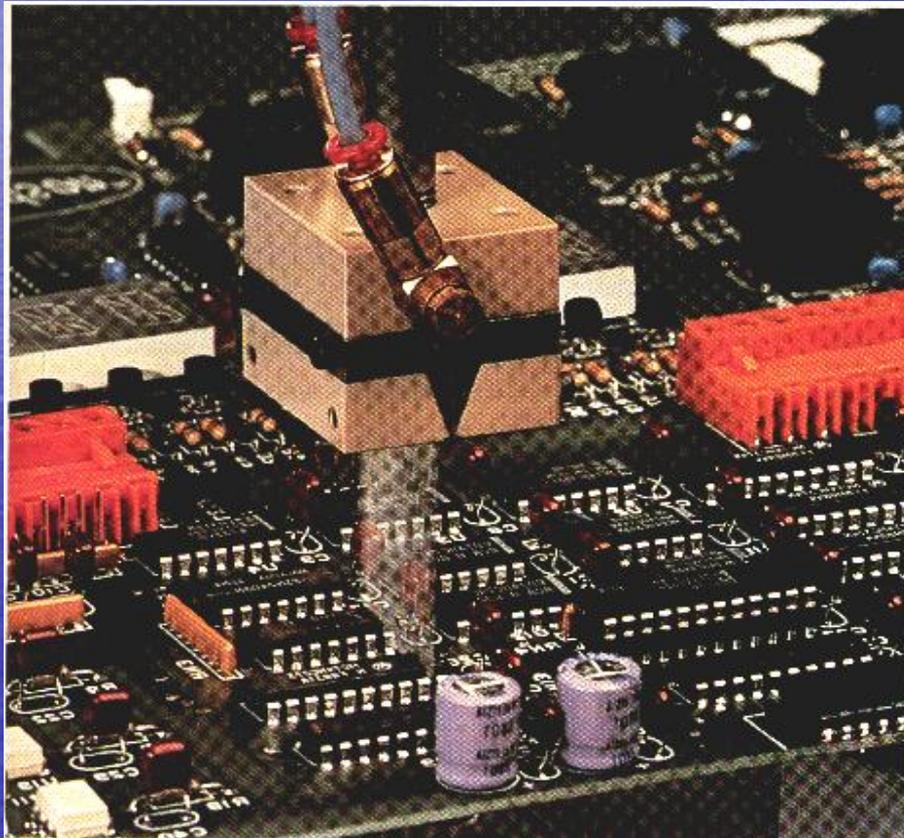
Fluorescing, & Non-Fluorescing



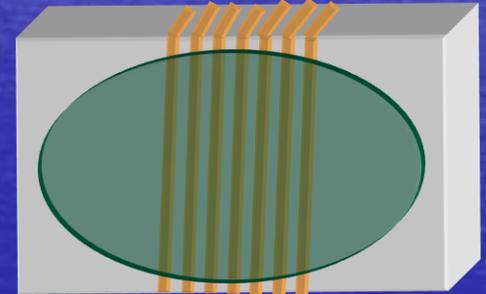
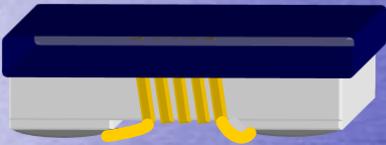
# Wire Tackers



# The Application of Conformal Coatings



# Inductor Encapsulants For Vacuum Pick & Place



Air Coil

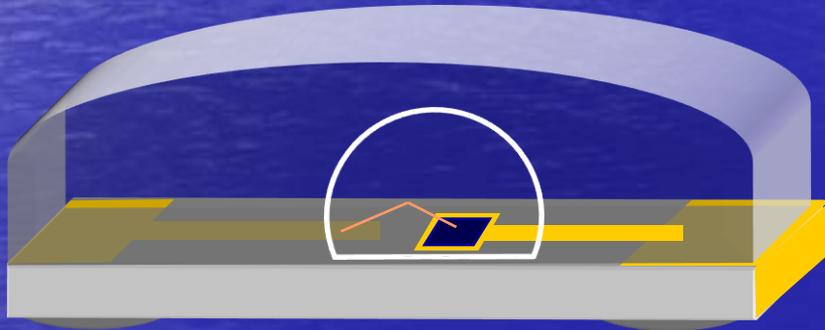
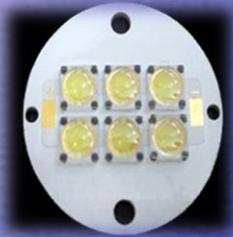
Molded Surface

"Flat" Over Wires

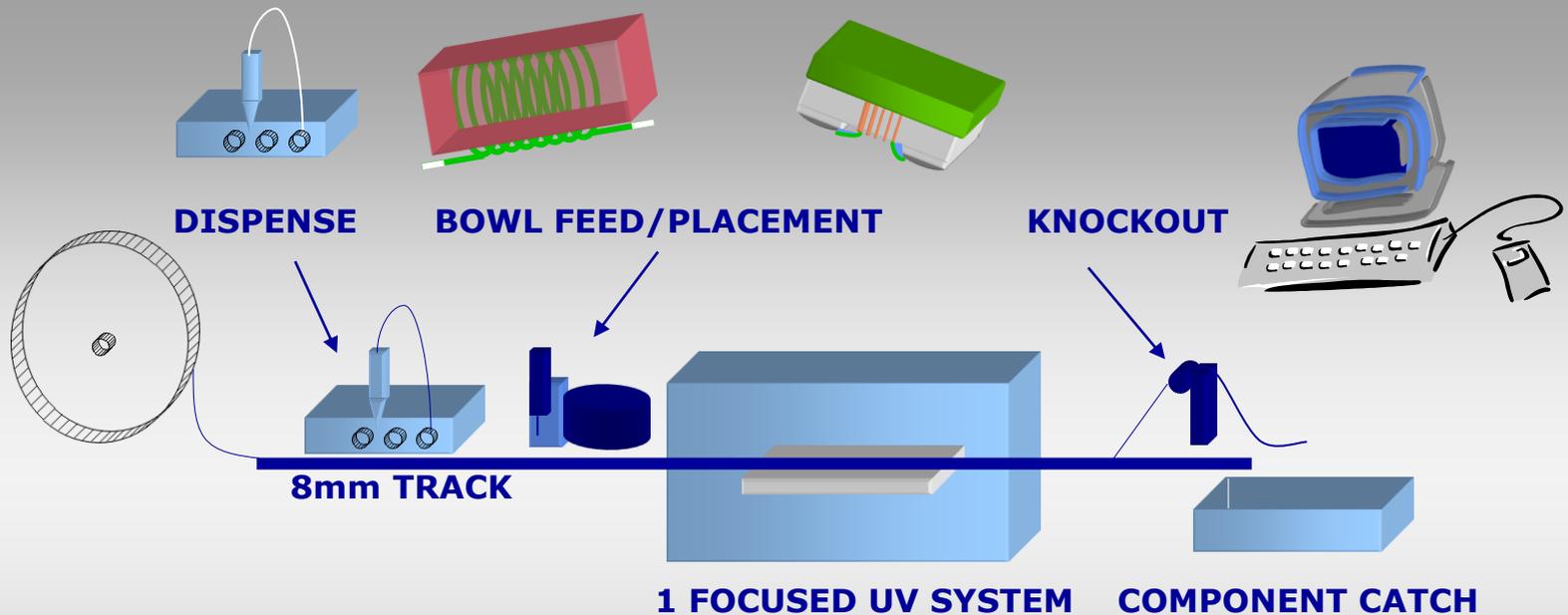


Spray or Dip Coatings

# UV Cure SMD LED Encapsulants



# Fully Automated, PC Controlled, Inductor Molding Process



MicroCoat Technologies  
McKinney, TX



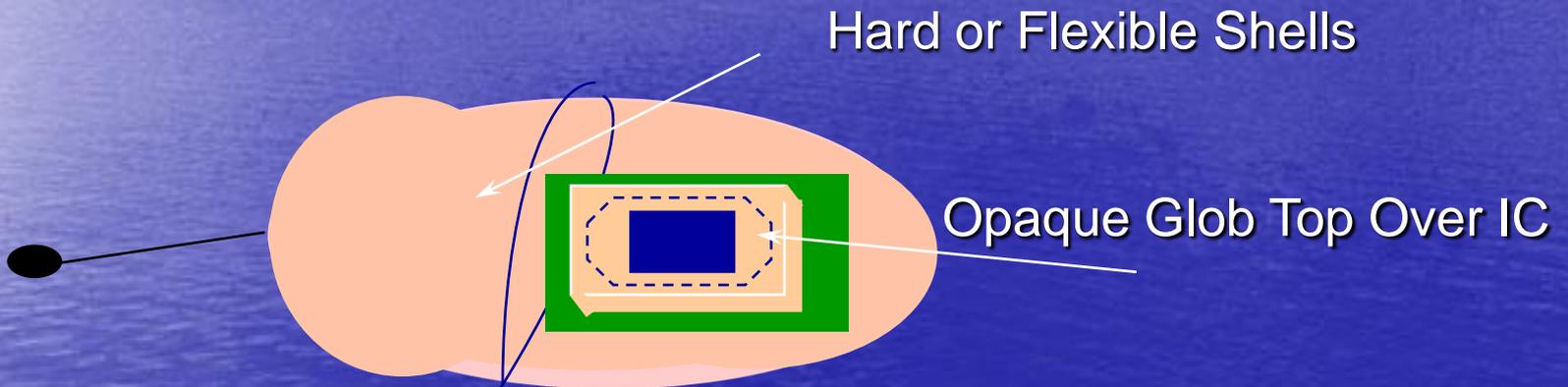
# CLASS VI\* MEDICAL ADHESIVES

FOR:

- ◆ FACE MASK BONDING
- ◆ STYLUS & CANNULA BONDING
- ◆ RESERVOIR BONDING
- ◆ MOLDED SHELL BONDING
- ◆ CATHETER BONDING
- ◆ TUBE SET BONDING
- ◆ \* PASSES MOLD SPORE INITIATION



# UV Cured Hearing Aid Shells & Forms



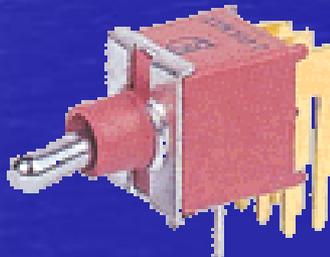
ITC & CIC Hearing Aid  
Shells , Fill, & IC Glob Top

# Hard Coat, Soft Coat & and Writeable UV Cure Coatings for DVD's

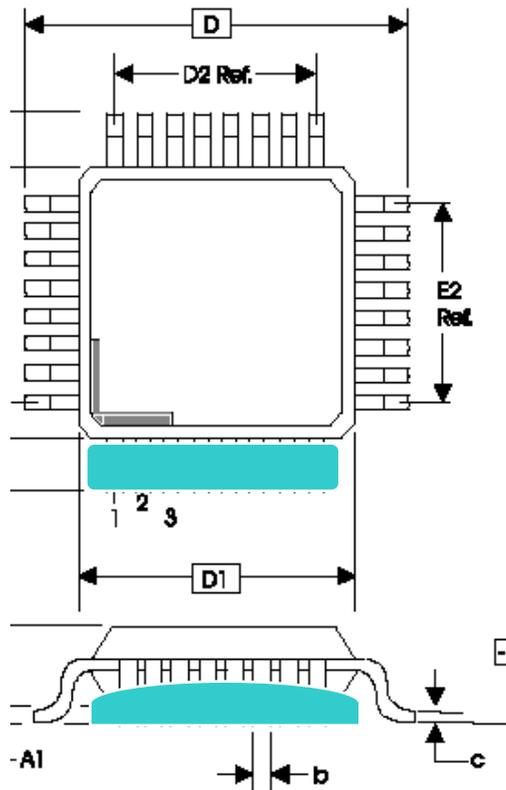


# Moisture Protection for Switches

Electrical/Electronic Equipment  
Automotive  
Machine Tools  
Medical Equipment and Devices  
Trucks and Busses  
Heavy Equipment  
Lawn and Garden  
Restaurant Equipment



# Lead Coating To Reduce The Possibility Of Tin Whisker Migration On Fine Pitch IC's



# What are Tin (and Zinc) Whiskers?

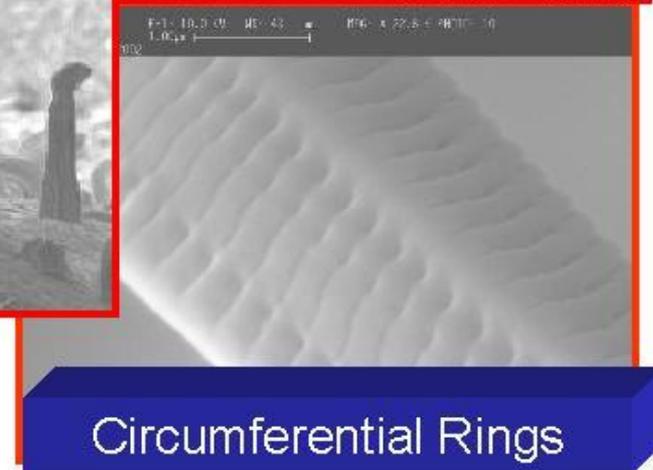
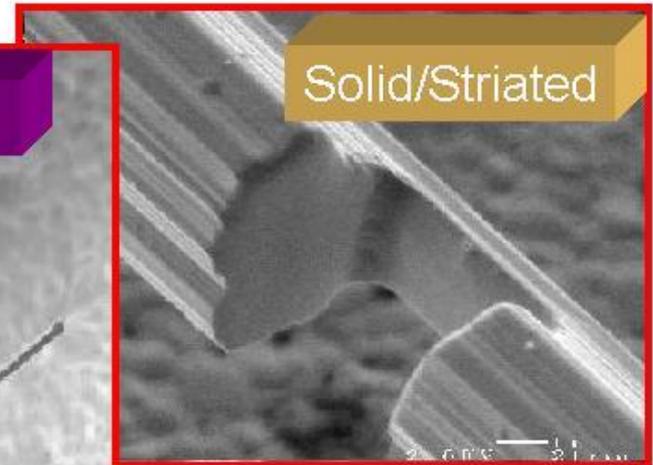
- “Hair-Like” Crystalline Structures that May Grow from mostly pure Tin (or Zinc) Finished Surfaces
- **LENGTH:** Up to 10 mm  
(Typically < 1mm)
- **DIAMETER:** from 0.006 to 10  $\mu\text{m}$   
(Typical  $\sim 1 \mu\text{m}$ )
- Grow from the Base Not the Tip
- *Growth Mechanism(s):* **UNKNOWN!**  
Diffusion Processes within Finish or on Surface are likely involved, but what drives diffusion into specific grains and then launches them OUT from surface?

**Fundamental Research  
is INCOMPLETE**

**Whiskers are  
NOT Dendrites**



# Metal Whisker Shapes & Features



# UV Cure Low Temperature Glass Replacement for Hybrid Circuits

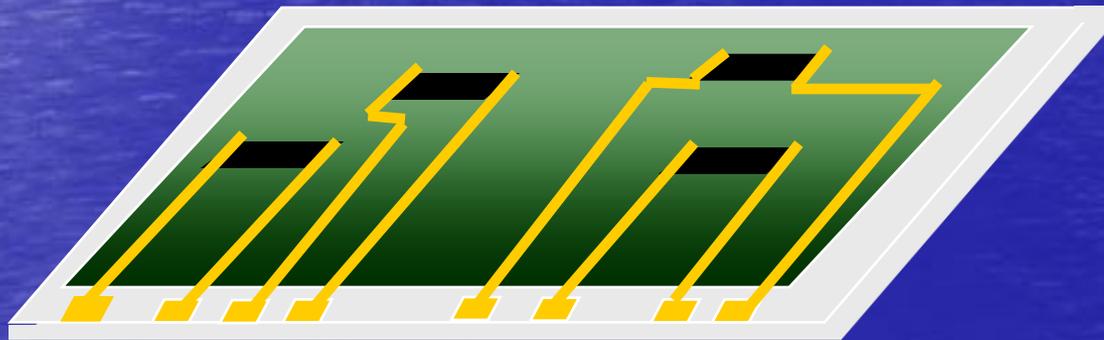
100% Solids

<25 Second Cure Time

Withstands 230°C Solder Reflow

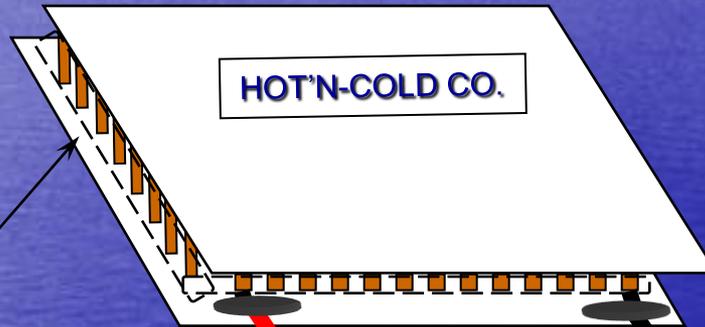
Print and Cure Before or After Trimming

No Post Cure Resistor Drift - **None!**

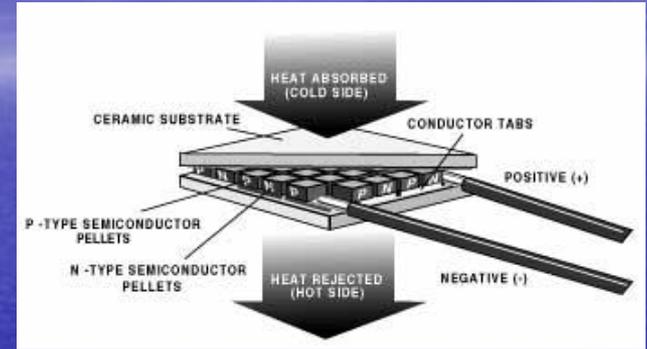


# Thermoelectric Components

Peltier Device



Moderately Flexible,  
High Temperature, UV Cure  
Coating



# UV and UV/Visible Light Curing Equipment



# The UV Rules of Responsibility

The Energy Rule

The Waste Disposal Rule

The Labor Rule

The WIP Rule

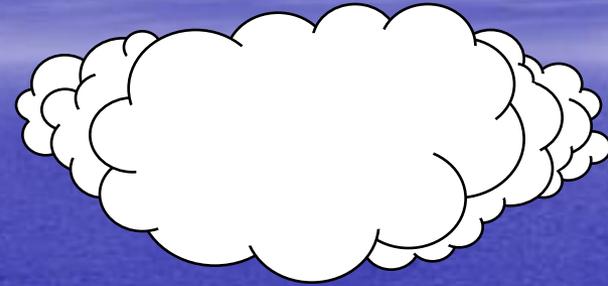
The Overhead Rule

The Capacity Rule

The Real Estate Rule

# SHORTENING CYCLE TIME

**REDUCES**



**WIP (Work in Process)**

**Labor per Part**

**Overhead per Part**

**THE RESULT**

**Higher Profits**