

The North American Market for UV+EB Technology



New at RadTech NA

- Automotive Consultant
- 3D Printing Committee
- Environmental, Health, Safety & Sustainability Updates
 - Market Outreach Committee
 - UV+EB Technology Magazine
 - RadTech Foundation
- International Ultraviolet Association
 - Partnership with Georgia Power
 - UV LED Biennial Event

UV+EB APPLICATION NEWS



HOME

APPLICATIONS



SPOILER ALERT! GAME OF THRONES SEASON 6 PREMIERE FEATURES 3D PRINTED DAGGER FROM SHAPEWAYS



MID AMERICA PLANES NEARING MOVE-IN DAY



SCIENTISTS 3D PRINT A ROBOT THAT WALKS AWAY WHEN COMPLETE



DATA, ALGORITHMS, AND 3D PRINTING BROUGHT REMBRANDT BACK TO LIFE



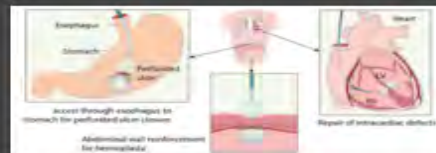
ROBOTIC COCOON-SPINNER CHALLENGES 3D PRINTING



LOCAL PRINTERS MUST BE UP TO SPEED WITH HIGH-TECH PRESSES



HRL CREATES ULTRA-STRONG, FLAWLESS 3D PRINTED CERAMICS, RESISTANT TO TEMPERATURES OF 1,400+ DEGREES



UV LIGHT AND BALLOONS



DISNEY REVEALS HOW TO DESIGN AND 3D PRINT AN OLAF DISNEY INFINITY

U.S. Manufacturing Production Forecasts

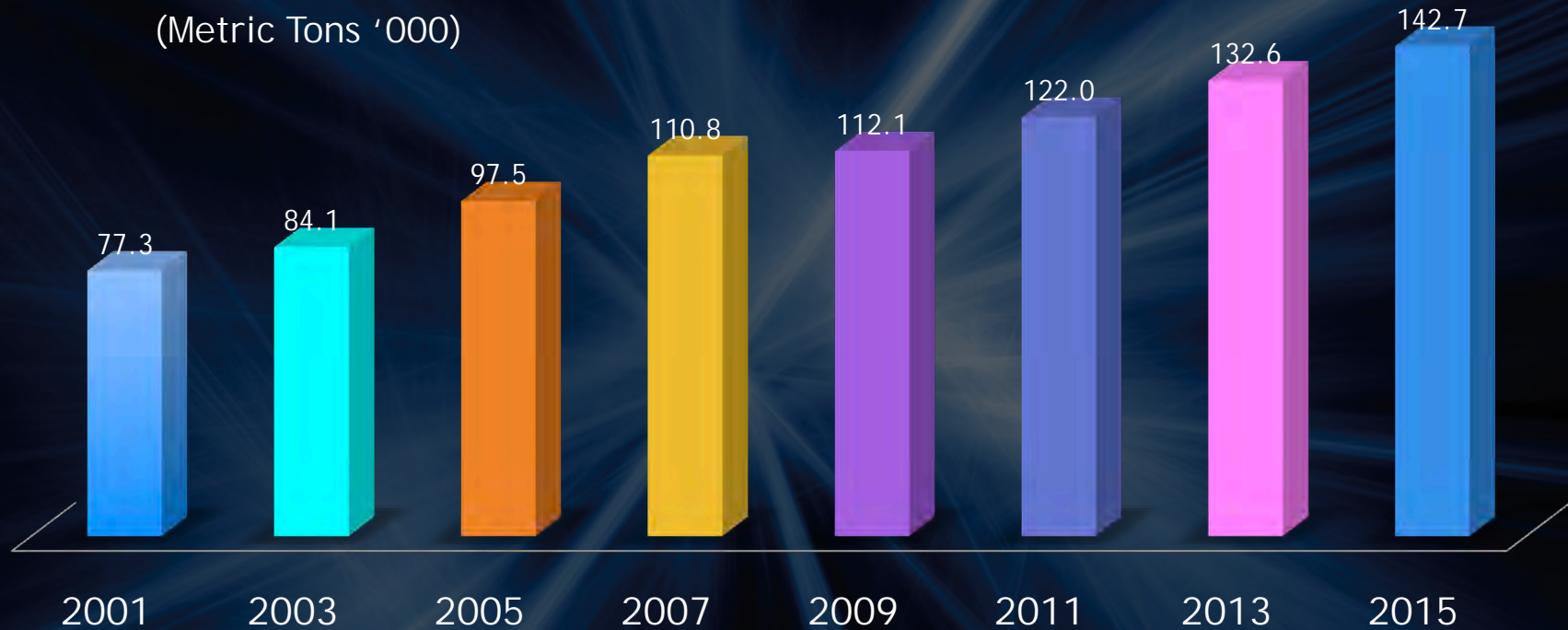
March 2016 Forecast, Annual Percent Changes, inflation adjusted

Sources: MAPL, NABE

	2015	2016F	2017F	2018F
Wood Products	1.6	5.1	5.7	2.7
Furniture & Related Products	4.4	3.3	2.7	2.7
Paper Products	-1.3	-1.4	-0.4	-0.5
Rubber & Plastic Products	4.8	2.6	3.8	4.4
Fabricated Metal Products	0.3	-0.9	1.4	2.0
Machinery	-0.1	-1.8	2.2	4.3
Computers & Electronics	1.7	2.3	3.1	5.3
Aerospace Products & Parts	1.9	0.3	3.3	5.5
Electrical Equipment, Appliances	4.7	4.4	1.4	2.0
Motor Vehicles & Parts	8.5	6.4	6.1	-1.1
Overall Industrial Production	1.3	0.8	2.7	NA

UV+EB Formulated Product Usage By Volume

North America
(Metric Tons '000)



RadTech Survey

UV+EB Curing Distribution by Country North America

United States	77%
Canada	12%
Mexico	11%

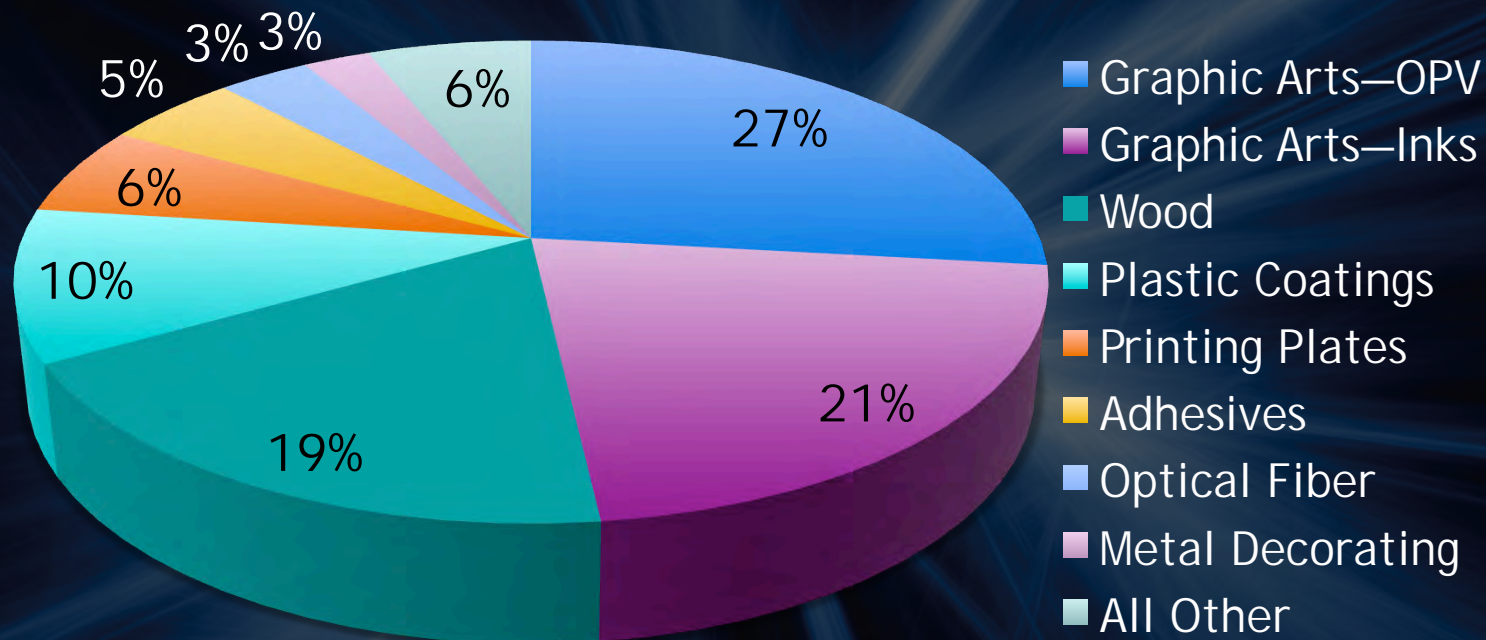
RadTech Survey Forecast

UV+EB Formulated Product Curing Distribution by Equipment Type North America

Conventional UV	84%
Electron Beam	9%
UV LED	7%

RadTech Biennial Market Survey

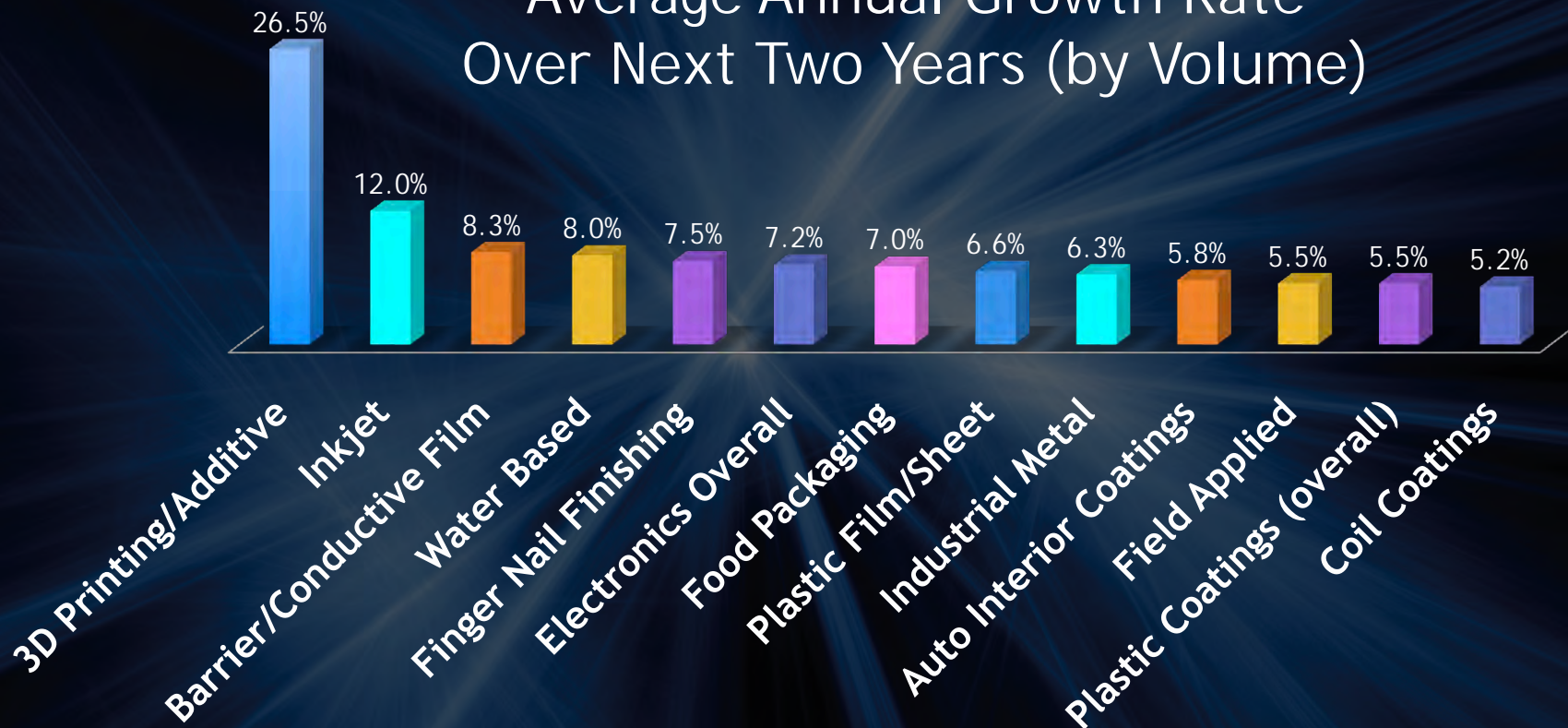
2015 UV+EB Formulated Product Usage by Volume
(percent of total)



Forecast

RadTech Biennial Survey

UV+EB Products:
Average Annual Growth Rate
Over Next Two Years (by Volume)



RadTech Forecast

Top 10 Projected UV+EB Growth Applications

(Each expected to grow by over 6% per year over next two years):

1. 3-D Printing/Additive
2. Inkjet Graphic Arts
3. Inkjet Industrial
4. Barrier/Conductive Films
5. Water Based Materials
6. Finger Nail Finishing
7. Electronics
8. Food Packaging
9. Plastic Film and Sheet
10. Industrial Metal Coatings

RadTech Biennial Survey

Top Emerging Markets for UV/EB

1. China
2. India
3. Brazil
4. Mexico

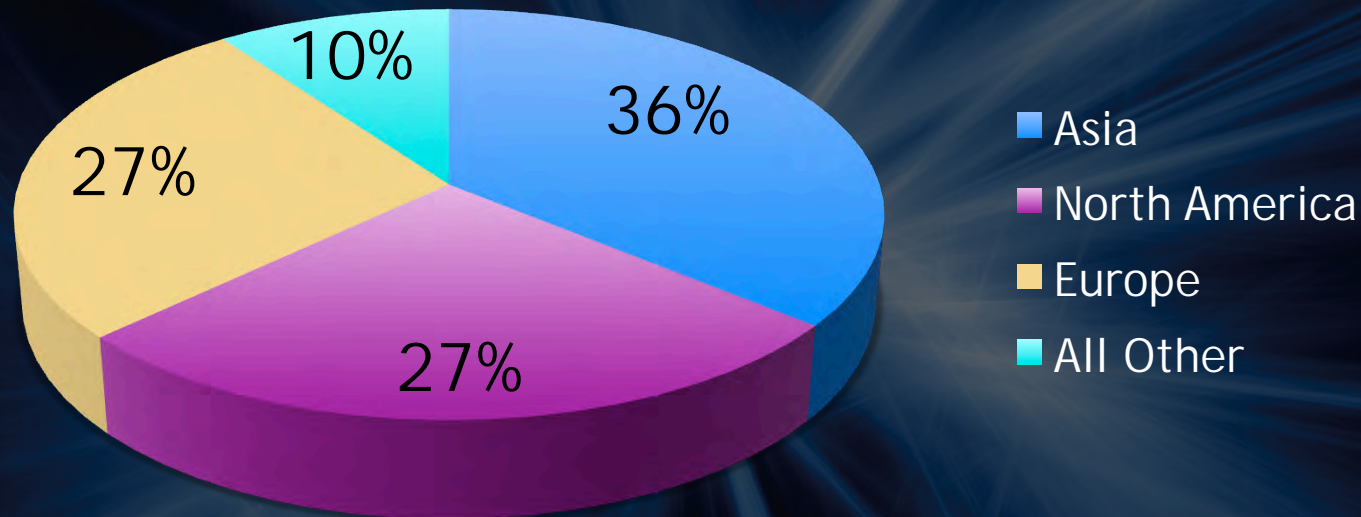
RadTech Survey Forecast

UV+EB Formulated Product Sales Growth in North America, by Volume

2015	4.7%
2016	4.9%
Next 3 yr. Annual Avg	5.5%

RadTech Biennial Survey

Global market for UV/EB



RadTech Biennial Survey

Motivations for Using UV+EB

1. Increase Productivity
2. Improve Physical Performance
3. Enabling/New
4. Cost Effective

RadTech Biennial Survey

Most Important Advances in Last Two Years:

1. UV LEDs
2. Better Adhesion
3. Improved Outdoor Weathering
4. Fast Cure Speeds
5. Lower Cost Materials

RadTech Biennial Survey

Needed Improvements that may be
Limiting the Adoption of UV+EB

1. UV LEDs
2. Migration Concerns
3. Better Adhesion
4. Regulations

RadTech International North America

Thank you!

www.radtech.org

RADTECH
THE ASSOCIATION FOR UV&EB TECHNOLOGY