

**Present Status of the Group Contribution Methods UNIFAC and Modified UNIFAC (Dortmund).
Revision and Extension**

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The synthesis, design and optimization of separation processes require a reliable knowledge of the phase equilibrium behavior of the system to be separated. In the case of missing experimental data, group contribution methods such as ASOG, UNIFAC, modified UNIFAC, PSRK, etc. can be successfully applied. Although the UNIFAC method is used world-wide, the method still shows some weaknesses leading to poor results for activity coefficients at infinite dilution, excess enthalpies and asymmetric systems. To overcome the above mentioned weaknesses, the group contribution method modified UNIFAC (Dortmund) has been developed, which has become very popular in the past few decades and consequently has been integrated into most commercial process simulators. Due to an ongoing research work, supported by the members of UNIFAC consortium, the large range of applicability of this approach is being continuously extended and at the same time the reliability of modified UNIFAC (Dortmund) is steadily improved by the revision of the group interaction parameters using an enlarged data base. All required data for fitting the model parameters are taken from the Dortmund Data Bank (DDB), where sophisticated software packages for fitting reliable model parameters are integrated. One of the further development of Modified UNIFAC (Dortmund) was the introduction of several new main groups (e.g. mono- and dialkylated amides, furane, oxime, silane, anhydrides, aromatic groups, carbonates, epoxides, sulfones, acroleine, ionic liquids, cycloalkylamines, bisulfides...). The introduction of the major part of the new groups was decided in cooperation with our consortium members. However, because of the lack of the data for new compounds, a large number of additional measurements of VLE, ρ , hE, SLE and azeotropic data must be performed before in laboratory. In this paper the most recent status of the research work within the UNIFAC consortium is presented together with some typical results.