**Aspen Plus对不同应用领域，推荐使用的物性计算方法**

**Recommended Property Methods for Different Applications**

|  |  |
| --- | --- |
| 一、Oil and Gas Production 轻烃储存和运输过程 |  |
| **Application (应用)** | **Recommended Property Methods（推荐计算方法）** |
| Reservoir systems | PR-BM, RKS-BM |
| Platform separation | PR-BM, RKS-BM |
| Transportation of oil and gas by pipeline | PR-BM, RKS-BM |
| 二、Refinery 炼油过程 |  |
| **Application** | **Recommended Property Methods** |
| Low pressure applications(up to several atm)  Vacuum tower, atmospheric crude tower | BK10, CHAO-SEA, GRAYSON |
| Medium pressure applications(up to several tens of atm)  Coker main fractionator, FCC main fractionator | CHAO-SEA, GRAYSON,  PENG-ROB, RK-SOAVE |
| Hydrogen-rich applications, Reformer, Hydrofiner | GRAYSON, PENG-ROB, RK-SOAVE |
| Lube oil unit, De-asphalting unit | PENG-ROB, RK-SOAVE |
| 三、Gas Processing 气体加工 |  |
| **Application** | **Recommended Property Methods** |
| Hydrocarbon separations , Demethanizer, C3-splitter | PR-BM, RKS-BM, PENG-ROB, RK-SOAVE |
| Cryogenic gas processing , Air separation | PR-BM, RKS-BM, PENG-ROB, RK-SOAVE |
| Gas dehydration with glycols | PRWS, RKSWS, PRMHV2, RKSMHV2, PSRK, SR-POLAR |
| Acid gas absorption with  Methanol (RECTISOL)  NMP (PURISOL) | PRWS, RKSWS, PRMHV2, RKSMHV2, PSRK, SR-POLAR |
| Acid gas absorption with  Water  Ammonia  Amines  Amines + methanol (AMISOL)  Caustic  Lime  Hot carbonate | ELECNRTL |
| Claus process | PRWS, RKSWS, PRMHV2, RKSMHV2, PSRK, SR-POLAR |
| **四、Petrochemicals 石油化工过程** |  |
| **Application** | **Recommended Property Methods** |
| Ethylene plant  Primary fractionator | CHAO-SEA, GRAYSON |
| Light hydrocarbons  Separation train  Quench tower | PENG-ROB, RK-SOAVE |
| Aromatics  BTX extraction | WILSON, NRTL, UNIQUAC and their ariances |
| Substituted hydrocarbons  VCM plant  Acrylonitrile plan | PENG-ROB, RK-SOAVE |
| Ether production  MTBE, ETBE, TAME | WILSON, NRTL, UNIQUAC and their variances |
| Ethylbenzene and styrene plants | PENG-ROB, RK-SOAVE or  WILSON, NRTL, UNIQUAC and their variances |
| Terephthalic acid | WILSON, NRTL, UNIQUAC and their variances  (with dimerization in acetic acid section) |
| 五、Chemicals 化工过程 |  |
| **Application** | **Recommended Property Methods** |
| Azeotropic separations  Alcohol separation | WILSON, NRTL, UNIQUAC and their variances |
| Carboxylic acids  Acetic acid plant | WILS-HOC, NRTL-HOC, UNIQ-HOC |
| Phenol plant | WILSON, NRTL, UNIQUAC and their variances |
| Liquid phase reactions  Esterification | WILSON, NRTL, UNIQUAC and their variances |
| Ammonia plant | PENG-ROB, RK-SOAVE |
| Fluorochemicals | WILS-HF |
| Inorganic Chemicals  Caustic  Acids  Phosphoric acid  Sulphuric acid  Nitric acid  Hydrochloric acid | ELECNRTL |
| Hydrofluoric acid | ENRTL-HF |
| 六、Coal Processing 煤加工 |  |
| **Application** | **Recommended Property Methods** |
| Size reduction crushing, grinding | SOLIDS |
| Separation and cleaning sieving,  cyclones, precipitation, washing | SOLIDS |
| Combustion | PR-BM, RKS-BM (combustion databank) |
| Acid gas absorption with  Methanol (RECTISOL)  NMP (PURISOL) | PRWS, RKSWS, PRMHV2, RKSMHV2, PSRK, SR-POLAR |
| Acid gas absorption with  Water  Ammonia  Amines  Amines + methanol (AMISOL)  Caustic  Lime  Hot carbonate | ELECNRTL |
| 七、Power Generation 发电过程 |  |
| **Application** | **Recommended Property Methods** |
| Combustion  Coal  Oil | PR-BM, RKS-BM (combustion databank) |
| Steam cycles  Compressors  Turbines | STEAMNBS, STEAM-TA |
| 八、Synthetic Fuel 合成燃料 |  |
| **Application** | **Recommended Property Methods** |
| Synthesis gas | PR-BM, RKS-BM |
| Coal gasification | PR-BM, RKS-BM |
| Coal liquefaction | PR-BM, RKS-BM, BWR-LS |
| 九、Environmental 环境 |  |
| **Application** | **Recommended Property Methods** |
| Solvent recovery | WILSON, NRTL, UNIQUAC and their variances |
| (Substituted) hydrocarbon stripping | WILSON, NRTL, UNIQUAC and their variances |
| Acid gas stripping from  Methanol (RECTISOL)  NMP (PURISOL) | PRWS, RKSWS, PRMHV2, RKSMHV2, PSRK, SR-POLAR |
| Acid gas stripping from:  Water  Ammonia  Amines  Amines + methanol (AMISOL)  Caustic  Lime  Hot carbonate | ELECNRTL |
| Acids  Stripping  Neutralization | ELECNRTL |
| 十、Water and Steam 水和蒸汽 |  |
| **Application** | **Recommended Property Methods** |
| Steam systems  Coolant | STEAMNBS, STEAM.TA |
| 十一、Mineral and Metallurgical Processes 采矿和冶金 |  |
| **Application** | **Recommended Property Methods** |
| Mechanical processing:  Crushing  Grinding  Sieving  Washing | SOLIDS |
| Hydrometallurgy  Mineral leaching | ELECNRTL |
| Pyrometallurgy  Smelter  Converter | SOLIDS |

**选择物性计算方法图示导引：**

Dimers

WILS-NTH; WILS-HOC; NRTL-NTH; NRTL-HOC; UNIQ-NTH; UNIQ-HOC; UNIF-HOC

**DP?**

Y

Vapor phase association

NRTL； UNIQUAC；and their variances

Hexamers

ELECNRTL

Medium pressure

BK10; CHAO-SEA; GRAYSON

**P?**

PENG-ROB; RK-SOAVE; PR-BM; LK-PLOCK; RKS-BM

Pseudocomponents & Real

REAL

Nonpolar

PSRK; RKSMHV2

Ij?

Single Liquid

Liquid--Liquid

Single Liquid

Liquid--Liquid

Electrolyte

P＞10bar

Non-electrolyte

P＜10bar

Ij?

Polar

体系

UNIFAC； UNIFAC-LBY； UNIFAC-DMD

**LL?**

**LL?**

UNIFAC=LL

**Vap?**

WILS-HF

**Polar?**

#### E?

##### **R?**

P?

Vapor phase

Is not association

Interaction parameters is not available

Low pressure

PENG-ROB; RK-SOAVE;

GRAYSON CHAO-SEA

SR-POLAR; PRWS; RKSWS; PRMHV2; RKSMHV2

Interaction parameters available

Interaction parameters

Is not available

Interaction parameters available

WILSON; NRTL; UNIQUAC and their variances