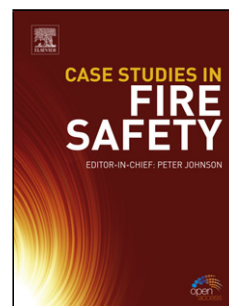


## Accepted Manuscript

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PII: S0010-938X(17)31350-1  
DOI: <https://doi.org/10.1016/j.corsci.2018.04.044>  
Reference: CS 7510



To appear in:

Received date: 25-7-2017  
Revised date: 29-4-2018  
Accepted date: 30-4-2018

Please cite this article as: Bhushan B, Murty BS, Mondal K, Dealloying kinetics and mechanism of porosity evolution in mechanically alloyed  $\text{Ag}_{25}\text{Zn}_{75}$  powder particles, *Corrosion Science* (2018), <https://doi.org/10.1016/j.corsci.2018.04.044>

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# Dealloying kinetics and mechanism of porosity evolution in mechanically alloyed Ag<sub>25</sub>Zn<sub>75</sub> powder particles

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## Highlights

1. The kinetics and mechanism of dealloying of Ag-Zn alloy powder were studied.
2. The pore formation is controlled by Zn dissolution from the alloy.
3. Coarsening is controlled by diffusion of Ag atom on alloy/electrolyte interface.
4. Ag rearrangement was the rate controlling phenomenon for the overall dealloying.

## Abstract:

The mechanism and kinetics of dealloying of mechanically alloyed Ag<sub>25</sub>Zn<sub>75</sub> powder particles was investigated at four different temperatures under free corrosion conditions in freely aerated 2N HCl. The activation energies of  $30.65 \pm 2.08$  kJ/mole and  $41.51 \pm 3.30$  kJ/mole, corresponding to the dissolution of Zn and pore coarsening, respectively, were obtained. The pore formation is controlled by Zn dissolution from the alloy and coarsening is controlled by diffusion of Ag atoms on the alloy/electrolyte interface. Ag rearrangement was found to be the rate controlling phenomenon for the overall dealloying.

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