



## Reaction of Methyl Chloride with Aluminum

### Introduction

Methyl chloride is known to attack aluminum (particularly powdered aluminum) in the presence of small amounts of aluminum chloride. The reaction product, trimethyl aluminum, is spontaneously flammable in air. Aluminum chloride is formed when methyl chloride containing small amounts of water contacts aluminum surfaces. Similar reactions can occur with powdered magnesium or zinc.

A reaction with powdered aluminum recently took place at a methyl chloride user location. Equipment having a moving aluminum part had been in methyl chloride service for several years with no apparent problems. The reaction occurred after the user's plant had been down for several weeks due to an unplanned outage. During the outage methyl chloride was in contact with the aluminum part. Aluminum chloride formed and accumulated due to the static conditions. The methyl chloride then reacted with powdered aluminum that had been formed from abrasion of the movable aluminum part. The first sign

of a problem was the presence of a solid residue in the methyl chloride system. The user then noticed smoke coming from the piece of equipment containing the aluminum part. In the enclosed space the reaction had taken place very slowly. Opening the equipment caused a sudden influx of air and the reaction accelerated spontaneously.

**Aluminum, zinc, or magnesium equipment should never be allowed to come in contact with methyl chloride.**

### Further Information

More detailed information on methyl chloride is available upon request through the OxyChem Technical Service Department. Call or write to:

Technical Service Department  
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