



IGM RESINS

A Leading Global Source
for UV/EB Materials
and Technology



low extraction products for industrial wood coatings

Barbara Fenzi
IGM Resins



Agenda

- INTRODUCTION - UV TECHNOLOGY
- FIELDS OF APPLICATION
- CHARACTERISTICS OF THE UV TECHNOLOGY
- WOOD COATINGS:
 - LOW VOC'S
 - LOW EXTRACTION
 - WATER BASED
- CONCLUSIONS



UV Technology

UV TECHNOLOGY: SINCE THE BEGINNING TO NOWADAYS



CONSTANT GROWTH



UV Technology - Fields of applications



Wood coatings

Graphic Arts

(Food) Packaging

Commercial / Publication

Electronics and Microelectronics

Adhesives

Industrial Coatings

Plastic

Glass

Metal

...

UV technology: characteristics

WHY UV TECHNOLOGY IS BETTER?

- HIGH SPEED - PRODUCTIVITY
- NO VOC'S EMISSIONS
- LOW ENERGY CONSUMPTION
- SMALL FOOTPRINT OF UV EQUIPMENTS
- GREAT PERFORMANCE OF FINAL MANUFACTURE



VERY ACTUAL SECTOR: ENVIRONMENTAL FRIENDLY
AND ENERGY SAVING



UV Technology : Characteristics



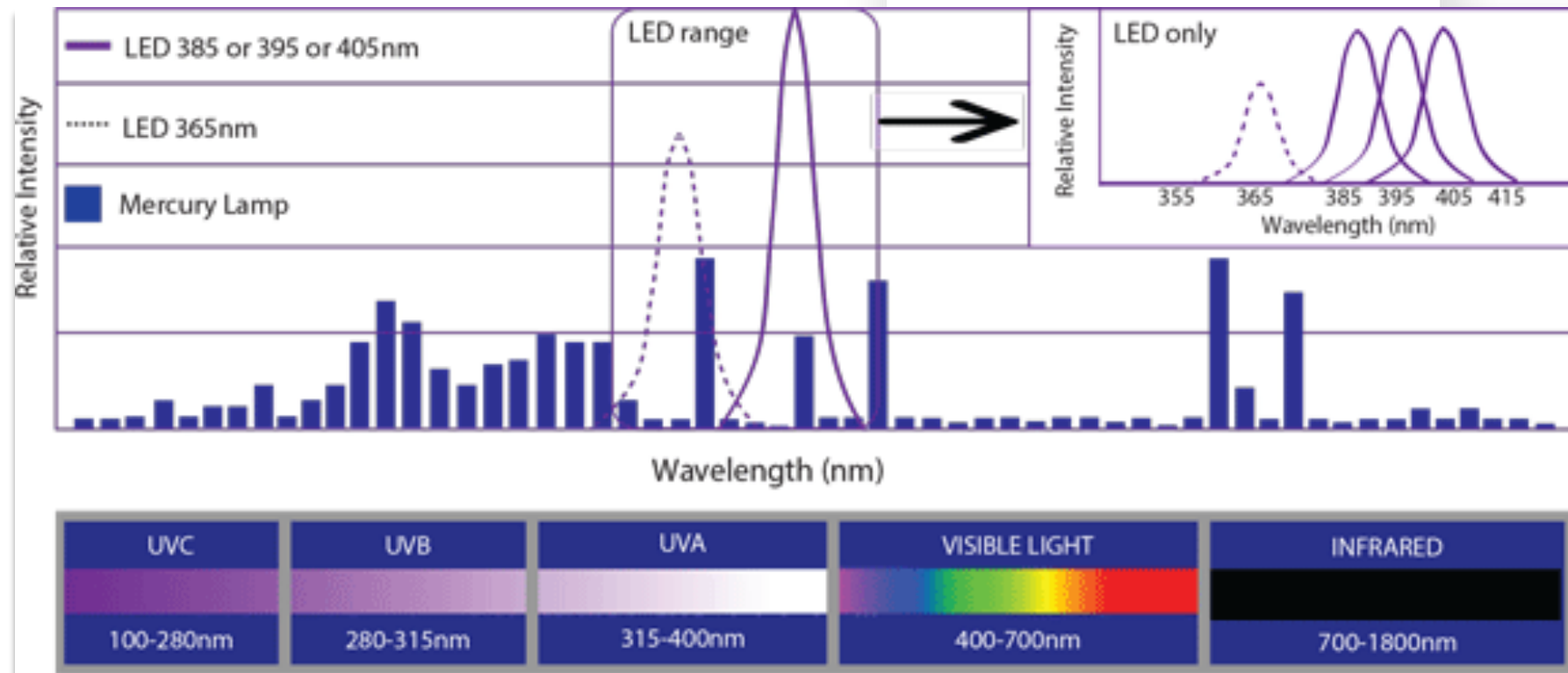
Daily research of new and more efficient raw materials: photoinitiators, acrylates, pigments and additives.



Sophisticated polymerization equipments: UV lamps

UV Technology: Lamps UV-UV/LED

EMISSION SPECTRA OVERLAPPING : Hg vs UV LED



WOOD COATINGS

WHEN DEALING WITH A FORMULATION
FOR WOOD COATINGS

Flexibility

Abrasion

Stain resistance

Low-yellowing

Gloss

BUT ALSO

LOW ODOR

LOW EXTRACTION



WOOD COATINGS

WHEN DEALING WITH A FORMULATION
FOR WOOD COATINGS

Flexibility

Abrasion

Stain resistance

Low-yellowing

Gloss

BUT ALSO

LOW ODOR

LOW EXTRACTION



WOOD COATINGS

WHEN DEALING WITH A FORMULATION
FOR WOOD COATINGS

Flexibility

Abrasion

Stain resistance

Low-yellowing

Gloss

BUT ALSO

LOW ODOR

LOW EXTRACTION



WOOD COATINGS - low VOC's

LOW ODOUR FORMULATIONS

PHOTOINITIATORS

Esacure KIP 150 and its blend (Esacure KIP 100 F and Esacure KIP 75 LT)

Omnirad 127 D

MONOMERS and OLIGOMERS

WIDE RANGE AVAILABLE different classes, functionality, characteristics (slide 17)

WOOD COATINGS - low VOC's

LOW ODOUR FORMULATIONS

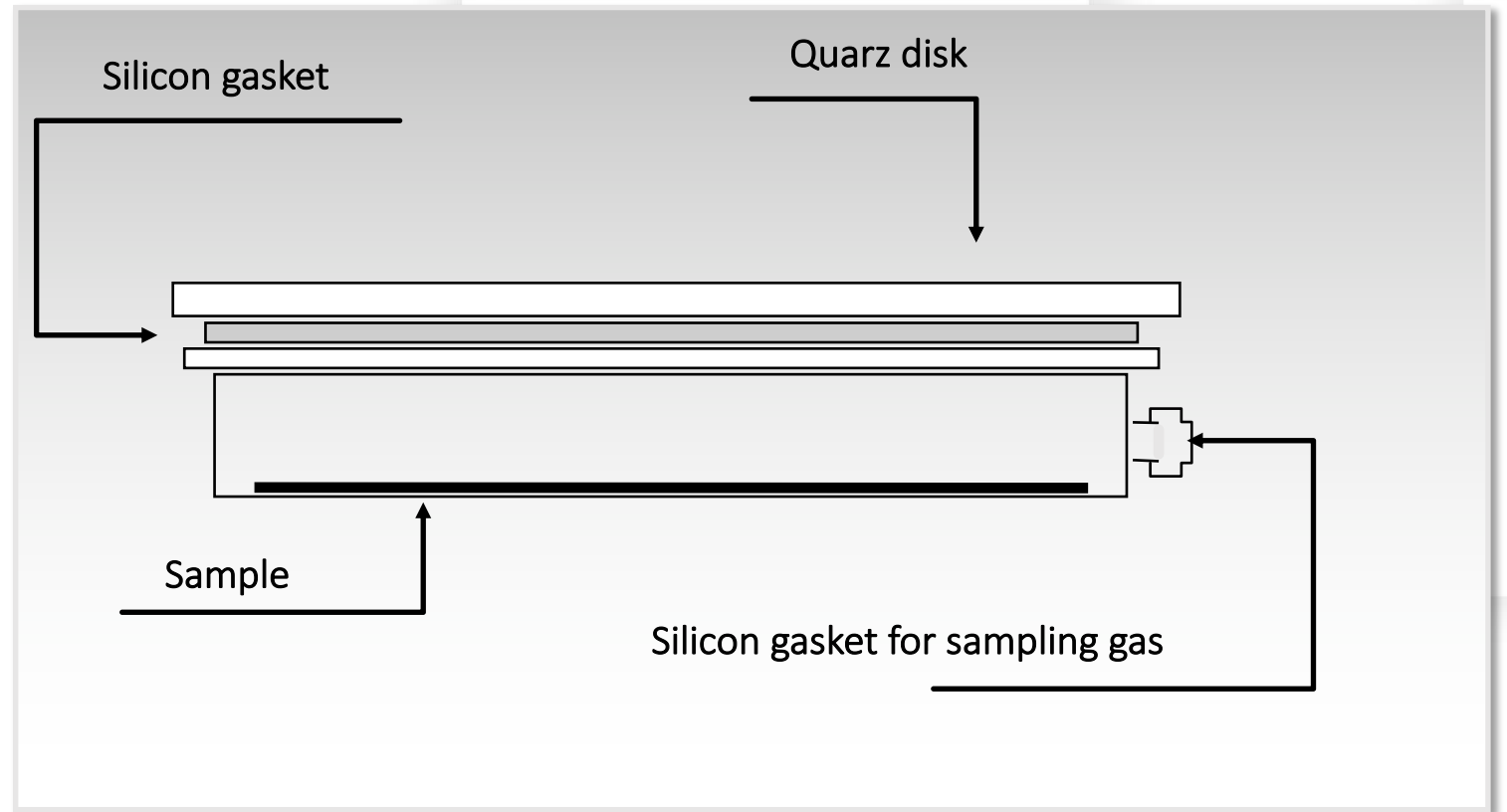
Photoinitiator with low/no emission of volatile organic compounds (VOC's)



WOOD COATINGS - low VOC's

Glass cell for collection of VOCs

GC Headspace analysis



WOOD COATINGS - low extraction

LOW EXTRACTION FORMULATIONS

PHOTOINITIATORS

- Omnirad TPO
- Omnirad BL 750
- Esacure ONE - Esacure 1001 M - Esacure A198
- Omnirad 4MBZ
- Omnipol 2702- Omnipol BP - Omnipol TX - Omnipol ASA
- Omnirad 754 + Omnirad MBF
- Esacure KTO 46

MONOMERS and OLIGOMERS

WIDE RANGE AVAILABLE different classes, functionality, characteristics (slide 17)

WOOD COATINGS - low extraction

LOW EXTRACTION FORMULATIONS

HOW DO WE DETERMINE THAT A
PHOTOINITIATOR HAS LOW EXTRACTION
VALUES?

With equipments like UHPLC (Ultra high performance liquid chromatography) we are able to identify and quantify for example byproduct that a photoinitiator potentially develops after curing

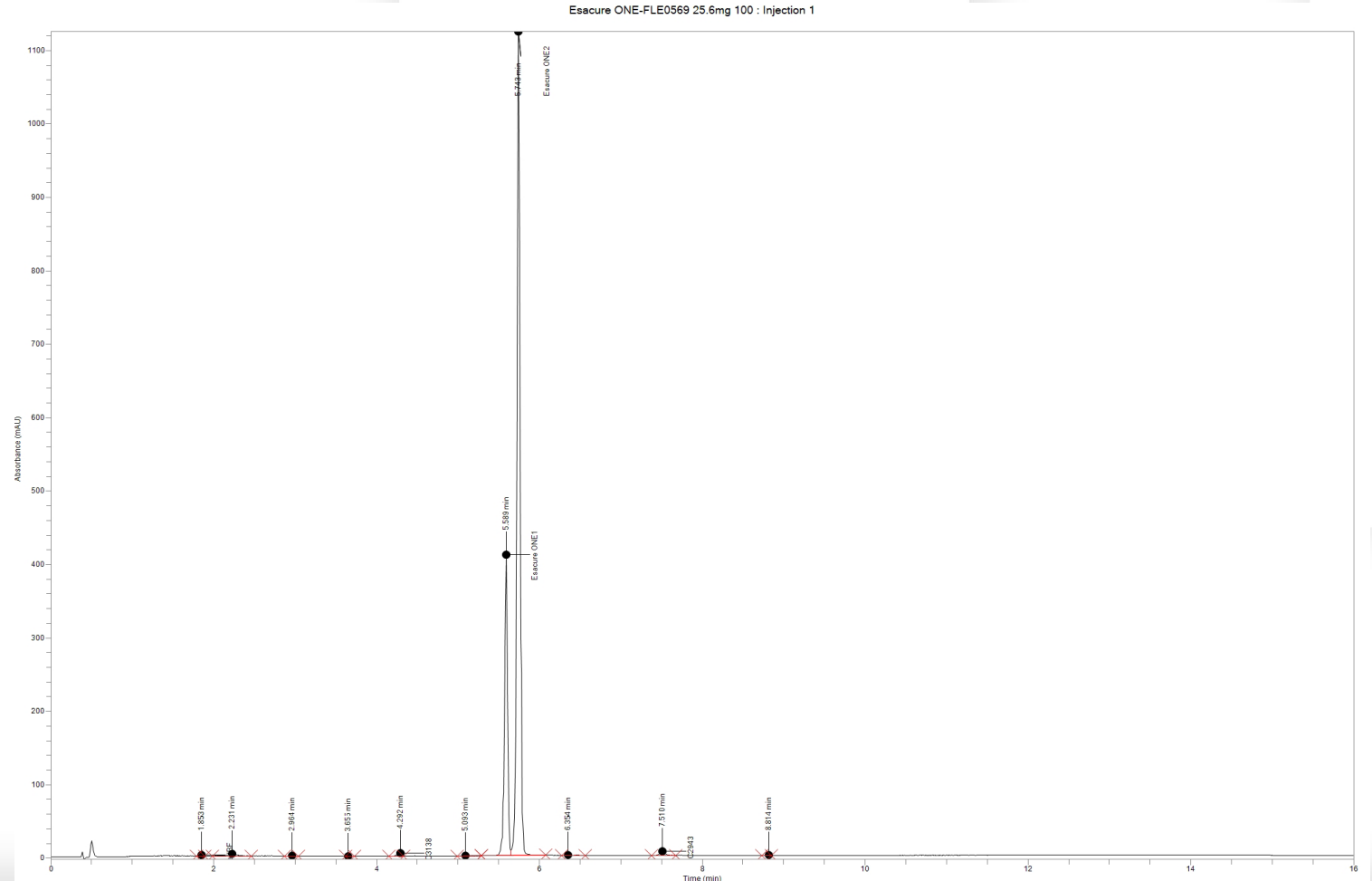
EFSA guidelines



WOOD COATINGS - low extraction

LOW EXTRACTION FORMULATIONS

HOW DO WE DETERMINE
THAT A PHOTOINITIATOR
HAS LOW
EXTRACTION/MIGRATION
VALUES?



WOOD COATINGS - low VOC's / low extraction

OLIGOMERS

PHOTOMER 5429 Tetrafunctional Polyester Acrylate

A low viscosity, low color tetrafunctional polyester acrylate oligomer. It is fast curing and imparts enhanced adhesion, hardness and scuff resistance in UV/EB coating as compared to other standard polyester acrylate oligomers. It exhibits excellent pigment wetting, flow and leveling characteristics in a variety of applications due to its low surface tension.

PHOTOMER 6184 Trifunctional Aliphatic Urethane Acrylate Blend

A medium viscosity, nonvolatile, proprietary urethane acrylate oligomer blended with 20% PHOTOMER® 4061. It exhibits good cure response and low odor. It is an excellent base resin where it contributes to consistent application viscosity, better pattern resolution and uniform coating thickness during cure. It forms a tough, durable film with excellent temperature stability, superior solvent resistance, high surface hardness and good flexibility when UV/EB cured.

PHOTOMER 4056 Polyethylene Glycol (600) Diacrylate

This acrylate exhibits low volatility and has good flexibility. It is a clear, high boiling, water-soluble monomeric di-ester liquid. When polymerized, this long chain crosslinking agent is a flexible, clear infusible resin. It is recommended for coatings or overprint varnishes that require more flexibility.

WOOD COATINGS- water based

WATER BASED FORMULATIONS

PHOTOINITIATORS DISPERSIBLE IN WATER

Omnirad 819 DW

Esacure DP 250



WOOD COATINGS - water based

OLIGOMERS

PHOTOMER Aqua 6901

Water-dilutable Urethane Acrylate

A water-dilutable di functional urethane acrylate oligomer that has good flexibility and exhibits good compatibility with water. It is easily diluted in up to 50% de-ionised water. It is recommended particularly for primers and topcoats.

PHOTOMER Aqua 6903

Water-dilutable Urethane Hexaacrylate

This hexafunctional acrylate show fast curing due to its functionality and excellent toughness. It is easily diluted in up to 50% de-ionised water.

It is recommended particularly for primers and topcoats for screen printing and wood coatings.

CONCLUSIONS

- Uv technology is largely used in industrial wood coating due to its characteristics

IGM resins offers:

- a wide range of photoinitiators and monomers/oligomers for different purposes, even the most challenging.
- Laboratories of R&D, R&DA and analysis to support customers from the beginning

GRAZIE!

Barbara Fenzi

Technical Marketing

T: +39 02 96 474 919

M: +39 340 8309045

b.fenzi@igmresins.com

www.igmresins.com