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# How to “consusmart” with your ink systems

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# QUIMOVIL

Specialists in the design and manufacture of **WATER-BASED** flexographic printing inks, varnishes and coatings

60 years' experience

Headquarters in Barcelona (Spain)

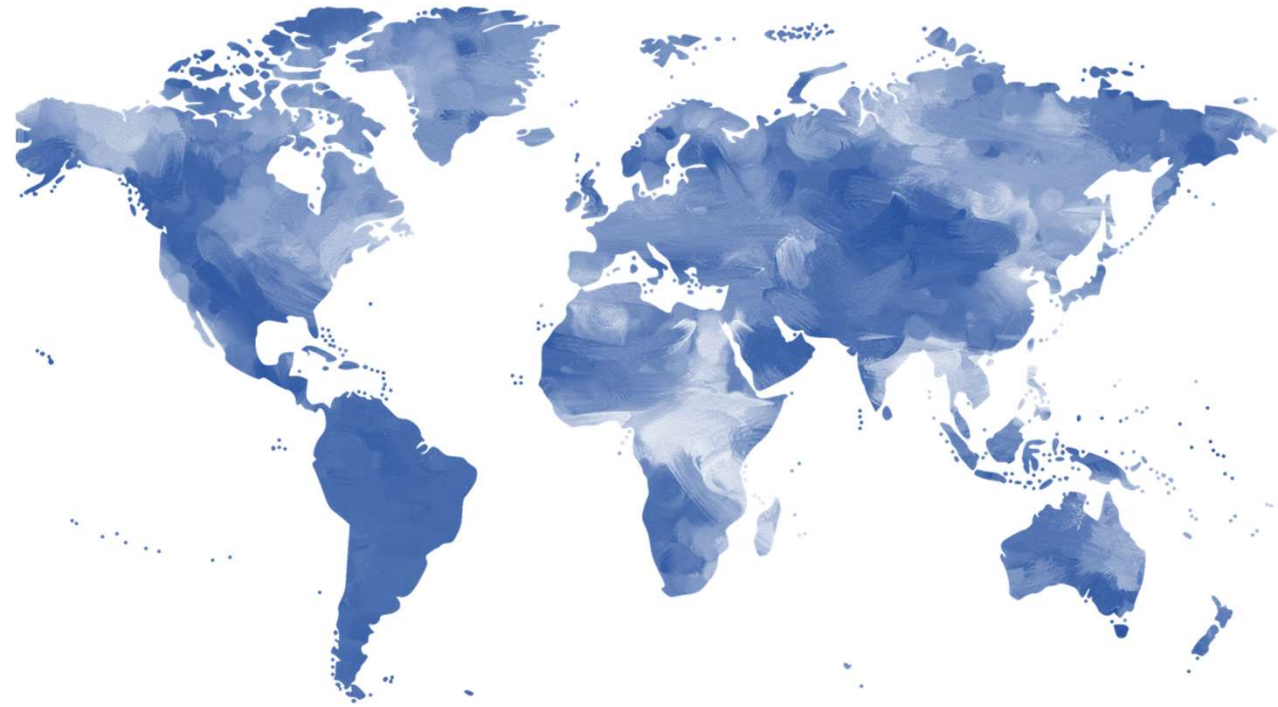
Sales offices in Madrid and Valencia

Presence in South America, Africa, Australia and Europe

Flexible manufacturing system

Own **R&D** Department

**SERVICES:** Direct technical support, Consulting, Trainings, Strategic environmental services...



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**We  
prethink  
ink.**

# EUROPEAN GREEN DEAL

- no net emissions of greenhouse gases by 2050
- economic growth decoupled from resource use
- no person and no place left behind



Source: [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en)

<https://audiovisual.ec.europa.eu/en/video/I-199819?&lg=EN/EN>

# CARBON FOOTPRINT

| GWP: Global warming potential values relative to CO <sub>2</sub> |                                  |
|--|----------------------------------|
| Green House Gases  | GWP – IPCC 5th Assessment Report |
| Carbon dioxide (CO <sub>2</sub> )                                | 1                                |
| Methane (CH <sub>4</sub> )                                       | 28                               |
| Nitrous Oxide (N <sub>2</sub> O)                                 | 265                              |
| Hydrofluorocarbons (HFCs)  | 4 – 12.400                       |
| Perfluorocarbons (PFCs)  | 6.630 – 11.100                   |
| Sulfur hexafluoride (SF <sub>6</sub> )                           | 23.500                           |
| Volatile Organic Compounds (VOCs)                                | ?                                |

A term used popularly to refer to the overall quantity of CO<sub>2</sub> and other greenhouse gas emissions caused directly and indirectly by a product or an activity, or associated with the activities of an individual or an organization. No mandatory EU rules exist for calculating carbon footprints (European Court of Auditors, 2014).

[https://www.eca.europa.eu/Lists/ECADocuments/SR14\\_14/QJAB14014ENC.pdf](https://www.eca.europa.eu/Lists/ECADocuments/SR14_14/QJAB14014ENC.pdf)

[https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29\\_1.pdf](https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf)

# VOCs: VOLATILE ORGANIC COMPOUNDS

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## VOC: INDIRECT CO<sub>2</sub> EMISSIONS

'Volatile organic compound (VOC)' means any organic compound having an initial boiling point less than or equal to 250°C measured at a standard pressure of 101,3 kPa (DIRECTIVE 2004/42/CE).

For instance: Ethyl acetate, propyl acetate, ethyl alcohol, isopropyl alcohol, etc.  
*used as solvents or diluters of liquid inks*

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0042&from=ES>

# CALCULATING CO<sub>2</sub> INPUTS TO THE ATMOSPHERE FROM EMISSIONS OF VOCs

Non-methane volatile organic compounds (NMVOCs) are not included in global warming potential-weighted greenhouse gas emission totals, but NMVOC emissions are reported in greenhouse gas inventories because they will eventually be oxidized to CO<sub>2</sub> in the atmosphere (2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 7).

The basic calculation principle is:

$$\text{Inputs CO}_2 = \text{Emissions NMVOC} \cdot C \cdot 44/12$$

FACTOR = 2.2

Where C is the fraction carbon in NMVOC by mass (default = 0.6)

[https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/1\\_Volume1/V1\\_7\\_Ch7\\_Precursors\\_Indirect.pdf](https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/1_Volume1/V1_7_Ch7_Precursors_Indirect.pdf)

# FOUR SUSTAINABLE INNOVATION STRATEGIES

1

WATER-BASED INKS

2

INKS MANUFACTURED WITH 100%  
RENEWABLE FEEDSTOCK

3

INKS PARTLY BASED ON BIO  
RENEWABLE RAW MATERIALS

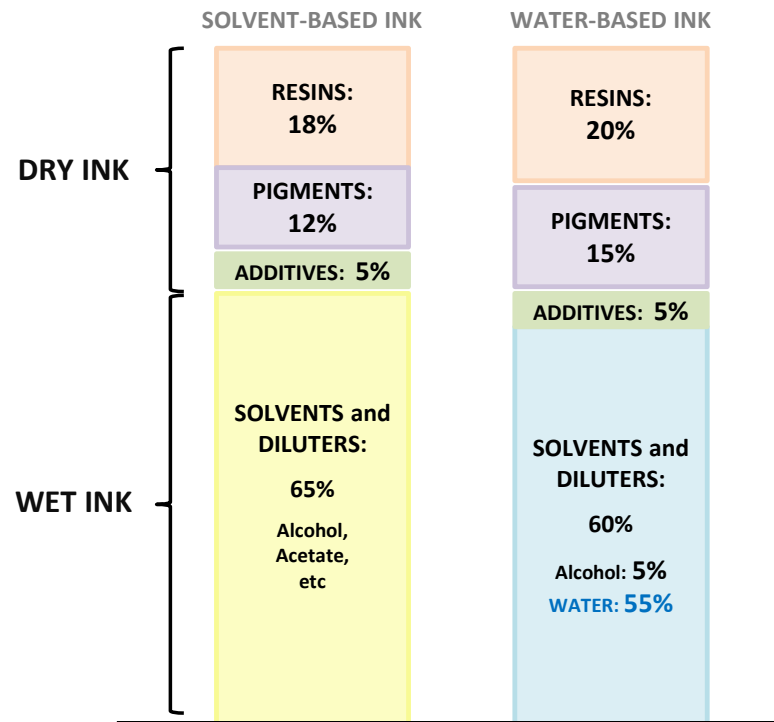
4

NEW OK-COMPOST INK SERIES



# 1

## WATER-BASED INKS FOR PRINTING ON PAPER, CORRUGATED BOARD AND FLEXIBLE PACKAGING *(surface and reverse print & lamination applications)*



# 1

## **WATER-BASED INKS FOR PRINTING ON PAPER, CORRUGATED BOARD AND FLEXIBLE PACKAGING** *(surface and reverse print & lamination applications)*

- **Very low (or no) VOC content:**
  - VOCs treatment is not necessary
  - Less solvent consumption
- **Less volatile substances used in production increase safety both for workers and for the finished food packaging**
- **Non-flammable:**
  - No special handling or storage requirements
  - No explosion proof equipments are necessary
- **The same quality and performance as solvent-based inks**
- **More stable on press**
- **Higher yield**
- **Longer photopolymer plates useful life**

### **REDUCTION OF:**

- ✓ VOCs content
- ✓ Carbon footprint
- ✓ Fossil resources

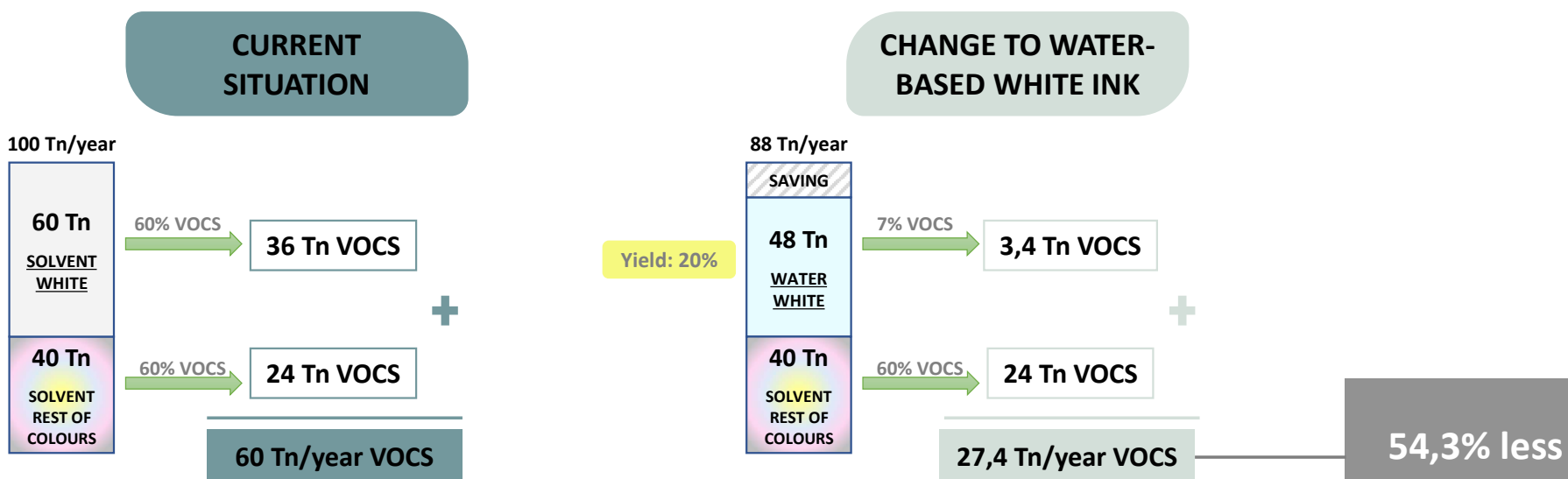
For flexible packaging:  
**#WePrethinkINK**

1

## WATER-BASED INKS FOR PRINTING ON PAPER, CORRUGATED BOARD AND FLEXIBLE PACKAGING *(surface and reverse print & lamination applications)*

### \*CASE STUDY:

TOTAL VOCs EMISSIONS CALCULATION WITH ONLY THE CHANGE OF SOLVENT-BASED TO WATER-BASED WHITE INKS



1

**WATER-BASED INKS FOR PRINTING ON PAPER,  
CORRUGATED BOARD AND FLEXIBLE PACKAGING**  
*(surface and reverse print & lamination applications)*

## QUIMOVIL INKS FOR FLEXIBLE PACKAGING

### REVERSE PRINT:

Lamin-Flex:

*Poliurethane*

*Acrylic*

*Hybrid*

### SURFACE PRINT:

Aquaplus

RA Aqua-Film

BBB Aqua-Film

### SPECIALTIES:

Neutro-Flex White

Heptachromia

OPV Varnishes

Primers

High coverage whites

Metallic Inks

Soluflex

OK COMPOST Inks

1

**WATER-BASED INKS FOR PRINTING ON PAPER,  
CORRUGATED BOARD AND FLEXIBLE PACKAGING**  
*(surface and reverse print & lamination applications)*

**INK CARBON FOOTPRINT** *(Lamin-Flex series):*

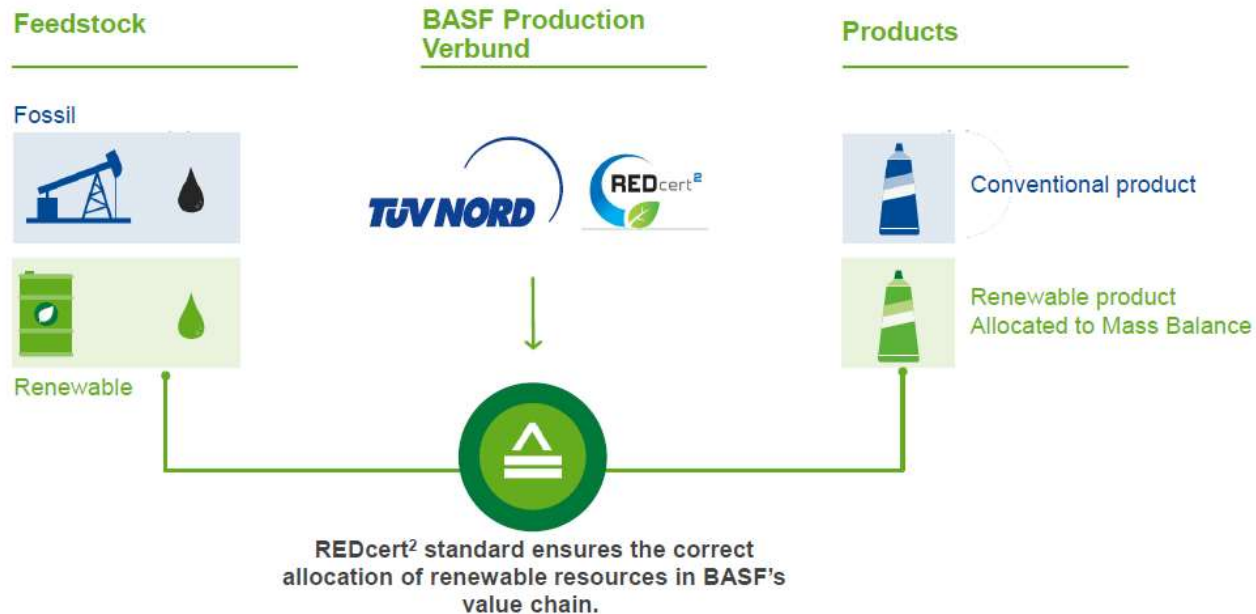
- ✓ **CARBON FOOTPRINT OF MATERIALS**
- ✓ **CARBON FOOTPRINT OF MANUFACTURING PROCESS**
- ✓ **CARBON FOOTPRINT OF WASTE VALORIZATION (IMPACT + CREDITS)**

**WATER-BASED INKS 30 - 35 %  
LESS THAN SOLVENT-BASED INKS**

PRINTING INKS FORMULATED WITH POLYMERS MANUFACTURED WITH **100% RENEWABLE FEEDSTOCK (BIOMASS BALANCE)** FOR PRINTING ON PAPER, CORRUGATED BOARD AND FLEXIBLE PACKAGING  
(100% substitution of fossil with renewable raw materials)

### The Biomass Balance Approach

Replacing fossil feedstock at the very beginning of the integrated production system



Source: BASF «In every change lies a packaged chance»

**PRINTING INKS FORMULATED WITH POLYMERS MANUFACTURED WITH 100% RENEWABLE FEEDSTOCK (*BIOMASS BALANCE*) FOR PRINTING ON PAPER, CORRUGATED BOARD AND FLEXIBLE PACKAGING**  
(100% substitution of fossil with renewable raw materials)

**\*CASE STUDY: OVERPRINT VARNISH FOR PAPER**

OPV producer purchasing 100 tons/year of standard fossil based varnish and replacing this volume by new renewable based varnish

|                               | CO <sub>2</sub> EMISSIONS<br>(tons CO <sub>2</sub> ) | CRUDE OIL CONSUMPTION<br>(tons) |
|-------------------------------|--|---------------------------------|
| STANDARD fossil based varnish | ~116   | ~58                             |
| NEW renewable based varnish   | ~6   | 0                               |
| <b>SAVINGS (tons)</b>         | <b>~110 (~95%)</b>                                   | <b>~58 (100%)</b>               |

**REDUCTION OF:**

- ✓ Carbon footprint
- ✓ Fossil resources

**110 tons CO<sub>2</sub> is similar to the savings of ~1050 solar panels\*\***

\*\*Solar panel info: In NL, 1 solar panel delivers ~225 kWh and saves ~103 kg CO<sub>2</sub> per year (0,46kg CO<sub>2</sub>/kWh)

Source: BASF «In every change lies a packaged chance»

3

**PRINTING INKS FORMULATED WITH POLYMERS PARTLY  
BASED ON BIO RENEWABLE RAW MATERIALS FOR  
PRINTING ON KRAFT PAPER AND CORRUGATED BOARD**

- Water-based technology (with all its benefits)
- High content of renewable material (up to 50% on solids)
- Good press performance
- Excellent transfer and color strength
- Ink for a variety of printing and packaging applications: pre- and post-print, corrugated boards, folding cartons, labels, etc.

**REDUCTION OF:**

- ✓ Carbon footprint
- ✓ Fossil resources



# 4

## SERIE QUIMO-IRIS:

WATER-BASED INKS FOR PRINTING ON COMPOSTABLE PAPER AND PLASTICS, CERTIFICATED BY TÜV AUSTRIA WITH THE **OK COMPOST INDUSTRIAL AND OK COMPOST HOME CONFORMITY MARKS**

- Water-based technology (with all its benefits)
- Wide portfolio of certificated products
- Suitable for printing on compostable papers and plastics
- Same performance in press than conventional inks
- Excellent printability and resistance properties
- Excellent adhesion on non-absorbing substrates
- EN 13432 Standard



### REDUCTION OF:

- ✓ VOCs content
- ✓ Carbon footprint
- ✓ Fossil resources
- ✓ Waste

Different **SPREADSHEETS** as tools for helping and advising to our customers in:

- The calculation of the maximum printing surface of each ink (% of the final product)
- The calculation of the technical viability in a real printing work (with different inks)

# THANK YOU

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