

[Using Py-GC/MS to detect and measure silicone defoamers in pulp fibres and mill deposits](#)

B. Sithole, C. Watanabe
J. Anal. Appl. Pyrolysis 103 (2013) 8-16

Abstract:

Defoamers are often used to control or reduce foam problems in a variety of pulp and papermaking processes. It has been recognised that non-judicious use of defoamers can lead to undesirable deposition problems. Amide-based defoamers have been largely supplanted by waterbased or water-extended defoamers that are supposed to be non-depositing. However, mill experience and research has shown otherwise. Hence, there is a need for analytical procedures to determine silicone defoamer components in deposits. In this work, for the first time, Py-GC/MS has been used to analyse for silicone defoamers in pulp and paper matrices. This work demonstrates that the technique is ideal for analysis and characterisation of silicone defoamers on pulp fibres and in mill deposits. The technique is easier and much more rapid than using solvent extraction and solid phase extraction, previously developed for analysis of silicone oil defoamers in deposits. It is applicable to silicone defoamers irrespective of molecular weight and can be used to ascertain the source of a particular defoamer formulation. Application of the technique to a washed kraft pulp, previously treated with silicone defoamers, shows that silicone defoamer oil carryover on pulp fibres can be substantial, depending on the defoamer formulation used. In pitch deposits, the level of silicone oil can be over 25% (w/w). In addition, analysis of deposits from mills using the defoamers shows that silicone defoamers have the potential to cause pitch deposition contrary to claims that the defoamers do not cause such problems. Thus, the method can be used to assess the impact of defoamer carryover on pulp properties and the contribution of silicone defoamers to pitch deposition.

* Excerpted from online journal website (Click the title)

Frontier Labs products used:

Multi-Shot Pyrolyzer