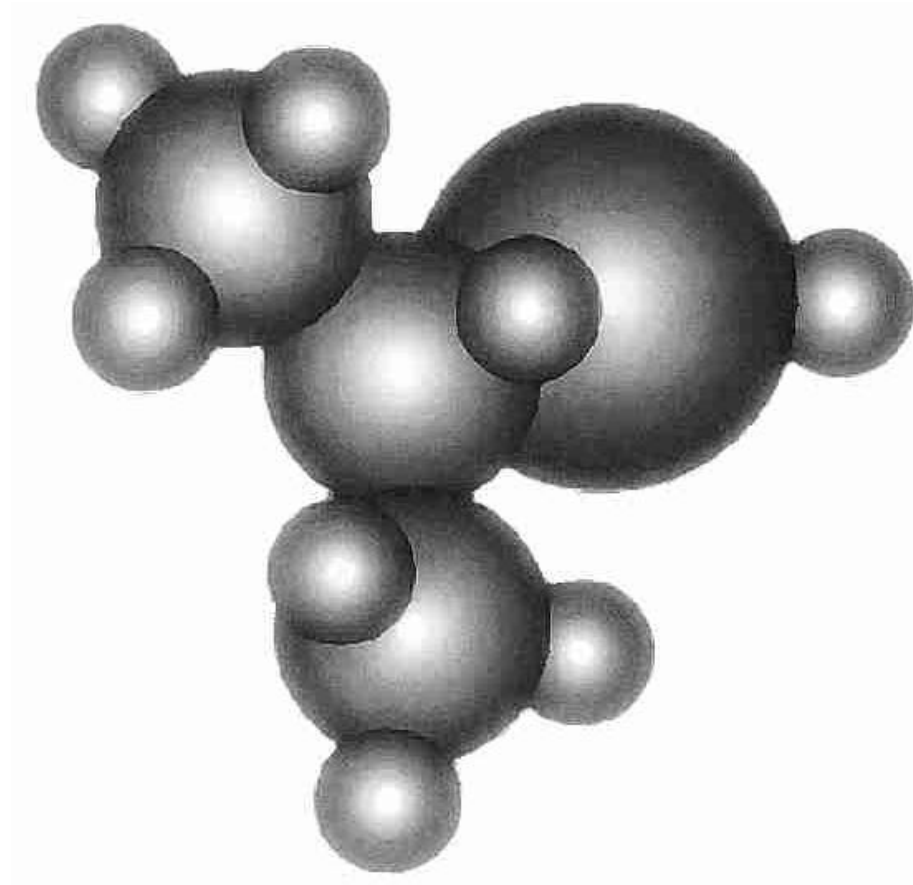


## **What Does Alcohol Do In Lithographic Printing?**

1. Gives printers a wider window of operation.
2. Reduces surface tension to promote better wetting of plates.
3. Dilutes the fount and increases absorption of Gum Arabic.
4. Cools the ink on press – Endothermic Reaction
5. Increases the viscosity for better transfer for damping units.
6. Acts as an ink solvent.
7. Fungicide / Biocide – acts as a self-cleaning agent.
8. Antifoam – prevents foaming.
9. Speeds up evaporation of water on non-image areas of plates.

# Isopropyl Alcohol

3-D molecular Structure



## What is Alcohol?

Alcohol is a colourless volatile liquid, intoxicant present in wine, beer, whiskey etc. Also used as a solvent and fuel.

There are 3 main types of alcohol.

Methyl Alcohol  
P2 Ethyl Alcohol  
Isopropyl Alcohol

Isopropyl Alcohol is commonly used in the printing industry.

Isopropanol  
Isopropyl Alcohol  
2- propanol  
IPA

### Physical Data

|                  |            |
|------------------|------------|
| Specific Gravity | 0.785 g/ml |
| Boiling Point    | 82.2°C     |
| Flash Point      | 13.5°C     |
| Vapour Pressure  | 41.6 m bar |

### Toxicity and Hazards

- Threshold limit value 400 pm
- Causes irritation on contact with eyes
- Inhalation of very high concentrations of indigestion
- Produces narcotic effect

## Alcohol Reduction

Ever since IPA (Isopropyl Alcohol) was introduced into the pressroom, printers and manufacturers alike have been trying to emulate its usage.

Even though IPA makes printing considerably easier with an addition of 10-12% IPA, this is clearly outweighed by the risk to safety and the environment, with strict new laws being passed by the EU.

It's time for everyone to start thinking about alcohol reduction.

### Benefits of Alcohol Reduction

- Highly flammable
- Expensive (cost saving)
- Volatile organic compounds
- Can damage your health
- Evaporation (lost savings)
- Attacks the ink
- Another variable to control
- Fewer unpleasant odours

## **PA Restriction Worldwide**

Throughout Europe a maximum level of 5% IPA has been imposed for all new presses.

Switzerland imposes a tax on IPA usage in the pressroom.

In the USA some states have a total ban on IPA usage.

Scandinavia offers state subsidies for those firms who reduce their VOC emissions and a new VOC environmental tax to be implemented for those who don't.

## **Alcohol Replacement**

Delta pressroom products are at the forefront of technical developments concerning the reduction and elimination of alcohol (IPA) in sheetfed and heatset printing processes.

Alcohol has many benefits to the printing process, and until recent times presses have been specifically designed to run with alcohol. Therefore, the process of reducing alcohol requires specialist fount formulations to replace the following benefits achieved by using 8-12% alcohol.

- Reduces the surface tension of the dampening solution to achieve excellent plate wetting at low filmweights of damp, achieving excellent ink/water balance.
- Increases the viscosity of the water to improve the transfer through the press.
- Evaporates from the press and acts as a cooling agent.

Although the new press designs are incorporating dampening designs and specialist roller compounds to help with the reduction of alcohol, the fount solution is an integral part of the success, and also the commitment and understanding of the printers is key to achieving results.

The reason for moving towards the reduction of IPA is because as a VOC (volatile organic compound) it readily evaporates into the atmosphere, contributing to photochemical smog. Also, as alcohol has a flash point of 11°C, which is very low, there are difficulties with storage of alcohol from a health and safety aspect.

We recommend the following procedures are adhered to when changing to an alcohol replacement fount solution.

1. A technical presentation is made to the printers involved with the project so they clearly understand the requirements.
2. Initially one press is chosen to introduce the fount solution and the following cleaning procedure takes place:
  - Drain mixing tank pipe work and pans and then remove all accumulated material by hand.
  - Fill the mixing tank with mains water and 5% System Cleaner. Allow to circulate for one hour.
  - After disposal the system must be flushed at least two or three times using plain water.
  - Please do not mix System Cleaner and Fount Additive

3. The fount solution is introduced with 8% alcohol. This should remain this way until the press chemistry stabilises, which should take a relatively short period of time.
4. The alcohol should gradually be reduced over the coming weeks. We would expect that a maximum of 4-5% alcohol should be required with our products, but in most cases complete elimination is possible.

The following maintenance program should be implemented to maintain optimum results:

#### **Damping Units Preventative Maintenance**

- Six monthly – remove glaze from rubber coated plate dampers using Delta Roller Paste D1028
- Clean inking and damping rollers as normal.
- Apply paste to inking rollers and plate dampers and run press at low speed for twenty minutes then clean as normal.
- Repeat three times.
- Once clean, check surface conditions for wear and tear and replace covering if necessary.
- Check diameter of rollers for correct size using callipers. If more than 2mm undersize replace coverings.

#### **Mixing Tank Preventative Maintenance**

As the presses are run day to day, the fount mix will eventually become contaminated. To maintain optimum damping performance, at the end of each week:

- Drain Technotrans mixing tank pipe work and pans and dispose of contents.
- Clean tank and fount pans of any accumulated materials by hand, and then refill with a fresh mix.

- Before start up, check to confirm that alcohol level and temperature measured in the mixing tank are correct
- Other important points to consider when implementing an alcohol reduction project are listed below.
  - a) The use of special hydrophilic compound rollers will give benefits with improved transfer of the dampening solution. The pan rollers and first form rollers are recommended for replacement.
  - b) If your press is equipped with temperature control, then we recommend the press temperature is controlled between 28°C and 30°C.
  - c) Careful resetting of all dampening system rollers is important to ensure optimum results. Fine adjustments can have a major influence on the results.
  - d) Also to help with chemistry control, we would strongly recommend controlling the consistency of the incoming water by means of reverse osmosis.

Delta supply a range of four solutions for alcohol reduction