



REPI

# REPI

LIQUID COLOURS, ADDITIVES AND  
DOSING UNITS  
FOR THERMOPLASTICS PACKAGING

## **Company Profile and Organisation**



## Technical Organisation

### Quality

- ☐ Inspection of incoming goods
- ☐ Production monitoring/Quality control
- ☐ Special testing
  - ✓ Additive efficiency
  - ✓ Product/packaging compatibility tests
  - ✓ Permeability tests
  - ✓ Sensorial analysis
  - ✓ Shelf-life tests
  - ✓ Taste test: panel of trained REPI employees

### Tech Area

- ☐ Prototyping, Automa ISBM - 1,5L and 0,5L (3 shapes)
- ☐ Material validation
- ☐ Technical development on auxiliaries
- ☐ Training

### PRODUCTION

Liquids

Masterbatches

Dosing Units






### LABORATORY

Quality Control

Colour matching

Innovation and R&D

## PET PRODUCT LINE

-  Liquid colours
-  Additives
-  Barrier solutions
-  Specialty masterbatches
-  Dosing units





## **Colour Technology**

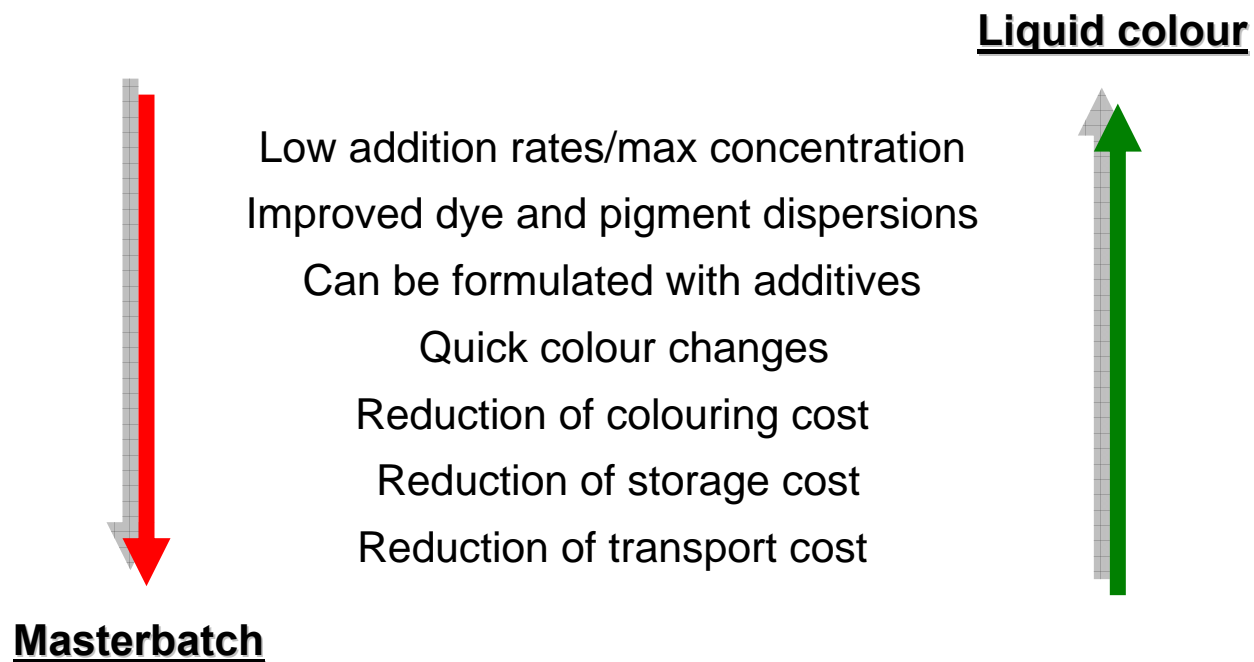
### **Why use liquid colours in PET packaging?**

Liquid colours enable to obtain a complete range of shades/effects to enhance the appeal of the packaging and protect the content.

There is no limitation in using liquid colours in all the packaging applications  
(mineral water, beer, dairy, wine, soft drinks, juices, detergents and edible oil)

## Colour Technology

### Why use liquid colours in PET packaging?





## Additives

Additives are developed to improve the final product performance, to reduce manufacturing costs, to optimise the processing parameters and to enhance the product quality.

### **PERFORM**

- ✓ Process stability Enhancement
- ✓ Energy Saving
- ✓ Static Charge Reduction
- ✓ Preform Storage Optimisation

### **PROTECT packaging content against**

- ✓ UV
- ✓ Visible Light
- ✓ Oxygen negative Impact
- ✓ AA taste

### **RECYCLE**

- ✓ Intrinsic Viscosity Enhancement
- ✓ Colour shade tuning
- ✓ Yellow index reduction

**PROCESS AID**

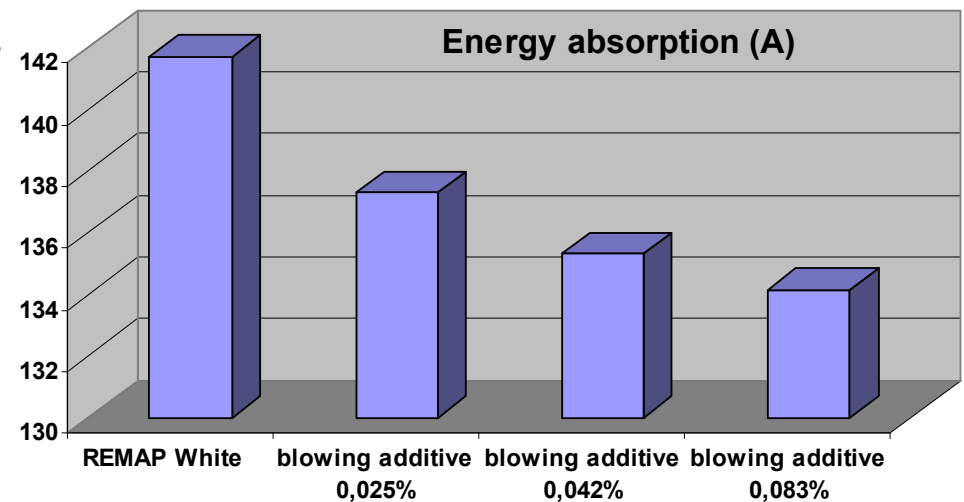
- **Optimises preform storage**
- **Reduces scratches**
- **Enhances process parameter stability**
- **Improves process productivity**
- **Reduces static charge**
- Low viscosity liquid
- Suitable for standard liquid dosing units
- Can be blended with liquid colours and additives
- Meets EU and FDA food contact regulations
- Let Down Ratio: 0,12%





**BLOWING ADDITIVE**

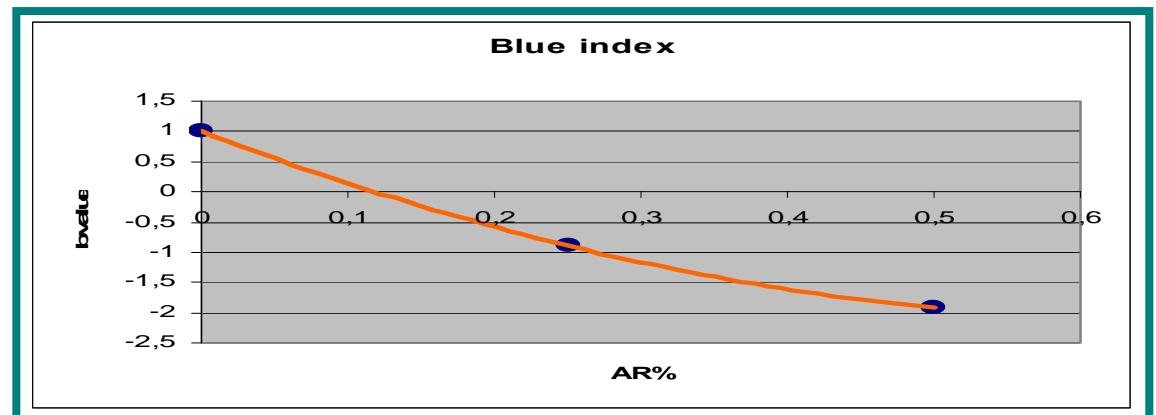
- Improves preform heat absorption
- Reduces scrap (blowing stage)
- Improves productivity (blowing stage)
- Energy saving (3-5%)
- Low viscosity liquid
- Suitable for standard liquid dosing units
- Can be blended with liquid colours and additives
- Meets EU and FDA food contact regulations
- Let Down Ratio: 0,03 %





## OPTICAL BRIGHTENER

- **Increases the glossy (bright shades)**
- **Enhances the whiteness**
- Low viscosity liquid
- Suitable for standard liquid dosing units
- Can be blended with liquid colours and additives
- Meets EU and FDA food contact regulations
- Let Down Ratio: 0,2 - 0,3%

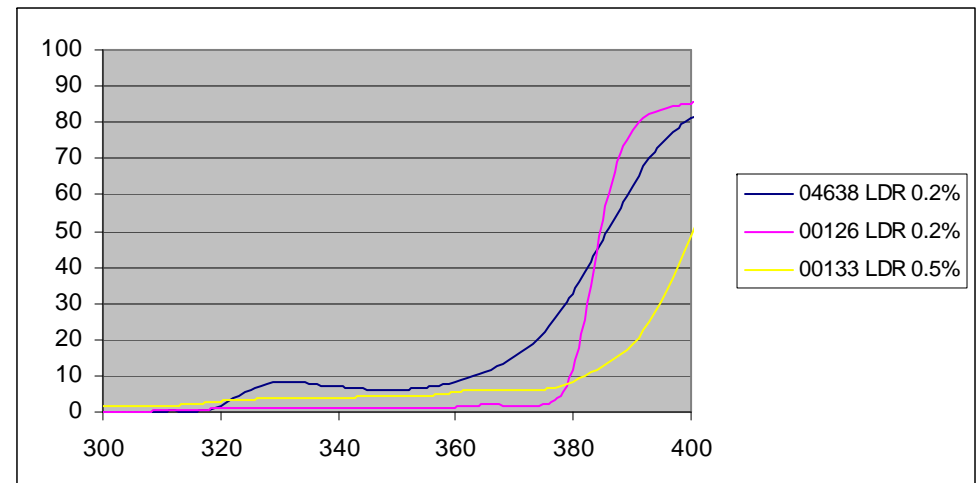


**UV ABSORBER**

- **UV radiation absorption: 300-400 nm**
- Low viscosity liquid
- Suitable for standard liquid dosing units
- Can be blended with liquid colours and additives
- Meets EU and FDA food contact regulations
- Let Down Ratio: 0,2 - 0,5%

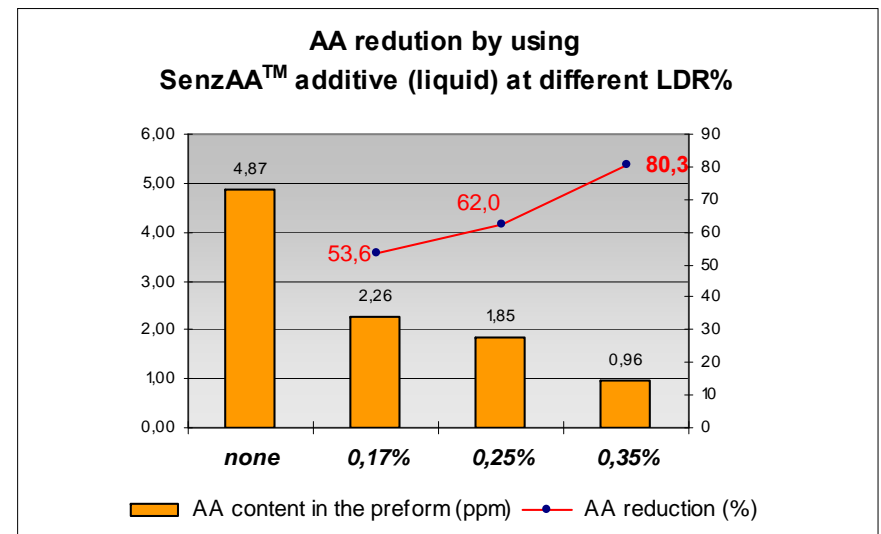
**Overlay**

(PET bottles, thickness 250 µm)



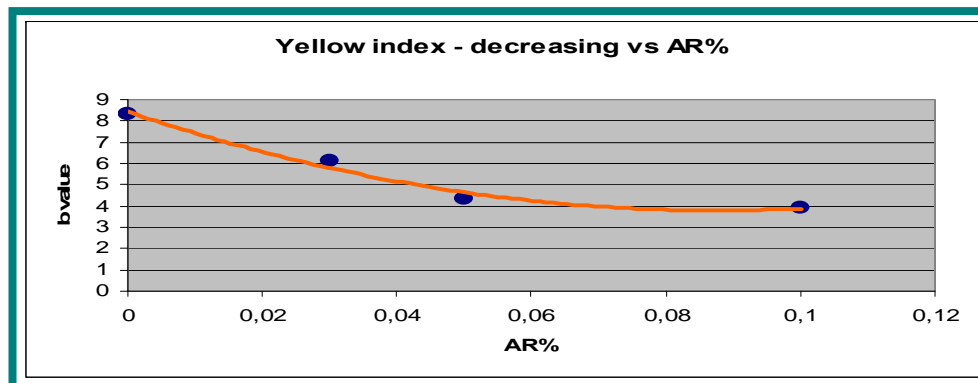
## AA REDUCER

- AA reduction over 75%, meeting the requirement of  $\leq 1\text{ppm}$  of AA in the preform, at the recommended loadings level
- Preserves natural taste of water
- No black specks, no plate-out, no sublimation
- Bottle-to-bottle recycling (meets PETCORE standards for recycling)
- Suitable for standard liquid dosing units
- Can be blended with liquid colours
- Meets EU and FDA food contact regulations
- Let Down Ratio:
  - liquid: 0,35%
  - masterbatch: 1%



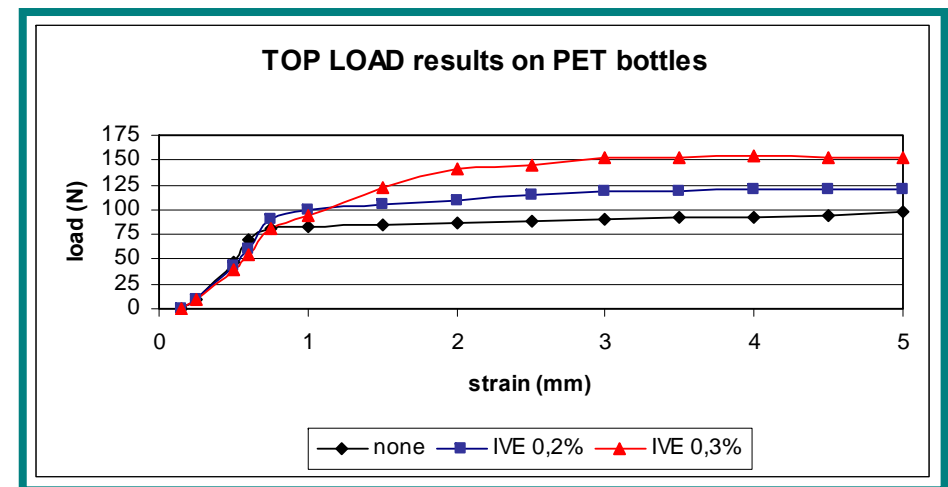
**ANTI YELLOW**

- **Reduces yellow index**
- **Improves aesthetics on recycled PET preform**
- **Suitable for R-PET chip production technologies**
- Low viscosity liquid
- Suitable for standard liquid dosing units
- Can be blended with liquid colours and additives
- Meets EU and FDA food contact regulations
- Let Down Ratio: 0,02 - 0,05%



**INTRINSIC VISCOSITY ENHANCER**

- IV increase from 0.05 to 0.10 dl/g
- Balance of the IV “peak”
- No cross link: MW and mechanical properties increase accordingly
- Low viscosity liquid
- Suitable for standard liquid dosing units
- Can be blended with liquid colours and additives
- Meets EU and FA food contact regulations
- Let Down Ratio: 0,2 - 0,3% (masterbatch)





## **Colour Barrier Technology**

REPI Colour Barrier solutions are developed to protect the packaging content from

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**UV light**

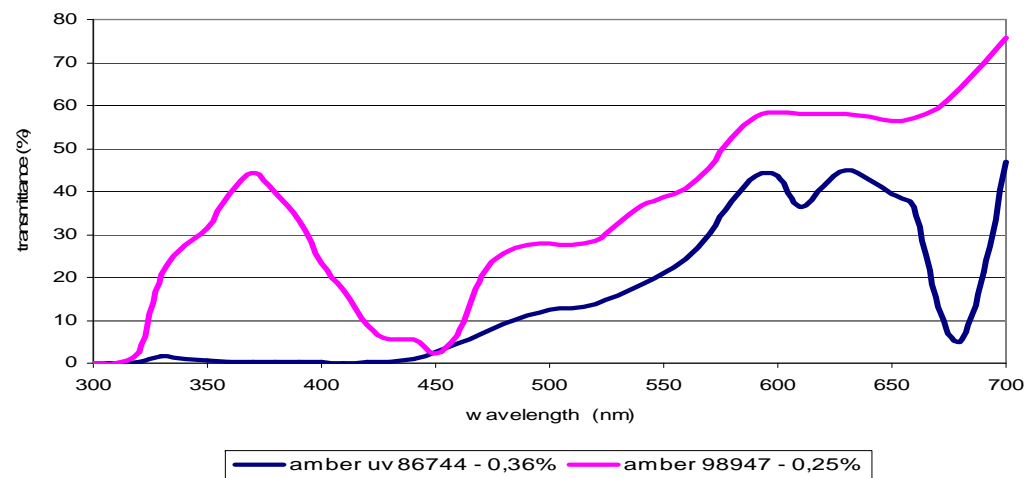
**Visible light**

**Negative Oxygen Impact**

## Colour Barrier Technology

### REMAP UVS

Colourants, pigments and specific additives used for these formulations work in synergy to protect the packaging and its content from UV degradation.



Application: beer, wine, juice.

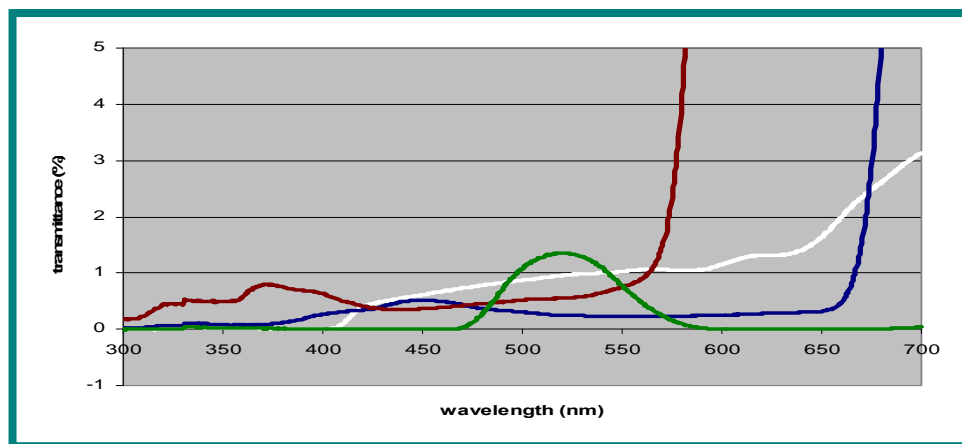


## Colour Barrier Technology

### REMAP LS

Four LS colours are specifically developed to protect the packaging from visible light. High UV barrier. Very low transmittance in visible light with all barrier colours formulation till 600 nm.

Different protection using the LS white at various addition rates according to the application requirement.



Application: milk (ESL, UHT), dairy products, juice

## Technological Innovations

### How to control the colour consistency in barrier preforms?

Obtaining the measurement of the light transmission directly from the PET preform, before the blowing stage, is important to guarantee the right protection in the final container.

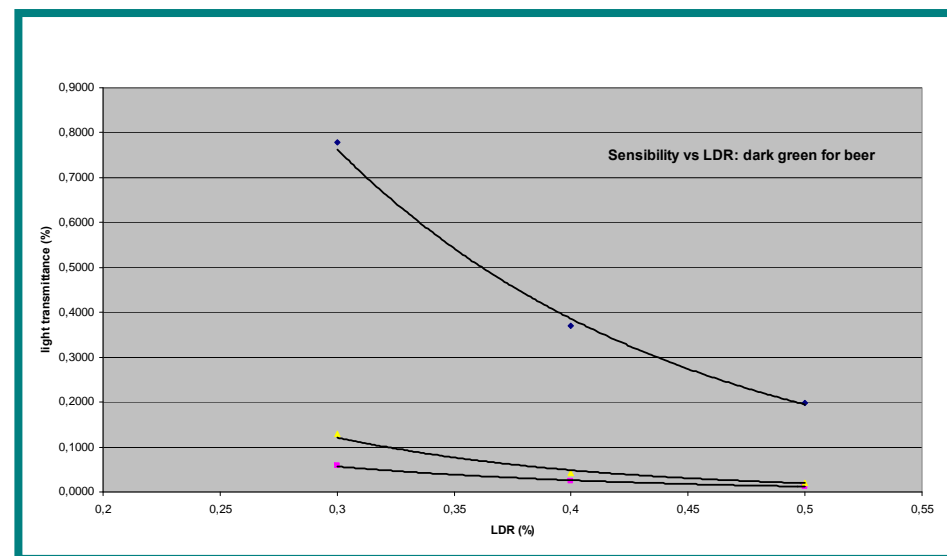
Visual check is generally used, but there is a limitation with opaque preforms, so that the reliability of the test results depends mainly on the expertise of the production people.

REPI has developed the **LIGHT METER**, an instrument able to measure all types of preforms, allowing a more scientific control for all coloured preform ranges.



## Technological Innovations

**LIGHT METER** is available in two different versions, where different light sources are applied: model FLASH/201 (Patent Pending) and model RGB/101 (Patent Pending). Using the RGB model, according to the different pigments used, the LM allows a very precise colour consistency control on amber and green “beer” preforms.





### Constant dosing and precision

- Use of gear pumps
- Encoder-guided dosage allowing high precision starting at 1 rpm
- Load cell sensibility : 1g

### Reliable

- More than 500 REPI dosing units installed in the last 5 years, working worldwide

### Easy to use

- New colours can be programmed while the unit is in operation
- Memory for a limitless number of programs
- Easily accessible LOG memory allows to transfer past operational history
- Automatic calibration of the colour/additive
- Automatic pump speed adjustment
- Fast colour changes and easy to clean pumps
- USB, SD and LAN options

### Versatile

- Different capacity pumps (gear = 0,06 – 0,2 – 1 – 2 – 5 cc; screw = 1,1 cc)

### Alarms

- Pressure gauge and liquid level

### Technical service

- A team of REPI technicians gives assistance worldwide, installs the dosing units and trains the operators for their use



**U2011 Dosing Unit**



*The approach to the final packaging application directly involves REPI in challenging projects.*

*The REPI mission is to provide complete support by working in synergy together with the customer, from the idea to the realisation of the final package.*