

Zeolite Degradation: An Investigation of CO₂ Capacity Loss of 13x Sorbent

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System testing of the Carbon Dioxide Removal and Compression System (CRCS) has revealed that sufficient CO₂ removal capability was not achieved with the designed system. Subsystem component analysis of the zeolite bed revealed that the sorbent material suffered significant degradation and CO₂ loading capacity loss. In an effort to find the root cause of this degradation, various factors were investigated to try to reproduce the observed performance loss. These factors included contamination by vacuum pump oil, o-ring vacuum grease, loading/unloading procedures, and operations. This paper details the experiments that were performed and their results.

Nomenclature

ARC	=	Ames Research Center
CDRA	=	Carbon Dioxide Removal Assembly
CRCS	=	Carbon Dioxide Removal and Compression System
CO ₂	=	Carbon Dioxide
MSFC	=	Marshall Space Flight Center
TGA	=	Thermogravimetric Analysis

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