

## Effect of N<sub>2</sub> Pretreatment on the Properties of Tungsten Based Catalysts in Metathesis of Ethylene and 2-Butene

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**Abstract :** The effect of N<sub>2</sub> pretreatment on the catalytic activity of tungsten-based catalysts was investigated in the metathesis of ethylene and trans-2-butene at 450°C and atmospheric pressure. The presence of tungsten active species was confirmed by UV-Vis and Raman spectroscopy. Compared to the WO<sub>3</sub>-based catalysts treated in air, higher amount of WO<sub>4</sub> tetrahedral species and lower amount of WO<sub>3</sub> crystalline species were observed on the N<sub>2</sub>-treated ones. These contribute to the higher conversion of 2-butene and propylene selectivity during 10 h time-on-stream. Moreover, N<sub>2</sub> treatment led to lower amount of coke formation as revealed by TPO of the spent catalysts.

**Keywords :** metathesis, pretreatment, propylene, tungsten

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