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Screening Tests for Evaluating the Effectiveness of Gypsum Scale Removers

ABSTRACT

This standard presents test methods for screening the effectiveness of two types of gypsum scale removers, one for scale dissolvers, and another for scale converters. The test methods described in this standard are static laboratory screening tests designed to measure the ability of chemicals to remove gypsum scale deposits. Test methods for screening both gypsum scale dissolvers and converters are described. This standard is maintained by Task Group 384.

KEYWORDS

Oilfield, test methods, gypsum

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Foreword

In NACE standards, the terms "shall," "must," "should," and "may" are used in accordance with the definitions of these terms in the NACE Publications Style Manual. The terms "shall" and "must" are used to state a requirement, and are considered mandatory. The term "should" is used to state something good and is recommended, but is not considered mandatory. The term "may" is used to state something considered optional.

Hydrocarbon production is often accompanied by the production of a brine. Minerals may precipitate from a brine and deposit within the production system. The scale deposits can be located both downhole and in surface equipment. Often the deposit has an adverse effect on production and must be removed.

Producers and service companies devote considerable effort to developing and marketing effective treating chemicals because of the serious impact that gypsum ($CaSO_4 \cdot 2H_2O$) scale formation can have on hydrocarbon production. The performance of these treating chemicals used for scale removal can be verified most effectively after an actual field trial. However, field testing can be very difficult and time-consuming, especially when many chemicals are being evaluated. Although most laboratory tests cannot exactly duplicate field conditions, the advantage of such tests is to provide the user with a comparison of the performance of one scale remover against that of another under standard laboratory conditions. The industry has not established a standard test method to evaluate gypsum scale removers. Consequently, performance tests on a scale remover or collection of scale removers yield widely differing absolute and relative results depending on the test procedure used.

NACE Unit Committee T-1D formed Task Group T-1D-32 in 1987, in response to an expressed need for a standard test method for the evaluation of chemical-based gypsum scale removers.

The initial task group assignment was to compose and publish a technical committee report. That report was issued in 1991 (NACE Publication 1D191[1]). The subsequent assignment was to develop standard test methods for screening gypsum scale remover chemicals, which are addressed in this standard.

This standard presents test methods for screening the effectiveness of two types of gypsum scale removers, one for scale dissolvers, and another for scale converters. These methods are primarily intended for use by those in the petroleum industry who need to use treating chemicals to remove gypsum scale deposits.

This NACE standard was originally prepared in 1997 by Task Group T-1D-32, a component of former Unit Committee T-1D on Corrosion Monitoring and Control of Corrosion Environments in Petroleum Production Operations. It was reaffirmed in 2002 by Specific Technology Group (STG) 31 on Oil and Gas Production—Corrosion and Scale Inhibition and it was reaffirmed in 2018 by TG 384, Oilfield Scale Removers Evaluation. It is issued by NACE International under the auspices of STG 31.

Soluble Salt Testing Frequency and Locations on Previously Coated Surfaces

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