

염화이온 함유 용액 내에서 예민화된 316L 스테인레스강에 형성된  
표면피막의 조성분석을 통한 공식 특성연구

**An Investigation on the pitting corrosion of sensitized 316L stainless steels  
by the composition analysis of the passive film  
in  $\text{Cl}^-$  ion containing solution**

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The pitting susceptibility of sensitized 316L stainless steels in aqueous 1000 ppm NaCl solution was investigated as a function of sensitization time by using Scanning electron microscopy (SEM), Energy dispersive x-ray spectroscopy (EDS) and Auger electron spectroscopy (AES). From the results of SEM, it is observed that the pit morphology changed hemispherical pit to crystallographic pit with increasing applied anodic potential. This means that pit formed on the grain boundaries, which are well known as susceptible sites to pitting corrosion, propagates along the grain boundaries as applied anodic potential increases. The composition analyse of EDS and AES showed that the chromium content at the inside of the pit formed on the sensitized specimen is higher than that on the non-sensitized specimen. The profound increase in chromium content is caused by not only relative increment by preferential dissolution of iron by chemical attack of  $\text{Cl}^-$  ion but also by increasing in the precipitates of chromium carbides, which is more susceptible to pitting corrosion, with increasing sensitization time at the grain boundaries. Thus, it is suggested that the grain boundaries in which the chromium carbides exist act as the preferential sites for the pit initiation in sensitized 316L stainless steels.

**References**

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