

Peran 2-mercaptobenzothiazole sebagai inhibitor korosi pada tembaga dalam larutan HCL dan brine = The role of 2-mercaptobenzothiazole as corrosion inhibitor for copper in HCL solution and brine

Taamy Alif Firman, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20389793&lokasi=lokal>

Abstrak

[ABSTRAK

Permasalahan korosi dalam bidang minyak dan gas, menjadi salah satu perhatian serius. Proses penanganan korosi ini dilakukan dengan dua klasifikasi metode yaitu secara fisika dan kimia. Pada penelitian ini dilakukan penanganan korosi secara kimia menggunakan 2-mercaptobenzothiazole (MBT) sebagai inhibitor korosi pada tembaga. Pengamatan dilakukan menggunakan metode berat hilang dan polarisasi ekstrapolasi Tafel dalam larutan yang mengandung ion klorida (HCl dan brine). Karakteristik film yang terbentuk diamati menggunakan spektrofotometer ATR-IR dan spektrofotometer UV Vis. Studi morfologi hasil menggunakan SEM. Hasil penelitian menunjukkan bahwa terbentuknya film Cu(II)-2-mercaptobenzothiazole pada permukaan tembaga melalui mekanisme adsorpsi isothermal Langmuir. Peningkatan konsentrasi MBT akan meningkatkan % inhibisi pada tembaga dari proses korosi, sedangkan peningkatan temperatur akan menurunkan % inhibisi korosi pada tembaga dikonsentrasi yang sama. Aplikasi penggunaan MBT dengan konsentrasi minimal 25 ppm pada temperatur 70 oC dengan waktu kontak 72 jam memberikan % inhibisi diatas 90,00 % pada brine sintesis.

<hr>

ABSTRACT

Corrosion problems in oil and gas fields are very serious concern. Corrosion treatment process is used by two methods, physical and chemical. In this research, the corrosion treatment by chemical method with 2-mercaptobenzothiazole (MBT) as a corrosion inhibitor in copper. This research used weight loss method and polarization with extrapolation Tafel in solution which chloride ion contains (HCl and brine). Characteristic of film layer using ATR-IR spectrophotometer and UV Vis spectrophotometer. Surface morphological study was observed on SEM. The results showed that formed Cu(II)-2-mercaptobenzothiazole on copper surface through the Langmuir isothermal adsorption mechanism. Increasing of concentration MBT will improve the % inhibition of copper from the corrosion process, whereas an increase in temperature will decrease the % corrosion inhibition of copper in the same concentration. The application of MBT in the minimal concentration 25 ppm at 70 °C in 72 hours contact times gave % inhibition value more than 90.00 % in synthetic brine;Corrosion problems in oil and gas fields are very serious concern. Corrosion treatment process is used by two methods, physical and chemical. In this research, the corrosion treatment by chemical method with 2-mercaptobenzothiazole (MBT) as a corrosion inhibitor in copper. This research used weight loss method and polarization with extrapolation Tafel in solution which chloride ion contains (HCl and brine). Characteristic of film layer using ATR-IR spectrophotometer and UV Vis spectrophotometer. Surface

morphological study was observed on SEM. The results showed that formed Cu(II)-2-mercaptobenzothiazole on copper surface through the Langmuir isothermal adsorption mechanism. Increasing of concentration MBT will improve the % inhibition of copper from the corrosion process, whereas an increase in temperature will decrease the % corrosion inhibition of copper in the same concentration. The application of MBT in the minimal concentration 25 ppm at 70 °C in 72 hours contact times gave % inhibition value more than 90.00 % in synthetic brine, Corrosion problems in oil and gas fields are very serious concern. Corrosion treatment process is used by two methods, physical and chemical. In this research, the corrosion treatment by chemical method with 2-mercaptobenzothiazole (MBT) as a corrosion inhibitor in copper. This research used weight loss method and polarization with extrapolation Tafel in solution which chloride ion contains (HCl and brine). Characteristic of film layer using ATR-IR spectrophotometer and UV Vis spectrophotometer. Surface morphological study was observed on SEM. The results showed that formed Cu(II)-2-mercaptobenzothiazole on copper surface through the Langmuir isothermal adsorption mechanism. Increasing of concentration MBT will improve the % inhibition of copper from the corrosion process, whereas an increase in temperature will decrease the % corrosion inhibition of copper in the same concentration. The application of MBT in the minimal concentration 25 ppm at 70 °C in 72 hours contact times gave % inhibition value more than 90.00 % in synthetic brine]