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## Durst Rigid ink - Cure and Odour

### Product background

The Durst Rigid ink is classified as non hazardous in its liquid format. The only provision in section two (Hazards identification) of MSDS states that the ink may be irritating to eyes and skin.

These products are classified in accordance with the latest European Health and Safety guidelines.

In the liquid format if the ink is handled, gloves and eye protection must be worn, however in the Durst printing process neither the printer operator nor the finishing department should come into contact with the liquid ink.

### Method of Investigation

Durst have conducted analyses on the final ink film and the level of free monomer within the film, due to time restraints this testing was conducted directly after curing and 24 hours after curing.

Durst Rigid ink was applied in a continuous film at a thickness 12 on 3M self adhesive vinyl. This film was then cured with various levels of UV, dissolved into a solution and analysed using our IR spectrometer.

The output of this measurement was then analysed and the quantity of monomer calculated.

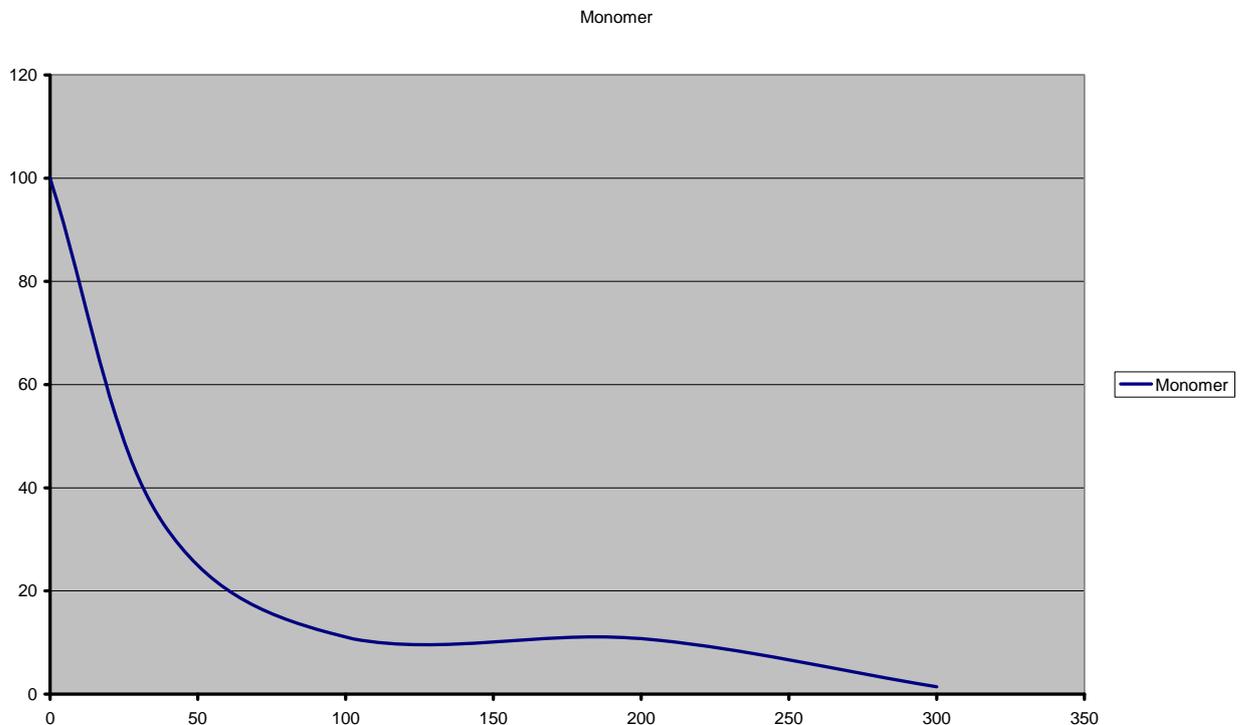
## Results

The level of monomer has been converted to a percentage against the total amount in the liquid ink. The results of this analyses demonstrate the percentage of free monomer remaining in the ink film immediately after cure.

Initially 4 measurements have been taken, 37mJ/cm<sup>2</sup>, 100mJ/cm<sup>2</sup>, 200mJ/cm<sup>2</sup> and 300mJ/cm<sup>2</sup>. Please find below a table and graph demonstrating the results;

<i>Level of cure mJ/cm<sup>2</sup></i>	<i>Percentage of free monomer Directly after printing</i>	<i>Reduction of free monomer 24 hrs after printing</i>
0	100%	
37	34%	-80%
100	11%	-60%
200	10%	-60%
300	1.4%	-30%

Monomer Concentration directly after printing:



These results demonstrate that when the Rigid ink is subjected to 300mJ of UV they reach full cure and can be described as a polymer, which is non-hazardous. In situations when the ink receives a lower dose a level of monomer remains in the ink film, however this will continue to fall with time

In relation to the odour of an ink, there is currently no legislation that would declare the Durst UV curing inks odour as hazardous. It should be remembered that a very small quantity of a substance can provide a strong odour – which must not be associated with a hazard.

### Conclusion

When fully cured Durst UV inks are polymers and are non-hazardous, if the ink in any way has been under cured then the end user should use gloves. In cases of under cure the end user may consider leaving them for a time to allow post cure.

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