

## Studies on Deicing Salts

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### Summary

The worldwide used deicing salts (sodium, calcium and Magnesium chloride) are well known for their ability to melt ice and snow on the highways and the roads in the northern districts during winter season but, are also well known for their secondary influences to the environmental degradation attributed to deicing salts contamination near the road and the pavement in recent years. From 1970s so many investigations focus on acetate/chloride mixtures such as calcium magnesium acetate (CMA), but also phosphate. In this work, testing was done on steels containing a known anti-corrosive material (zinc galvanized steel) by using an electrochemical method, steels were exposed to various components of CMA under a similar condition in the crevice of the car body. Weight loss and rest potential ( $E_0$ ) of steels in various deicing salts are simply compared. The electrochemical experiments to evaluate the corrosivity of deicing salts to steels, were performed by measuring the polarization curves with a potentiogalvanostat. As acetate salts have been suggested as alternate deicing salts, they are not only effective to melt ice and snow, but also are inhibitive to corrode steel in the saturated NaCl solution from the results of the polarization curves. A zinc galvanized steel is also effective to resist corrosion owing to a sacrifice of zinc. A deicing mixture of sodium chloride with a small portion of CMA under the same concentration may be an effective, benign and economic deicing salt.