**Paper No: PU-SOE- PET- 05**

**Anti-Corrosion Effect of Curcuma Longa on Petroleum Drilling Equipment in the Presence of Different Acid Environments**

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**Abstract**

Corrosion is a common issue during drilling operations as it is mainly dealing with the borehole fluids which consists of acidic environments. Mainly, the challenge during drilling isthe failure of drilling equipmentsuch as drill pipe, drillstring and casing pipe mostlymade ofmild steelthat occurs due to the presence of hydrogen sulfide (H2S) gas that leadsto sulfide stress cracking and also reacts with formation water to form sulphuric acid (H2SO4) that eventually leads to failure or breakdown ofsteel drill pipes. Therefore, to prevent the drawbacks of corrosion need to be investigated through an additive via increasing the basic in nature by forming a protective layer on the metal surface. In this work, ‘Curcuma longa’ a botanical name of turmeric has been used as a natural additive for corrosion prevention on mild steel samples that measured in the presence of various acidic (hydrochloric acid; HCl and sulphuric acid; H2SO4) aqueous solutions at 0.1 M in the absence and presence of turmeric, where comparison ofthese experimental data is not available in the literature. The visual observation and scanning electron microscope (SEM) results show that the HCl+Turmeric and H2SO4+Turmeric aqueous solutions found to be reduced the corrosion rate as compared to pure acidic aqueoussolutions of HCl and H2SO4. This work provides insight to use turmeric in drilling fluid to combat the high corrosion rate, due to the presence of H2S gases which produces in the wellbore and shows the potential to maintain the necessary rheological properties.

**Keywords:**

Corrosion rate; Hydrogen sulfide; Sulphuric acid; Turmeric; Weight loss

**Publication Details:**

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| --- | --- | --- | --- | --- | --- |
| **Journal Name** | **Vol.** | **Month & Year**  | **Page No.** | **Publisher** | **Scimago Ranking** |
| International Research Journal of Engineering and Technology (IRJET) |  7 (4) | April, 2020  | 1383-1389 | Engineering Journal Publication | Q4 |