

Under the microscope

What is rouging?

Rouging is an extremely common problem in the pharmaceutical industry. It appears in stainless steel equipment that is exposed to hot purified water, water for injection or clean steam for extended periods. As a result, the internal surfaces become polluted by loosely adhered products and discoloured by oxide build-up. The term 'rouge' refers to red-brown to dark violet deposits on the inside surface of distillation systems, storage vessels and distribution systems made of

austenitic CrNiMo steel grade AISI 316L. The formation of rouge is also promoted by temperatures of above 60 degrees Celsius.

There are a number of opinions on the causes of rouging, but it is clear that it creates a significant risk of contamination to pharmaceutical products. Repeated cleaning operations and proper installation of additional filters can alleviate the problem, but what will get rid of the problem all together?



Left: Red-brown Rouge layer in WFI-tube system (material 316L)

Right: WFI-tube system after professional and controlled derouging according to HENKEL-HC1106 processing

Photographs courtesy of HENKEL Pickling and Electropolishing GmbH & Co. K

For more information on this dilemma, contact Ko Buijs, Metallurgical Consultant, Van Leeuwen Stainless, The Netherlands, e-mail: nwbuijs@hetnet.nl



Ko Buijs is a recognised metallurgical and corrosion specialist on stainless steels and special metals and is actively investigating this problem. He is currently in discussion with a number of specialists regarding his new observations on the causes of rouging. His observations contradict existing opinions on what causes rouging and is the basis of a new method for stopping rouging which he is currently developing.

We cannot go into any more details yet, due to pending patents, but with extensive testing in the pipeline, all parties involved are confident that this method could become the ultimate way of combating rouging.

Stainless Steel World hopes to be able to provide you with more details about Ko Buijs' investigation in the coming months.