

Abstract

Scale Specific Antiscalants Used To Increase Recoveries On Challenging Plants

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Antiscalants have been widely used in reverse osmosis and nanofiltration systems for many years, and are now the accepted method of scale control in most systems. Standard antiscalants are capable of controlling a wide range of scales, including calcium carbonate, sulphate scales (calcium, barium, strontium), calcium fluoride and can disperse silica, and iron and other metals.

Recent developments in antiscalant technology now allow a significant increase in the limits previously set by antiscalants. Whereas for many years the maximum calcium sulphate limit would increase the K_{SP} by 300%, antiscalants are now available to increase K_{SP} by over 700%. In other areas, changes in reverse osmosis applications are finding different challenges for antiscalants to control, such as the treatment of waste water which require calcium phosphate to be controlled, or operation at high pH which require magnesium hydroxide to be inhibited.

The paper will describe the research and development of these antiscalants, and present case histories which show that with the correct antiscalant, significantly higher recoveries may be achieved than with conventional antiscalants. This will include a mining application in South Africa which has resulted in a significant increase in recovery.