



Perfectly printed with the Eggen range of fountain solution additives

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Head of Product Management Fountain Solution Additives

Milestones of company history

Founded in 1933 in the city centre of Hanover

1934 Eggen develops the first positive copying-process worldwide

1945 Development of the Eggen Agum gumming range

1969 Market-leading in copying layers for printing plates

1994 Start of production of fountain solution additives

Milestones of company history

- 2001 Start of production of dispersion varnishes
- 2007 Relocation to Brueggen on the Lower Rhine: modernization and capacity expansion
- 2014 Start of production of adhesives
- 2015 New office building and additional production hall

Eggen today:



- More than 50 employees generate two-digits of millions Euro sale with pre-press and pressroom products
- Production of about 50,000 kgs of chemicals per day
- Optimum combination of environmentally compatible and high-quality raw material systems with customer-oriented product development and highly-developed quality control
- Certified according to ISO 9001 by TÜV Rheinland and as a training company recognized by the German Chamber of Industry and Commerce

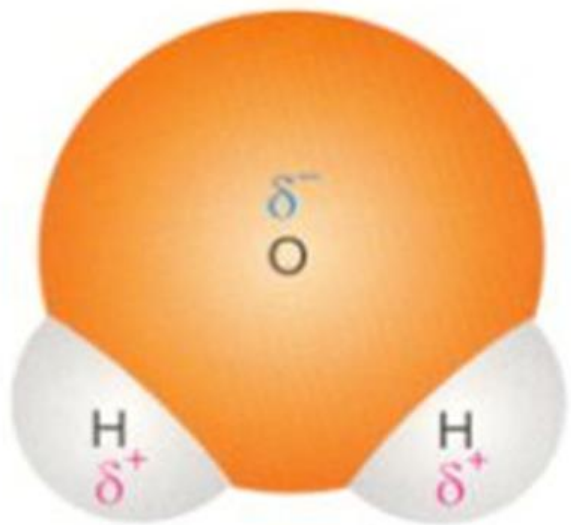
Oxilan Alcolan

Fountain Solution Additives Oxilan and Alcolan



- Eggen **Oxilan** for sheetfed and web printing
- Eggen **Alcolan** for printing with reduced or without alcohol in sheetfed and web printing
- Eggen **Oxilan** for coldset printing and narrow web

Water – a basic condition for offset printing:



water molecule as a dipole

Water has a strong tendency to react with other substances. Related to offset printing this means:

- **Before** printing water already contains calcium components (Ca, Mg) and other disturbing components.
- **During** printing water solves even more calcium and other components from ink and paper.

Water – a basic condition for offset printing:

The raw water should have a hardness of **11 – 13 °dH**.

Water which is too soft results in:

- difficulties in drying
- instable ink- / water balance
- uncontrolled dot gain
- emulsifying / fogging

Water which is too hard results in:

- Ca- deposits in the ink unit / ink roller stripping
- possibly insufficient water absorption of the ink

Water – a basic condition for offset printing:

- Raw water should not exceed a hydrogen carbonate (HCO_3^-) content of 200 mg / l

Excessive hydrogen carbonate content results in difficulties to keep the pH-value constant.

Examples for hydrogen carbonate contents (HCO_3^-) in raw water (Northern Germany):

- Braunschweig: 50-90 mg/L
- Osnabrück: 95 mg/L
- Hamburg: 120-210 mg/l
- Kiel: 370 mg/L

Water – a basic condition for offset printing:

Contents in raw water should not exceed

- Chlorides: < **25 ppm** → *Danger of corrosion*
 - Sulfates: < **50 ppm** → *Danger of corrosion*
 - Nitrates: < **20 ppm** → *Danger of corrosion*
 - Chlorine: < **25 ppm** → *Danger of corrosion and scumming*
 - Copper: < **1 ppm** → *Disturbance of ink-/water balance*
- Do not use copper in water pipes supplying the mixing system!

Water – a basic condition for offset printing:

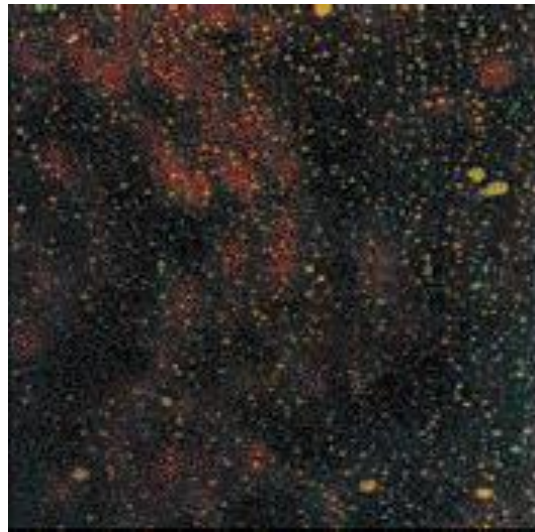
Water treatment – e.g. by reverse osmosis and subsequent re-hardening – is recommended in case of:

- Fluctuant water hardness due to supply from different water wells
- Excessive charge of corrosive ions.
- Significant water hardness.

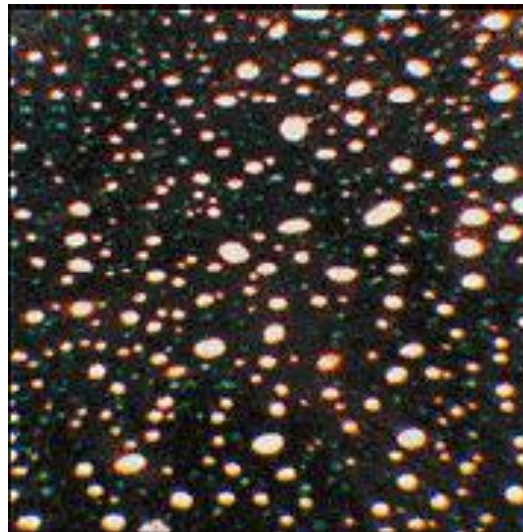
- A direct hardening can be reasonable in case of constant supply of very soft water qualities.

Water becomes fountain solution:

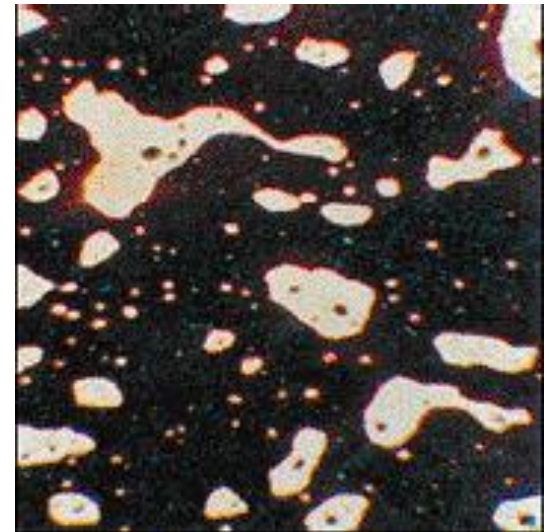
Formation of a stable ink- / water emulsion



stable emulsion



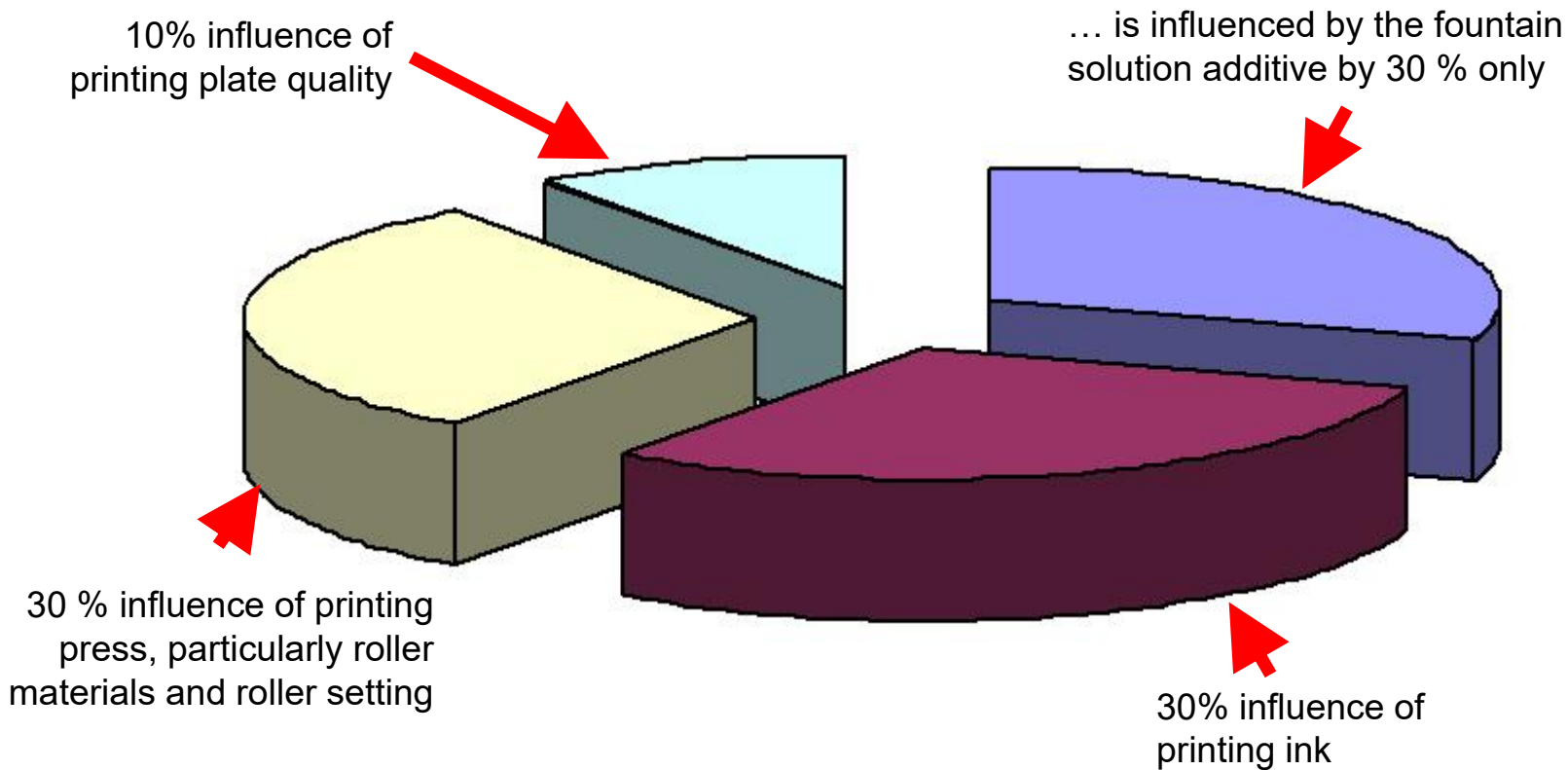
critical emulsion



instable emulsion

Fountain solution additives

A stable ink-/water balance...



Fountain solution additives

Demands on fountain solution additives

- efficient plate protection
- efficient buffer effect (e.g. to keep pH-value constant at 5)
- active components against stripping of the ink rollers
- universal compatibility with all common inks and substrates
- antimicrobial components
- corrosion protection
- IPA – reducing effect



Fountain solution additives

Classification, storage:

- Classification: GHS 07 »Warning«
- Storage stability between -2°C und 40°C
(Do not expose to direct sun light!)
- Use plastic materials for decanting and transport – do not use mild steel!



Fountain solution additives: sheetfed conventional and UV

for printing without IPA

Alcolan Eco V49.5

/12

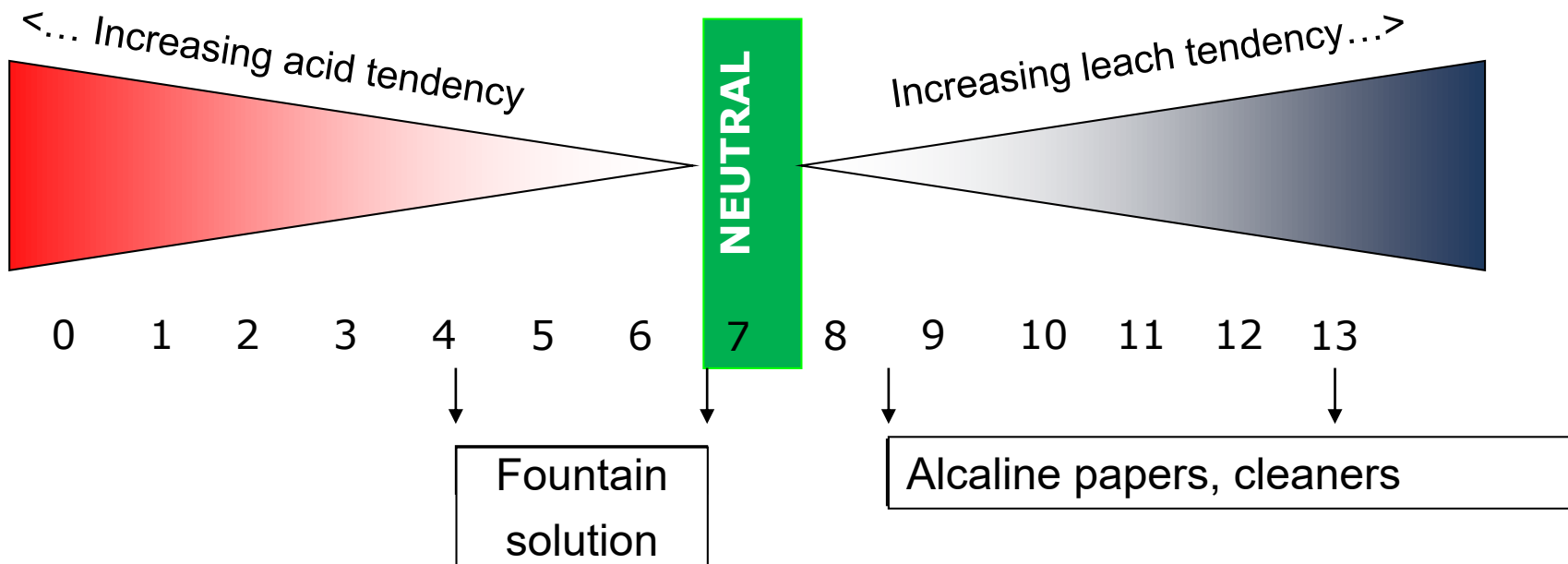
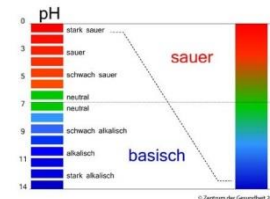


- environmental and health friendly
- very good processing of special inks
- very good processing of metallic inks



Fountain solution

pH-value*



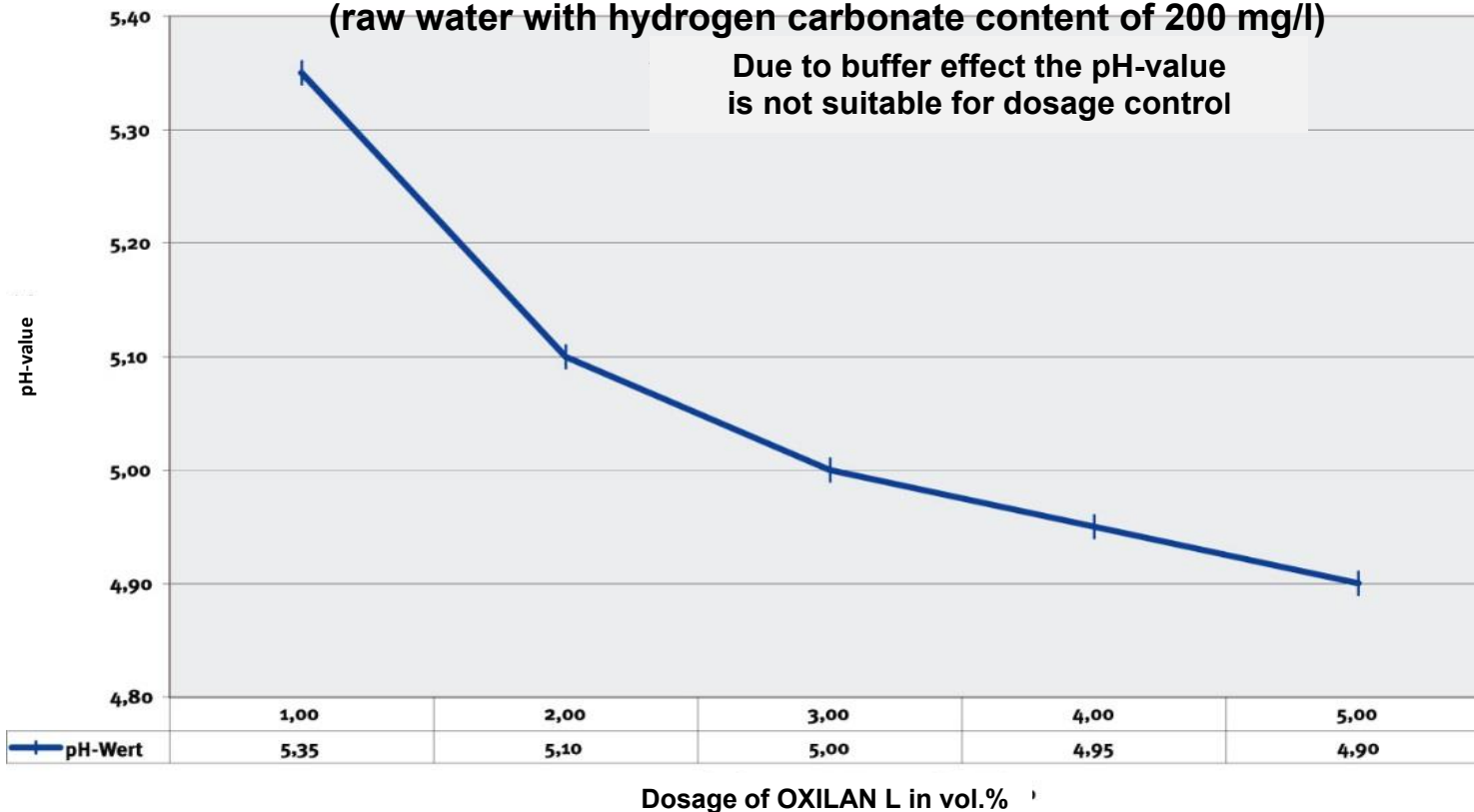
* Indicates concentration of hydrogen ions (as negative decade logarithm)

Fountain solution

pH-value dependence on dosage of fountain solution additive

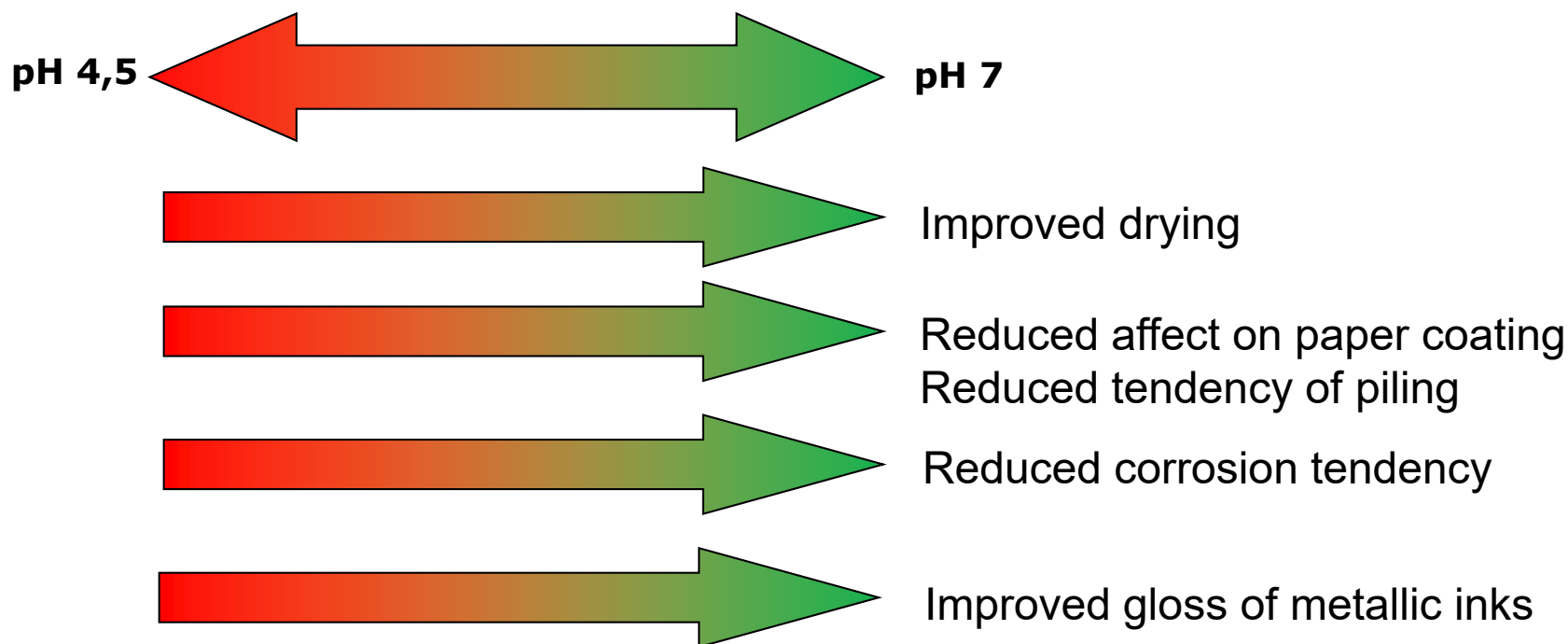
(raw water with hydrogen carbonate content of 200 mg/l)

Due to buffer effect the pH-value is not suitable for dosage control



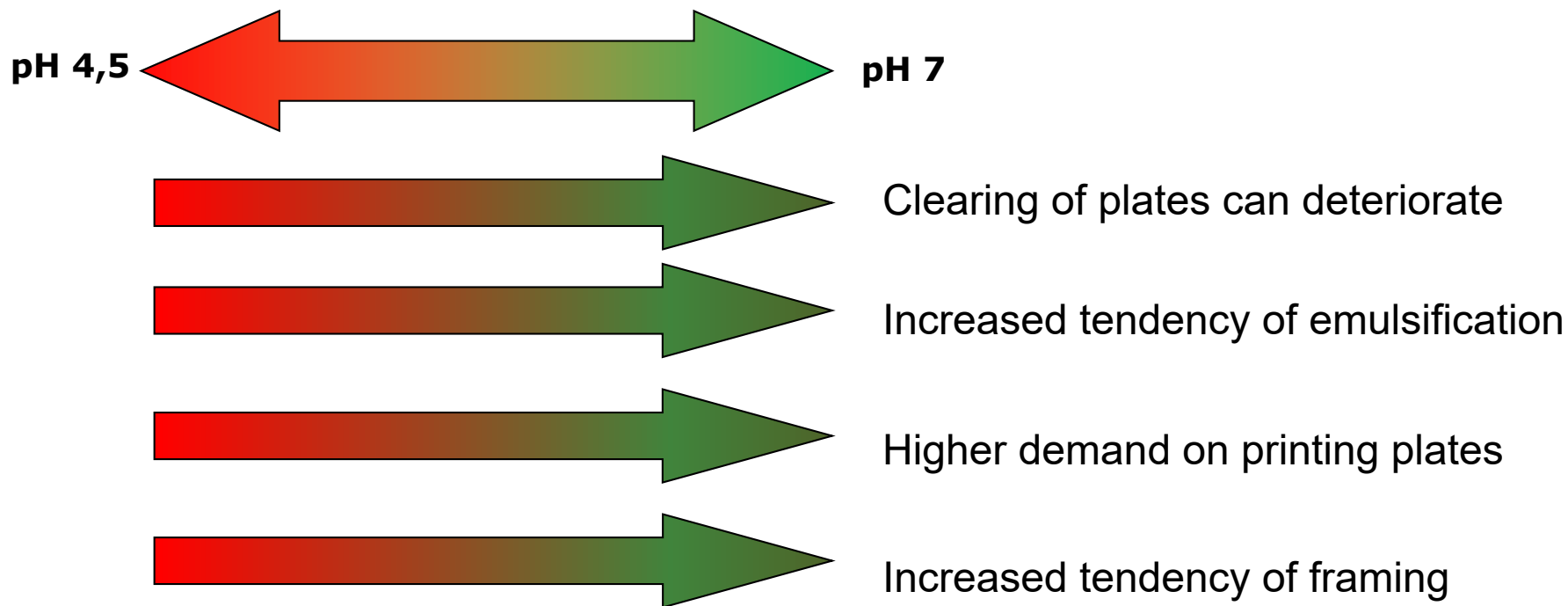
Fountain solution

Possible **positive** effects of an increasing pH-value



Fountain solution

Possible **negative** effects of an increasing pH-value



Fountain solution

Electrical conductivity

- When dissolving in water salt breaks up into electrically charged particles.
Conductivity measures the electrical transport in proportion with dissolved salt quantity.
- Fountain solution additives contain salts.
- Conductivity (measured in $\mu\text{S}/\text{cm}$) is suitable to control the dosage in case of clean, unused fountain solution!

Fountain solution

Comparison for control of correct conductivity:

1 Liter manual sample

Example:

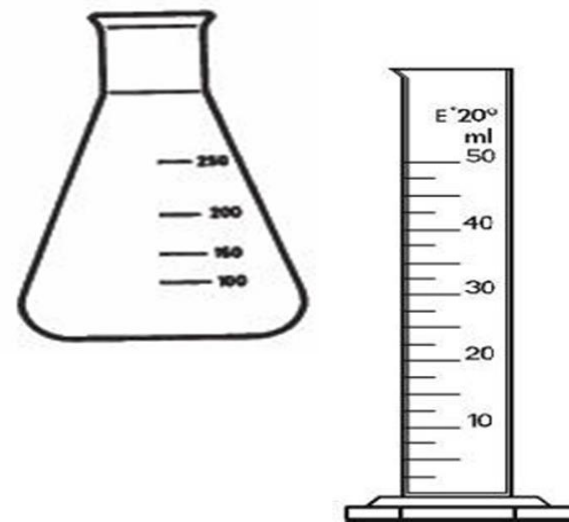
970ml raw water with a
conductivity-value of **300 μ S/cm**

+

30ml OXILAN L

=

1700 μ S/cm before adding alcohol

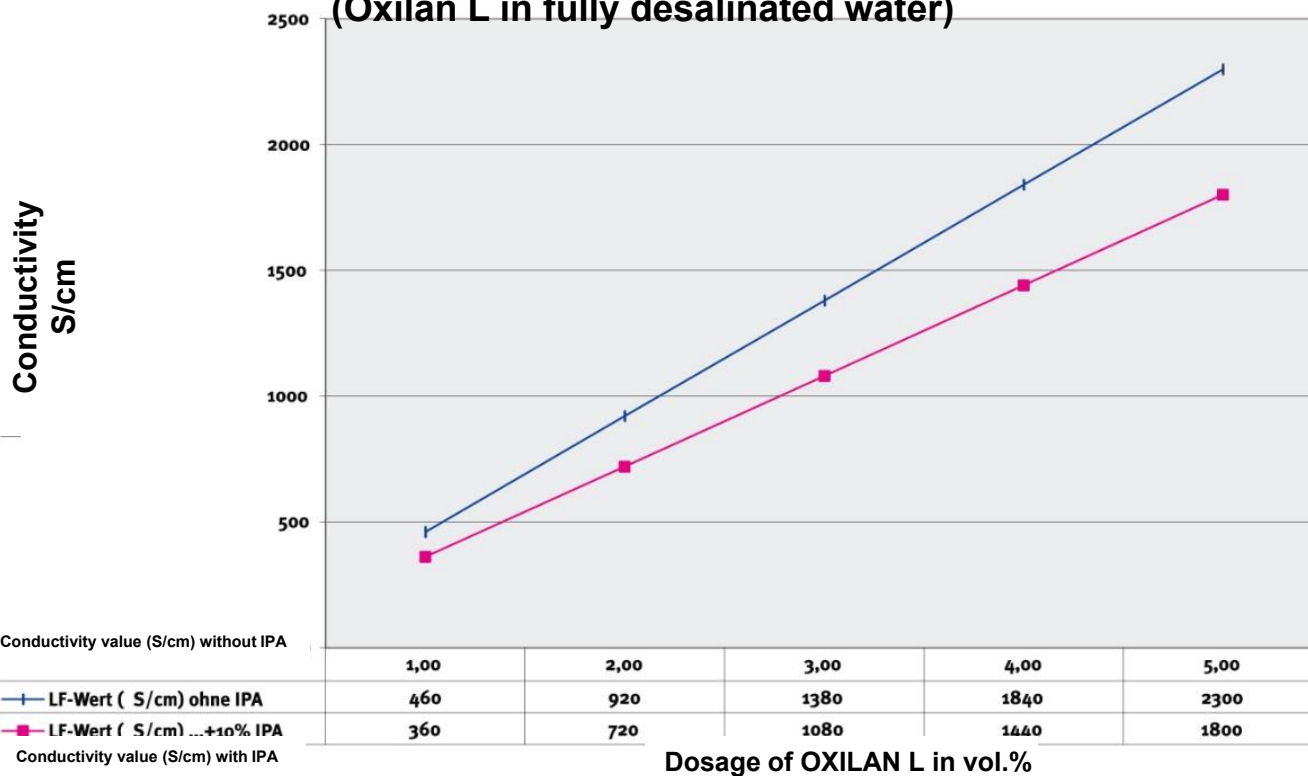


Dosing 3 % OXILAN L, abt. 1700 μ S should be reached with a fresh water preparation in the mixing unit as well!

Fountain solution

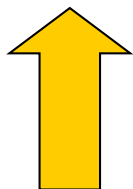
Conductivity dependence on dosage of fountain solution additive and IPA

(Oxilan L in fully desalinated water)

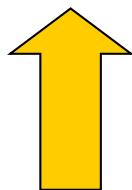


Fountain solution

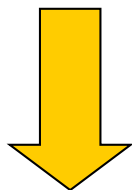
Influences on electrical conductivity in printing



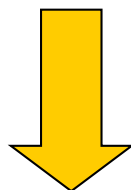
The conductivity value **increases** with dosing of additive



The conductivity value **increases** with contamination of fountain solution through coating components and fillers of paper and ink (up to + 100%)



The conductivity value **decreases** with increased IPA-concentration



The conductivity value **decreases** through entry of cleaners into the fountain solution

Fountain solution

Dosage of the additive

Control of correct dosage with FountControl-Test



1. Preparation of a manual sample
2. „Dripping“ of the manual sample
3. „Dripping“ of the fountain solution
4. Determination of fountain solution additive by means of diagram

The Eggen range of fountain solution additives

The Eggen range of fountain solution additives ensure process proof industrial offset printing. In particular they help reduce isopropyl alcohol.



Fountain solution additives: sheetfed conventional and UV

- for printing with 0-5 % IPA e.g.
 - **Alcolan CTP V 45.39**
 - **Alcolan XL V 47.5**
 - **Alcolan XL V 47.15**
- pH neutral additive for printing with 0-5 % IPA
 - **Alcolan N V 50.1**



Fountain solution additives: H-UV, LE- UV, LED UV

- for printing with 0-5 % IPA
 - **Alcolan UV V46.2**
 - **Alcolan LED-UV V46.15/20**
- for printing with 5-8 % IPA
 - **Alcolan V 79.33**





Thank you for your attention!

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