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USE OF ACETYLENE DIOLS AS AN INHIBITOR IN THE CORROSION OF METALS

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Abstract:

The mechanism of the protective effect of corrosion inhibitors consists mainly in the formation of protective films on the surface of metals, with the help of which separation of the aggressive environment and the metal is carried out. Currently, Russian and German production inhibitors are brought to our Republic, and there is a great demand for them, especially in the chemical, electrochemical, petrochemical, gas industry, water supply networks and circulating water. The modern classification of inhibitors includes oxidizing, adsorption, complex and oligomeric inhibitors

Keywords

Underground reservoirs, well-compressors, gas storage collector, gas loss to the atmosphere, diaphragm flow meters, optimization.

Introduction

Inhibitory properties of synthesized diols. Investigation of the corrosion behavior of steel (3 st.) was carried out on samples in the form of plates. The effect of salt environment and inhibitors on the corrosion behavior of steel (St. 3) samples was determined by the gravimetric method according to the decrease in the weight of the sample after the corrosion tests. By carefully performing the experiment, the yield is about 80%, that is, 5- 6 g. 2.4. The gravimetric method of determining the inhibitory activity of DIOL and DIOL + Urotropin. Experimental work was carried out to determine the corrosion rate of the electrode processed in different concentrations and ratios in the presence of established inhibitors in a certain temperature range. gravimetric method. After keeping the samples for 15 days, the corrosion products were removed with a scalpel and the corrosion rate (K) and corrosion loss (X) were determined gravimetrically with reference to the blank experiment (corrosion in the inhibitor solution):

$$K = \frac{(m_1 - m_2)\cdot 10000}{S\cdot \tau_1}[г/м^{-2}\cdot сут]$$

$$X = \frac{K_{инг.}}{K_0} \cdot 100$$

Z = 100-X,%,

Here: m1 is the mass of the metal plate before holding, g: m^2 is the mass of the metal plate after holding, g: S is the area of the metal plate, m^2: -1 is the holding time, days.

The most important factors affecting the effectiveness of inhibitors are: medium temperature, inhibitor concentration, acidity of the environment and interaction of inhibitors. Average temperature. For most inhibitors, as the temperature of the aggressive environment increases, the efficiency of p increases and then decreases after reaching a certain temperature (60-8000C). The maximum inhibitory effect increases with increasing acid concentration and inhibitor concentration.

The inhibitor should be introduced in sufficient quantity to cover the metal surface with a monomolecular layer. For many organic inhibitors, the effectiveness of the protective effect is characterized by an increase in their concentration to a certain amount, and then the effectiveness does not change. For inorganic anodic inhibitors, an increase in the corrosion rate is observed at low concentrations, and only when a certain concentration is reached, a sharp decrease in the corrosion rate occurs due to the passivation of the metal surface.

For each specific system, the optimal concentration of the inhibitor is determined empirically. However, during operation, the industrial inhibitor can be adsorbed on the formed corrosion products, it can be destroyed (for example, microorganisms), precipitates from the solution or evaporates. an excess amount of inhibitors is introduced into the system, then control is carried out and, if necessary, the inhibitor addition is replenished. Environmental acidity. Most inhibitors are effective only at certain pH values of the solution. It depends on the resistance of protective films or inhibitors.

Film-forming inhibitors are protective only in environments where the formation of poorly soluble compounds is observed. Carbonates and phosphates are effective in a neutral environment, and nitrites, sulfides, organic compounds, etc. are effective in an acidic environment.

It is known that the production of acetylene alcohol is based on the interaction of acetylene with carbonyl compounds (technologies of A.E. Favorsky and V. Reppe). However, in 1905, Favorsky proposed the direct condensation of carbonyl compounds with monosubstituted acetylenes (triple-bonded alkynes) in the presence of strong bases. Indeed, already the first interaction in this direction, the condensation of acetone with

phenylacetylene in the presence of powdered potassium hydroxide produces the expected 2-methyl-4-phenylbutyn-3-ol-2 in one step and quantitatively. It is worth noting that it began after Campbell's communication with his colleagues about the synthesis of large quantities of acetylene alcohol using sodium acetylenides in liquid ammonia. Based on a large number of experimental materials, it was found that of all the used acetylenides, lithium acetylenide is the softest, potassium acetylenide is the most reactive, and sodium acetylenide occupies an intermediate position between them. The advantages of this research on the production of acetylene alcohol over those previously known are safety, economy and high intensity of the process: liquid ammonia is not used (a toxic, irritating solvent that forms explosive mixtures with air), acetylene is used at atmospheric pressure, the process is room temperature. It is carried out at a temperature close to the temperature, there are no harmful waste and waste. Acetylene alcohols are obtained by adding acetylene hydrocarbons to carbonyl compounds in the presence of bases. Alicyclic ketones and some aldehydes react. Among acetylenes, unsubstituted acetylene is often used. This compound belongs to organic chemistry, in particular to functional derivatives of acetylene in the field of polymers, which contain two hydroxyl groups at the same time and a triple bond in its molecule, which makes polymers with specific properties, allows you to get medicines and vitamins, aroma. Agents, emulsifiers and flotation reagents. The use of derivatives of this compound as flotation reagents in the enrichment of copper and silver ores is currently the most relevant, because flotation reagents are not produced in the Republic of Uzbekistan, but are imported from abroad.

None of the methods for stoichiometric ethynylation of carbonyl compounds in the medium of inert solvents is currently as widely used as ethynylation in the medium of liquid ammonia. The ease of carrying out this type of synthesis is well known, so the intensive development of this method was carried out by I.A. to determine the optimal conditions for the first reaction. Favorsky with his students. Factors that contribute to the formation of glycols in the ether environment are:

a) slow mixing of the reaction mass;
b) weak flow of acetylene;
c) rapid addition of the carbonyl component.

Knowledge of these laws allowed the mentioned authors to show past active carbonyl compounds such as methyl-n-nonyl ketone based on condensation, but also a number of secondary acetylenes in quantitative yields. is an aldol condensation of an aldehyde accepted for interaction.

RESULT: Among the factors affecting the production of acetylene diols - temperature, nature of the catalyst, duration of the process and pressure - it was studied, as a result, it was found that increasing the pressure of acetylene at room temperature increases the yield of the product.

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