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Urea in liquid OBAs and Dyestuffs

During the manufacture of optical brighteners and direct dyes a relatively large amount of salt (NaCl) is produced from the various reaction stages.

Unfortunately, many dye and optical brightener aqueous solutions are destabilized by this salt present in the final liquid formulation.

The high proportion of salt present (often 5%) causes the concentrated liquid solution to precipitate over time.

There are two solutions to this problem, in order to produce a liquid dye or OBA that is storage stable, without a recrystallisation stage, they are:

- Urea (or another additive) can be added to the product to give a stable solution, how-

ever the amount added must be high and can even exceed 20% by weight of the liquid

- The NaCl can be removed by a process known as ultrafiltration. This is a reverse osmosis process where the salt is removed via a semi-permeable membrane. Once the salt content is brought to a much lower level the liquid product often becomes stable

Urea has a relatively low COD, however, it has a relatively high nitrogen content.

For a typical urea containing OBA added to the paper machine wet-end, around 6-20% is urea, i.e. 60-200kg of urea are added per tonne of OBA.



Since urea is not substantive to the paper it remains mainly in the water phase. This leads eventually to a build up of nitrogen and consequently a build up of bacteria that can lead to deposits, foam and slime etc.

Urea also has the effect of depressing the freezing point of the liquid which can cause it to be still liquid at lower temperatures (-8 to -15°C) compared to urea free products which freeze at around zero.

Testing for Urea

Urea is the most successful additive to be used in the stabilization of OBAs and direct dyes but others exist.

Makowhiteness can now analyse samples to determine if urea is present or not.

If you require samples to be tested please post them to us in a sealed container and order

one test per sample from our e-shop. (For example—if you send three samples you will need to order three tests).

Our test takes around 3 days to complete after which you will receive a report in PDF format confirming the presence of urea in the sample or not.

If you have 3 or more samples

for testing please contact us to arrange discounted pricing.

To order urea tests please follow the link below or visit our e-shop.

[Order Urea Test](#)



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Special points of interest:

- Important: This Technical Information Factsheet may not be distributed to non-members

- Please ensure that the samples are well sealed and are sent with an appropriate MSDS for an identical or similar product.

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