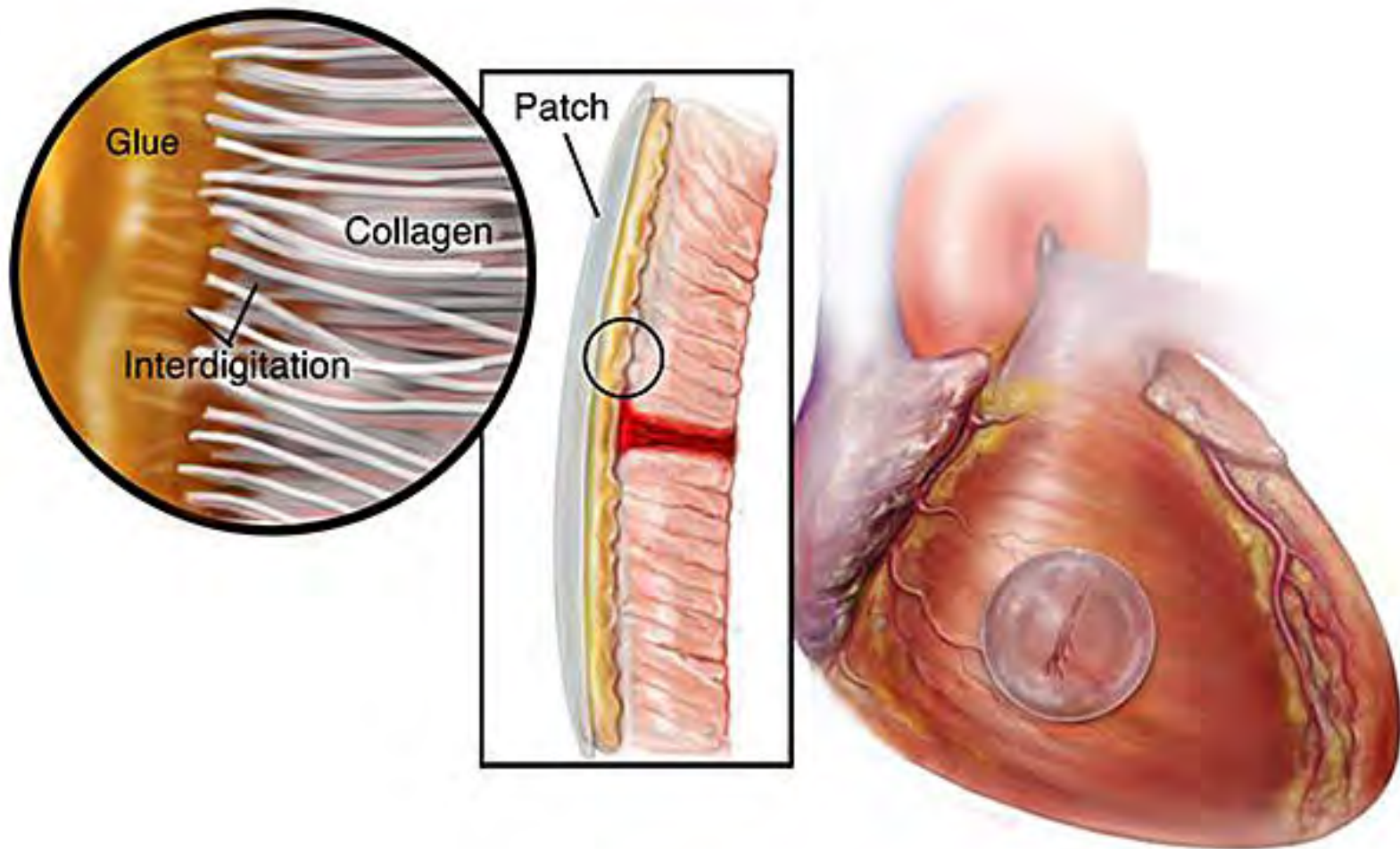


The North American Market for UV/EB Technology





Bio Inspired Glue



Shark Skin Aircraft Coatings



Ultra Thin PV Applications



UV for Railroad Repair



Thinking Differently About Wine?

Most Competitive Exporters

Source: Boston Consulting Group 2014

Under Pressure

China, Brazil, Czech Republic, Poland, Russia

Losing Ground

Belgium, Sweden, France, Switzerland, Italy

Rising Stars

Mexico, USA

MAPI Manufacturing Forecasts

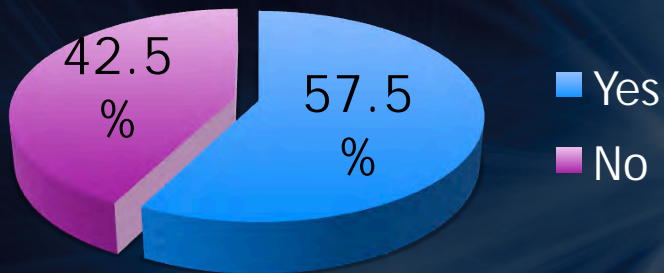
Spring 2014 Forecast, Annual Percent Changes

	2013	2014	2015
Housing Starts	19	22	30
Motor Vehicle & Parts	7	5	4
Household Appliances	7	5	5
Aluminum Production	1	1	6
Fabricated Metal Products	4	4	4
Paper	0	0	2
Industrial Machinery	3	9	4
Communications Equipment	0	4	7
Electric Lighting Equipment	-3	8	11
Medical Equip. & Supplies	6	6	4
Aerospace Products & Parts	0	4	11
Public Works Construction	-5	1	2

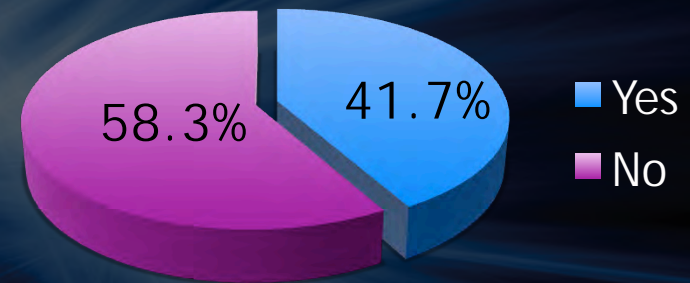
Ink World Magazine Survey

(412 respondents)

Are you currently working with
UV/EB-curable products?



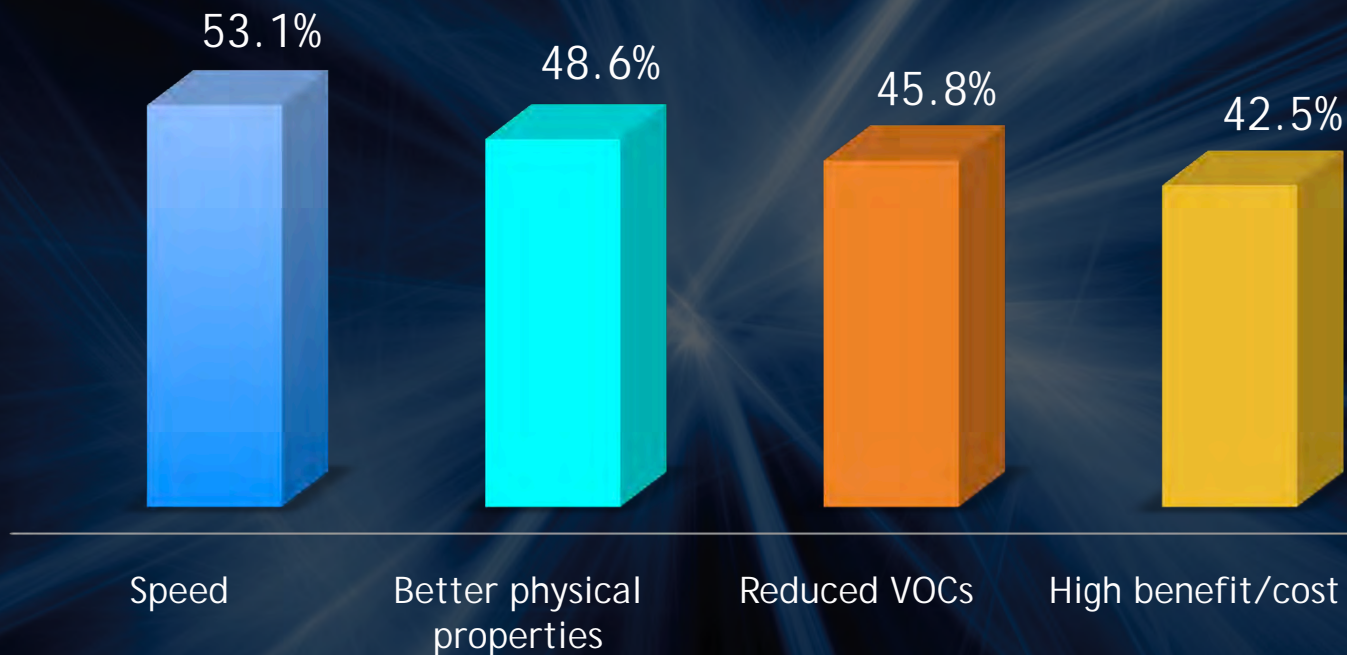
If no, have you ever evaluated
UV/EB-curable products?



Ink world Magazine Survey

(412 respondents)

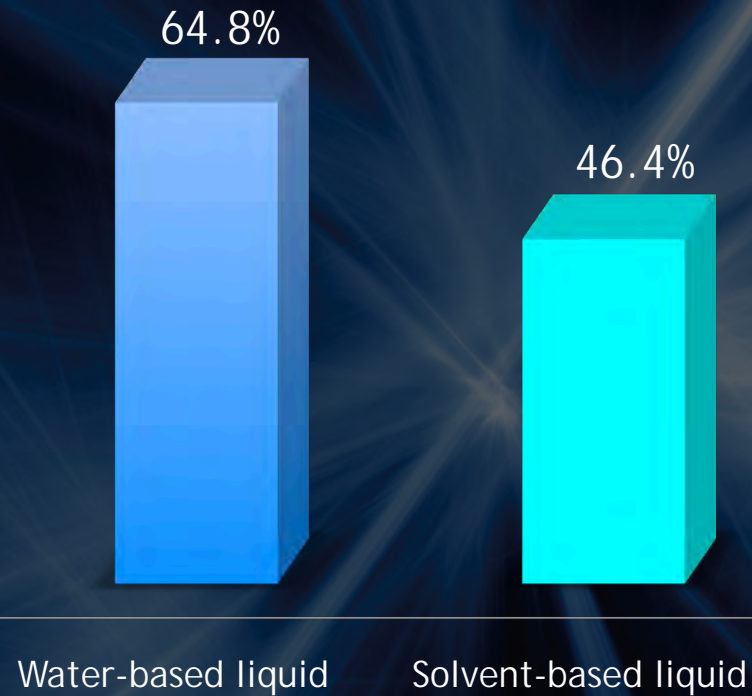
What are the most important factors relating to the adoption of UV/EB curable products?



Ink world Magazine Survey

(412 respondents)

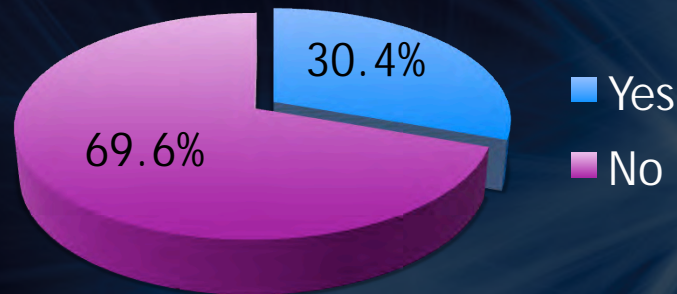
What materials do you primarily work with?



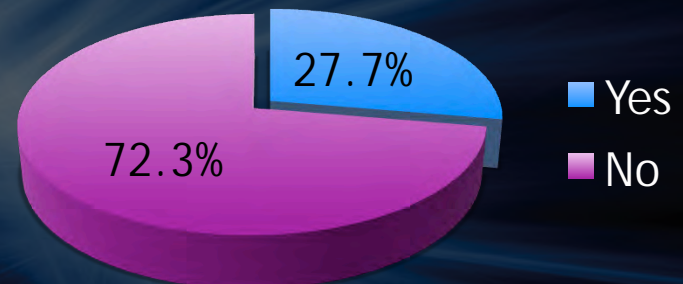
Coatings World Magazine Survey

(906 respondents)

Are you currently working with UV/EB-curable products?



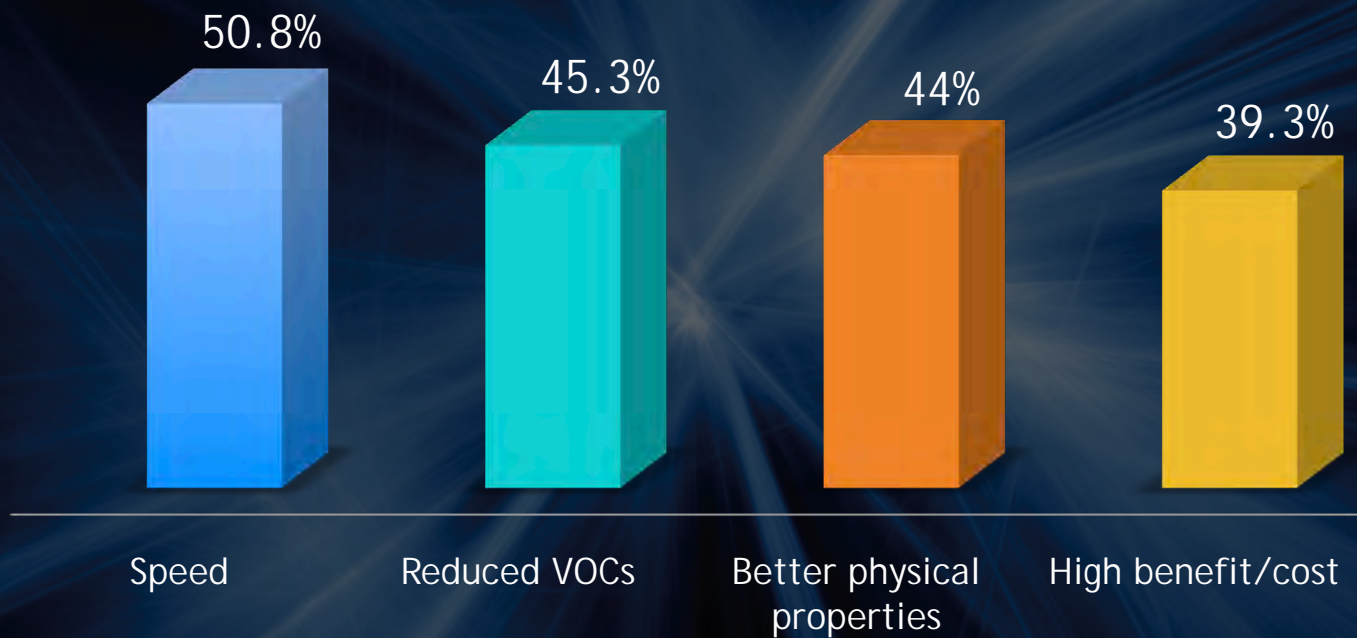
If no, have you ever evaluated UV/EB-curable products?



Coatings World Magazine Survey

(906 respondents)

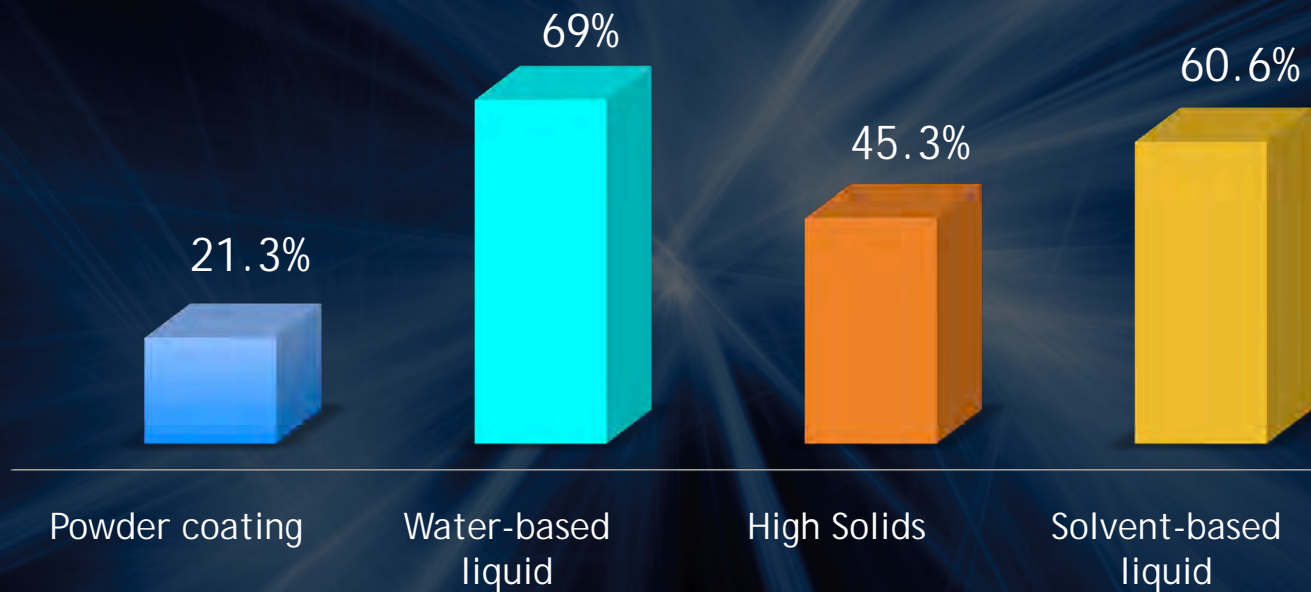
What is the most important factors relating to the adoption of UV/EB curable products?



Coatings World Magazine Survey

(906 respondents)

Which of the following other materials do you currently work with?



RadTech UV-LED Survey—Spring 2014

MOTIVATIONS for Using UV-LED Technology. By ranking:

1. Suitable for heat-sensitive substrates
2. Energy efficiency
3. System lifetime/downtime benefits
4. Instant on/off capability
5. Operating cost savings
6. More consistent UV output
7. Health and safety benefits
8. Environmental
9. Capital cost savings

RadTech UV-LED Survey—Spring 2014

Factors that may be limiting the use of UV-LEDs:

1. Lack of suitable curable materials
2. UV-LED investment costs too high
3. Technical limitations of existing equipment (output, cooling, size, wavelength)
4. Users lack of UV-LED familiarity/knowledge
5. New technology
6. Critical lamp to substrate distances
7. Limited base of installed UV-LED installations for the market application
8. UV-LED formulated ink, coating, or adhesive costs too high

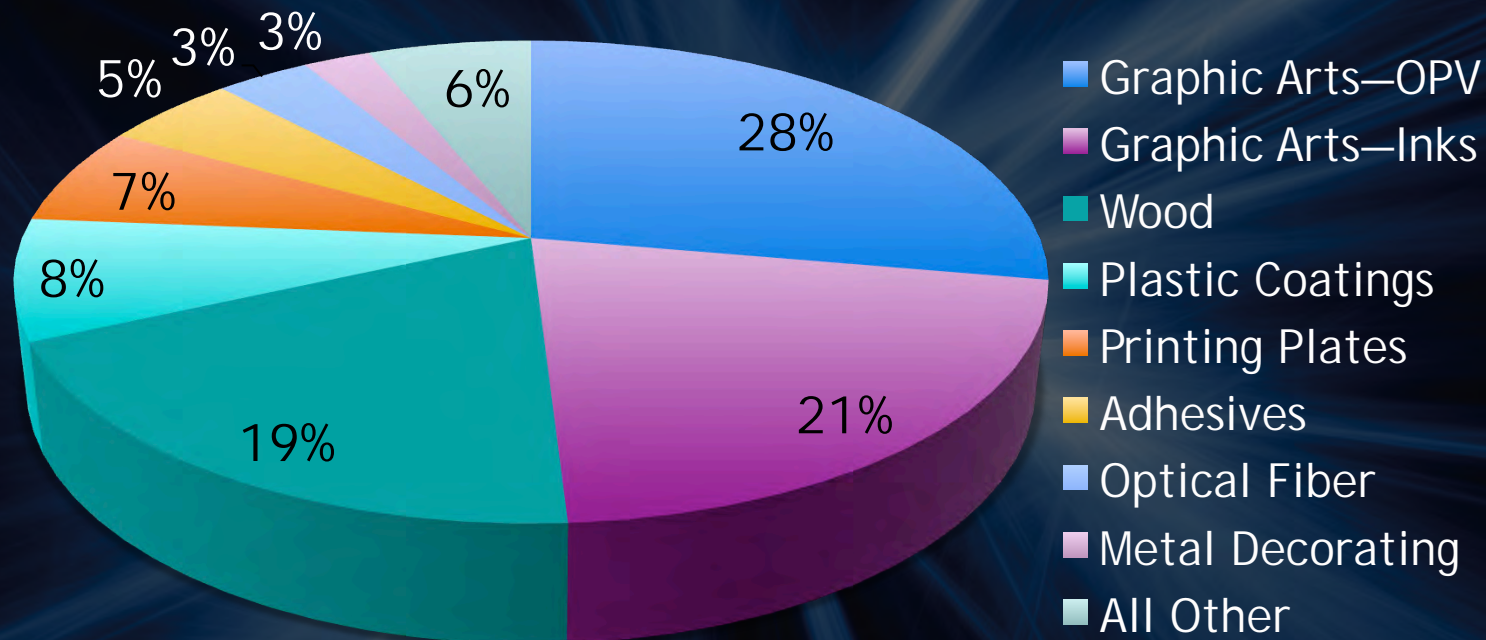
RadTech UV-LED Survey—Spring 2014

The time frame in which you believe LED curing will become commonplace for:

	0-2/yr	2-5/yr	Col 1+ Col 2
Digital Inkjet (single pass)	58	25	83
Digital Inkjet (wide format)	45	34	79
Adhesives (industrial)	29	31	60
Screen Inks	22	34	56
Flexo Inks	22	42	64
Adhesives(field applied)	21	37	58
Offset Inks(high speed graphics)	16	34	50
Offset Inks(sheet metal deco)	15	37	52
Coatings (graphics)	15	36	51
Coatings (field applied)	12	32	44
3D Industrial	12	34	46
Coatings (industrial)	7	36	43

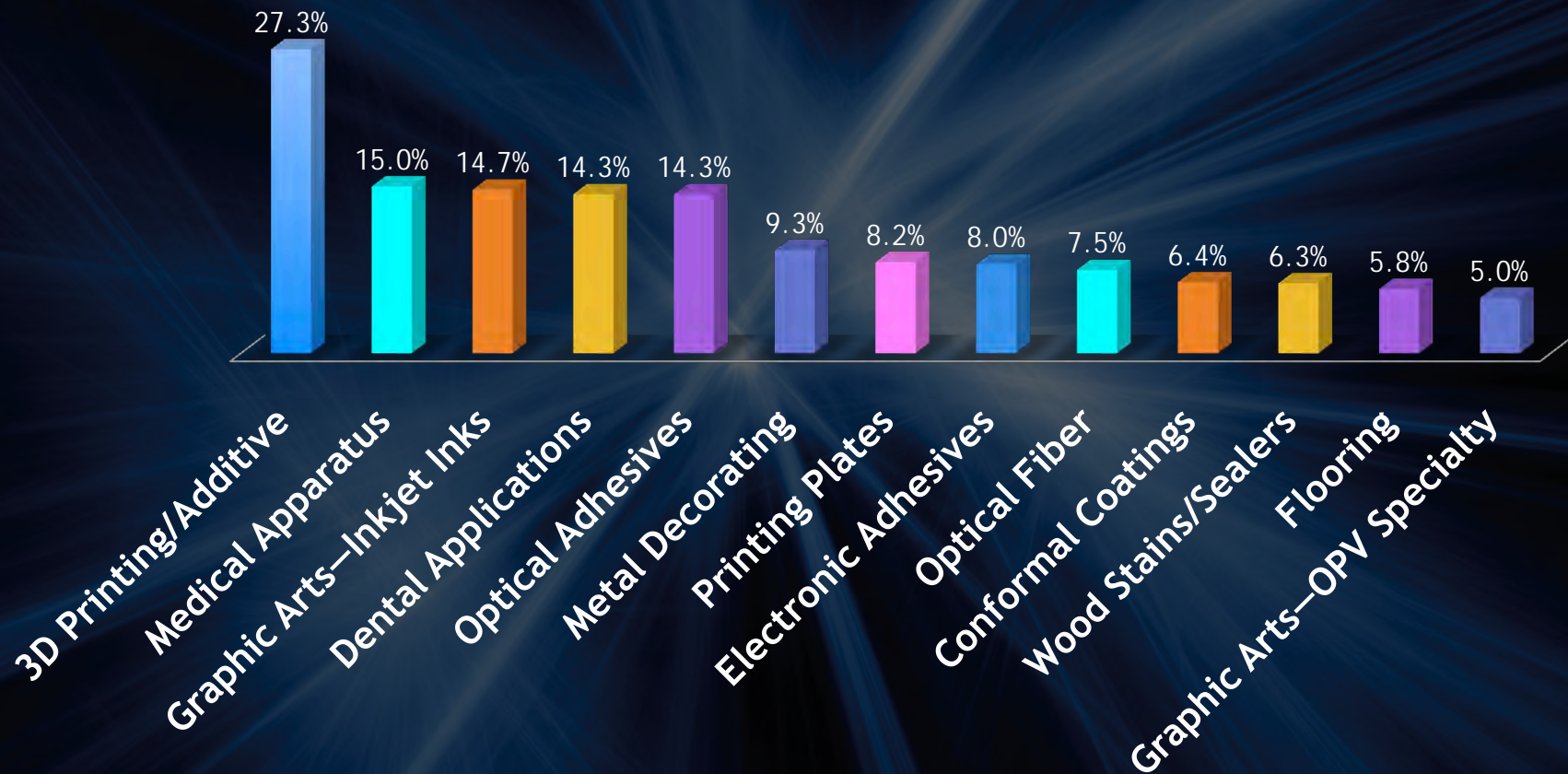
RadTech Biennial Market Survey

2013 UV/EB Formulated Product Usage by Volume
(percent of total)



RadTech Biennial Survey

2013 UV/EB Formulated Average Annual Growth Rate Last Two Years (by Volume)



RadTech Biennial Survey

Top 10 Projected UV/EB Applications

(Each expected to grow by over 7% per year over next two years):

1. 3-D Printing/Additive
2. Inkjet Graphic Arts
3. Inkjet Industrial
4. Fingernail Applications
5. Laminating Adhesives
6. Water-Based UV
7. Field-Applied UV
8. Metal Decorating
9. Electronics
10. Food Packaging Applications

RadTech Biennial Survey

Top Emerging Markets for UV/EB

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

RadTech Biennial Survey

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

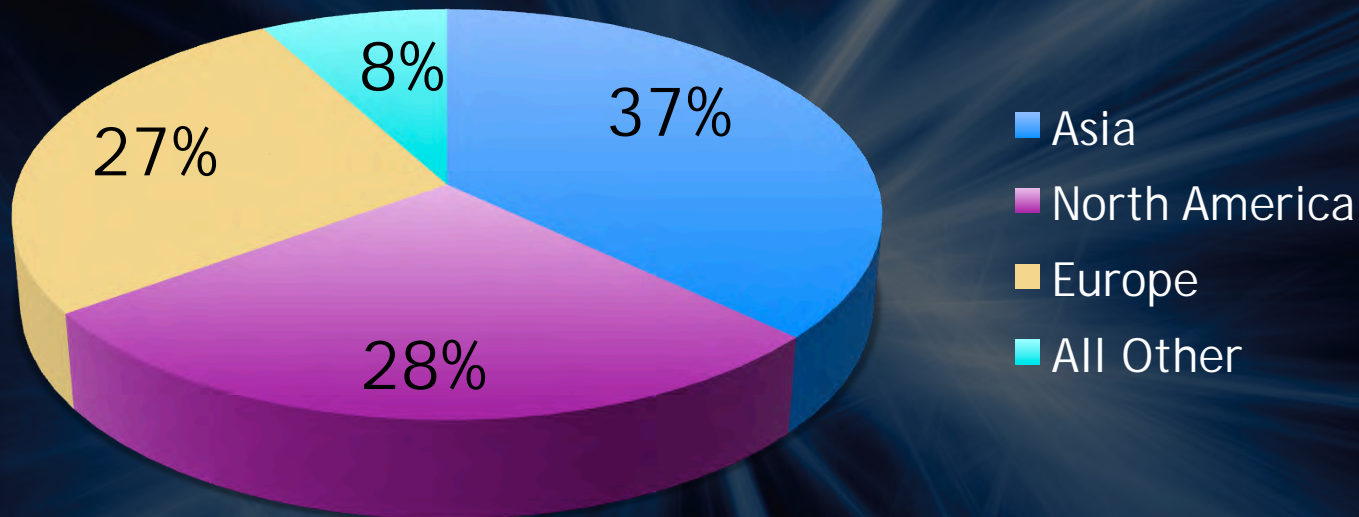
Projected Annual Growth Over the Next Three Years—6.7%

2012	4.6%
2013	5.4%
2014	6.3%

(percent change from previous year)

RadTech Biennial Survey

Global market for UV/EB



RadTech Biennial Survey

Most Important Advances in Last Two Years:

1. Improved outdoor weathering
2. Better adhesion
3. Fast cure speeds
4. UV-LEDs

RadTech International North America

Thank you!

www.radtech.org

RADTECH
THE ASSOCIATION FOR UV&EB TECHNOLOGY