



ESIMPROP



PROPERTY PREDICTION SOFTWARE

ESDOTCOM

Support and Software Services Pvt. Ltd.

WHAT IS ESIMPROP ?

ESIMPROP is a Property Prediction Package is a productivity enhancement tool developed by ESDOTCOM for use in the fields of Science & Engineering, Research & Development, Plant operation & Maintenance and Education. **ESIMPROP** is developed to address the need to provide reduced time-scale for determination of physical property values - to evaluate the Physical, Chemical and Thermodynamic properties of the materials accurately and in an efficient manner, as well as to provide significant cost benefits, thus catering to the needs of the Refineries, CPI(Continuous Process Industries) Power Plants and other related Industries.

BEFORE ESIMPROP..

The experimental determination of physical properties were time consuming and tedious, being subject to large experimental variations and errors. Designers of the Processes and Equipments used a variety of conventional methods to elucidate properties of Engineering materials. These included

- ❖ different property tables in different units and engineering
- ❖ time consuming calculations from fundamental equations.

Most of the properties were available only in a particular engineering unit. These were very much prone to errors as it involved a greater degree of human participation. Also the range of operating conditions were very narrow.

CURRENT SCENARIO.

The Property Prediction Packages currently available in the market are more specific in calculating particular properties of the materials and offer solutions for a smaller range of operating conditions only. Also there is a dearth of Software that provides characteristics of Petroleum and related hydrocarbons, API conversions that involve complex calculations which is the need of the hour for refineries and other related Industries.

WITH ESIMPROP..

1. Accurate evaluation & prediction of properties in process industries is no more a tedious process since the results of various complex calculations in prediction are obtained with a single click. – **This reduces the evaluation and prediction time**
 2. Optimal Design is possible with less or no wastage in terms of overdesign and less or no pre-mature failures in terms of underdesign. - **This reduces the fabrication and manufacturing cost.**
 3. Selection of raw materials for the given operating conditions can be done easily. - **Delivering Quality products to the market is guaranteed.**
 4. Calculations associated with research projects can be done quickly. - **Students and Research scholars can use this package.**
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WHO NEEDS ESIMPROP?

- ❖ Technical service Engineers, Design Engineers and Quality Analysts of the CPI need this package to determine the properties of their Raw materials, Intermediates and Products.
- ❖ Design Engineers of any Industry need to know the properties of materials for Design and preparation of Bill of materials prior to design of the plant.
- ❖ Simulation Engineers need to identify the thermodynamic and physical property for his/her simulation work.
- ❖ Research Scholars and Students need to know the properties of the substances, they will be using in their Research and experiments.

KEY AREAS FOR USE OF ESIMPROP

- ❖ Petroleum Refineries, Power Industries, Petrochemical Plants, Continuous Process Industries(CPI) and other related Industries.
- ❖ Scientific Research Institution and R&D Centres.
- ❖ Universities and Educational institutions.

FEATURES OF ESIMPROP

- ❖ A generalized and standard product with wide usage, from Industries to Educational Institutions.
- ❖ User-friendly product, provided with a Graphic User Interface(GUI) that runs on Windows environment.
- ❖ Provides Characteristics and properties of Petroleum, other petroleum fractions and Hydrocarbons.
- ❖ Results are available in different units like SI, BPS, etc.,
- ❖ Wide range of properties can be predicted in a single run for a range of operating conditions at regular intervals.
- ❖ Results are available in a single click
- ❖ The predicted properties can be exported to a flat file or to a spread sheet file

MODULES OF ESIMPROP

The Current version of **ESIMPROP** supports the following modules:

1. ENTHALPY OF PETROLEUM FRACTION
2. CHARACTERISE PETROLEUM FRACTION
3. ASTM - TBP - EFV CONVERSION
4. API ATMOSPHERIC DISTILLATION CONVERSIONS
5. API VACUUM DISTILLATION CONVERSIONS
6. EFV PRESSURE CORRECTION

7. SATURATED PROPERTIES
8. AIR-WATER HUMIDITY CALCULATIONS
9. PREDICT EQUILIBRIUM K-VALUE
10. PREDICT VAPOR PRESSURE
11. LIQUID DENSITY TEMPERATURE CORRECTION
12. COMBUSTION ANALYSIS
13. VISCOSITY PREDICTION
14. THERMAL CONDUCTIVITY
15. SURFACE TENSION
16. PURE COMPONENT PROPERTIES
17. SOLUBILITY OF WATER IN HYDROCARBON

FUTURE ENHANCEMENTS

Subsequent versions will be able to predict more properties for wide range of components and will have options to export the predicted properties data to a spread sheet format.



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