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# 空气泡沫驱油相关实验及影响因素的研究

## 摘要

空气驱油和泡沫驱油结合的新技术，可以提高原油采收率。文章讲述了空气、泡沫驱油机理在我国乃至世界范围内的发展历史以及发展前景，并阐述了该项研究带来的深远意义和对油田提高采收率的重大影响。而本篇论文对注空气驱油机理安全性进行了研究，根据实验数据表明：在低温氧化过程中氧耗量与温度高低、穿透时间长短有关。储层温度越高，气体的穿透时间越长，含氧量越低。还对岩心渗透率、交替段塞的大小、气液比等进行了研究。研究结果说明：当空气、泡沫交替段塞气液比为 3:1 时能最大的提高原油采收率；除此之外，注气压力、注气量等因素也对空气泡沫驱油提高采收率有影响，压力越大，采收率越大，但趋势逐渐降低。

**关键词：**注空气驱油；泡沫驱油机理；气液比；采收率

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## Abstract

The combination of air displacement and foam displacement can improve oil recovery. This paper describes the development history and prospect of the mechanism of air and foam flooding in China and even in the world, and expounds the far-reaching significance of this research and its significant impact on oil recovery. In this paper, the safety of oil displacement mechanism by injecting air was studied. According to the experimental data, the oxygen consumption was related to the temperature and the penetration time. The higher the reservoir temperature, the longer the gas penetration time, the lower the oxygen content. The core permeability, the size of alternate slug and the gas-liquid ratio were also studied. The results show that the maximum oil recovery can be achieved when the gas-liquid ratio between air and foam is 3:1. In addition, factors such as injection pressure and gas injection volume also have an impact on the eor enhanced by air foam flooding. The greater the pressure, the greater the eor, but the trend gradually decreases.

**Key words:** air injection and oil displacement; Foam flooding mechanism; Gas liquid ratio; Recovery factor

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