



Research Report

RR-208

Methanol Solubility in Natural Gas

Project 975-7



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Foreword

The Gas Processors Association (GPA) initiated Project 975 to aid in updating key industry resources, specifically the 13th Edition of the GPSA Engineering Data Book. Sub project 7 (Project 975-7) was undertaken specifically to review the content of previously published GPA Research Reports (specifically RRs 149 and 198) as well as other trusted and available published data in the literature on methanol solubility in natural gas and hydrocarbon liquids at conditions pertinent to gas processing industry operations.

Previous projects sponsored by GPA resulted in the production of data describing the vapor-liquid and vapor-liquid-liquid equilibria of systems containing hydrocarbons, water, and methanol. These data are important to the gas processing industry because methanol is commonly used in gas treatment systems for applications such as hydrate inhibition, dehydrations, and sweetening. Knowledge of the phase behavior of methanol with natural gas, liquid hydrocarbons, and water is important to understand such impacts as solvent losses, amount of treated product contamination, and efficacy in hydrate inhibition (i.e. methanol required to maintain specific aqueous concentrations).

The ultimate goal was to summarize the data into forms that would be convenient for use in quick and approximate manual calculations such as figures, descriptive text, and where feasible equations that more accurately represent the data over a wider range of conditions, yet were simple enough for suitable inclusion into the Data Book. This project focused on an update to Section 20 (Dehydration), specifically an update to Figure 20-65 through 20-66 from the 12th Edition and supporting text. Applicability of the data, including expected error and range of use, were included to help the user better understand the limitations of this using this data to various applications. The overall intent was to make the subject data more easily interpreted and applied by user company engineers and operators with guidance to assist users of the Data Book to apply the data and correlations to real design and operating problems.

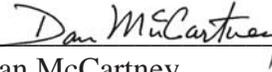
In addition to the Data Book updates described above, this report was prepared and contains:

- a more detailed review of the original source data with tables summarizing all of the data used with reference to the original data source,
- the methods and techniques used to analyze the data,
- the new representation of these data such as equations and figures describing the relationships of the data in specific areas of interest to the gas processing industry, and
- the use and limitation of these new and updated representations such as anticipated error specific to the new equations or plots and their range of applicability.

As noted above, this work is based on the data generated by a number of previous projects sponsored by the GPA. No new data were generated as part of this project.



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