



PRODUCT INFORMATION

UCARSOL™ HS 101 SOLVENT

FOR GAS TREATING

INTRODUCTION

Possessing a high capability for selective removal of H₂S from CO₂-H₂S mixtures, UCARSOL™ HS 101 solvent has proved highly effective and economically attractive for many gas treating applications such as:

- Refinery and Petrochemical Gas Treating
- Natural Gas Treating
- Tail Gas Treating

Historically, primary and secondary amines, such as monoethanolamine (MEA) and diethanolamine (DEA), have been used for removal of both H₂S and CO₂ from gas process streams. However, with the increasing availability of sour crude, as well as increased energy costs and increased capital costs, the need for selective removal of H₂S in preference to CO₂ has become more important. Diisopropanolamine (DIPA) has commonly been used for this role, but it has been shown that tertiary amines offer significantly improved selectivity and performance.

UCARSOL HS 101 solvent, a specially formulated methyldiethanolamine (MDEA)-based product, has been developed to further enhance the selective removal of H₂S from H₂S- and CO₂-contaminated gas streams.

SPECIAL FEATURES

UCARSOL™ HS 101 solvent offers these important advantages:

- Excellent selectivity performance to gas treating products such as MEA, DEA, triethanolamine and DIPA
- Reduced energy demands in processing compared to other commonly used materials.
- Increased processing capacity of existing equipment
- Excellent chemical stability, which essentially eliminates the need for solvent reclaiming
- The inclusion of the full range of gas treating services to prevent and correct specific problems through technical assistance and follow-up

PERFORMANCE DATA

Conventional processes for removal of H₂S are effective for gas streams containing significant quantities of CO₂. DIPA exhibits better selectivity than primary and other secondary amines and has been a preferred solvent for selective H₂S removal in recent years.

However, absorption tests[†] have shown that UCARSOL™ HS 101 solvent has excellent selectivity to DIPA. The excellent selectivity of UCARSOL HS 101 solvent provides these advantages:

- Energy savings, primarily in the form of lower reboiler duty per pound of H₂S removed.
- Increased processing capacity of existing equipment or reduced capital cost for new equipment.

[†]Tests conducted with inert gas (containing 1.5 percent H₂S, 52 percent CO₂, and 46.5 percent inerts) using 27 percent DIPA and 50 percent UCARSOL HS 101 solvent.

PROCESS EVALUATION

In order to determine the feasibility of switching to UCARSOL™ HS 101 solvent in a given gas treating application, The Dow Chemical Company (Dow) will evaluate current operations based on data supplied by the operator, using one of its proprietary computer simulation packages. A comparison simulation is then generated with UCARSOL HS 101 solvent as the solvent. The results of the evaluation are provided in a written report that displays and interprets the pertinent operating parameters and indicates, in each particular case, what the benefits are of using UCARSOL HS 101 solvent.

GAS TREATING SERVICES

Dow is a worldwide leader in providing gas treating processors with specialized technology and services. To aid in both plant design and operation, UCARSOL™ solvents are supported by advanced computer capabilities, state-of-the-art laboratory, field test equipment, analytical procedures and an optimization program. The services Dow provides encompass preliminary assessments, start-up services, continual monitoring, and follow-up services. Included in this total support program are the training for people in the field, regular sample testing and performance evaluation. To help ensure complete customer protection and satisfaction, Dow is there every step of the way — before, during and after installation.

COMPUTER CAPABILITIES

With information drawn from actual operating conditions of over 800 plants, Dow has an extensive formulated solvent database used to optimize the simulation programs used in design. This sophisticated computer program provides a powerful tool for process analysis and design, including tray-by-tray calculations. Hydraulic evaluations can be made of existing trayed or packed towers to help ensure that conversion to UCARSOL solvents will be trouble-free.

Field representatives have the latest equipment and programs that make it possible to predict the performance of UCARSOL™ solvents under actual plant conditions. In addition, their use as an in-field preliminary design tool is extremely valuable after conversion to make any adjustments necessary to optimize the process.

LABORATORY AND FIELD TESTING

The Dow Analytical Service Laboratories perform regular service analyses of customer solvents to ensure good performance of the amine unit, as well as specialized analyses to assist in trouble-free operation. Among the routine analyses performed are ion chromatography, atomic absorption and solution alkalinity. Specialized analyses include gas chromatography/mass spectroscopy, FTIR (Fourier Transform Infra Red), ICP (Inductively Coupled Plasma Spectroscopy), NMR (Nuclear Magnetic Resonance Spectroscopy) and x-ray fluorescence.

Analyses are normally completed and reported to the customer within a few days. A written report from Dow usually includes a technical service interpretation of the analytical results and their impact on the customer's operation.

SAMPLE KITS

Dow offers a unique sample kit. Completely self-contained, the kit provides everything necessary — from containers to labels — to obtain lean and rich amine samples and seal and safely ship them for routine analysis.

OTHER SERVICES

Dow's engineering expertise is also available to provide information on process and equipment requirements. Our corrosion group can also assist in field inspections or set up corrosion-monitoring programs for customers. In addition, Dow can train customer personnel prior to and during conversion, following up with them to ensure optimal performance.

PRODUCT STEWARDSHIP

When considering the use of any Dow products in a particular application, you should review the latest Material Safety Data Sheets from Dow and ensure that they are intended for safe use. For Material Safety Data Sheets and other product safety information, contact Dow. Before handling any other products mentioned in the text, you should obtain available product safety information and take necessary steps to ensure safety of use.

No chemical should be used as or in a food, drug, medical device, or cosmetic, or in a product or process in which it may contact a food, drug, medical device, or cosmetic until the user has determined the suitability and legality of the use. Since government regulations and use conditions are subject to change, it is the user's responsibility to determine that this information is appropriate and suitable under current, applicable laws and regulations.

Dow requests that the customer read, understand, and comply with the information contained in this publication and the current Material Safety Data Sheet(s). The customer should furnish the information in this publication to its employees, contractors and customers, or any other users of the product(s), and request that they do the same.

TO LEARN MORE...

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Oil & Gas

For more information, visit www.DowOilandGas.com.

Note: This guide is designed as a general product overview. Please contact your local Dow Oil & Gas representative for up-to-date, detailed technical information including registration and use limitations and to discuss individual applications or requirements.

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