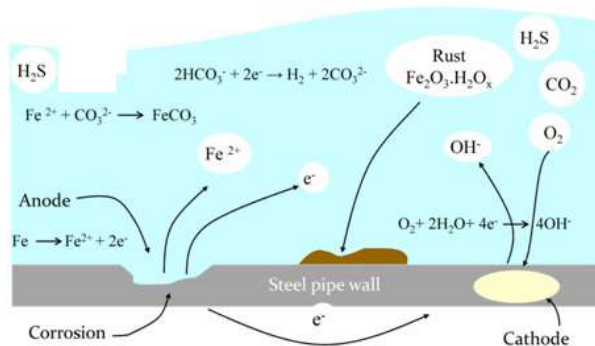


# HPCORRMIT

## A Novel Cost Effective Corrosion Inhibitor for LPG pipelines

Pipeline transportation is a cost effective and safe mode for long distance transportation of petroleum products. Corrosion is one of the major problems in pipeline transportation, which leads to leakage of gases, fuels and may lead to accidents. In the recent past, leakages in hydrocarbon pipelines occurred due to corrosion. The presence of carbon dioxide (CO<sub>2</sub>), hydrogen sulphide (H<sub>2</sub>S) and free water can cause corrosion problems in oil and gas pipelines. To mitigate the problem, the corrosion inhibitors (CI) are injected into pipelines at very low dosage level (ppm). The corrosion inhibitor forms a protective film on the metal surfaces and thereby inhibits corrosion caused by acidic moieties petroleum products in the pipeline. At present, very few commercial additives available for LPG pipelines.



HPCL has developed novel, cost-effective corrosion inhibition formulations for transporting liquefied petroleum gas (LPG). A novel accelerated corrosion evaluation method was developed based on rotating cage experiment compliance to ASTM G-209 and validated by standard commercial CI sample.

Different formulations were synthesized and evaluated by using rotating cage and electrochemical methods. The corrosion rates are measured for the coupons in the presence of developed CI formulations. During the accelerated corrosion evaluation test, it was found that the corrosion rates for different MOCs such as, carbon steel & SS316 were found to be <1mpy for a period of one year. Thus, the corrosion rate is well below the limit and was meeting the required technical specifications.

Field Trials were conducted in MHBPL (Mangalore Hassan Bangalore pipeline) for a period of 21 Months. The above said additive is currently being used by MHBPL. It was observed that the corrosion rate was low throughout (0.3 to 0.4 mpy) the pipeline in comparison with the benchmark (0.5 to 0.7mpy).

Table 1: The corrosion Inhibitor data from rotating cage experiment.

S. No.	Sample	Metal loss (10 <sup>-4</sup> mm year)	Corrosion Rate (mpy)	Inhibitor Efficiency (%)
1	BLANK	7.6454	1.0997	NA
2	REF	1.6510	0.2388	78.29
3	HP-CI4	0.2794	0.0411	96.27
4	HP-CI10	0.4064	0.0574	94.78
5	HP-CI11	0.2286	0.0319	97.1
6	HP-CI12	0.254	0.0376	96.59

HPCL offers HPCORRMIT as Corrosion Inhibitor Additive for LPG Pipelines.