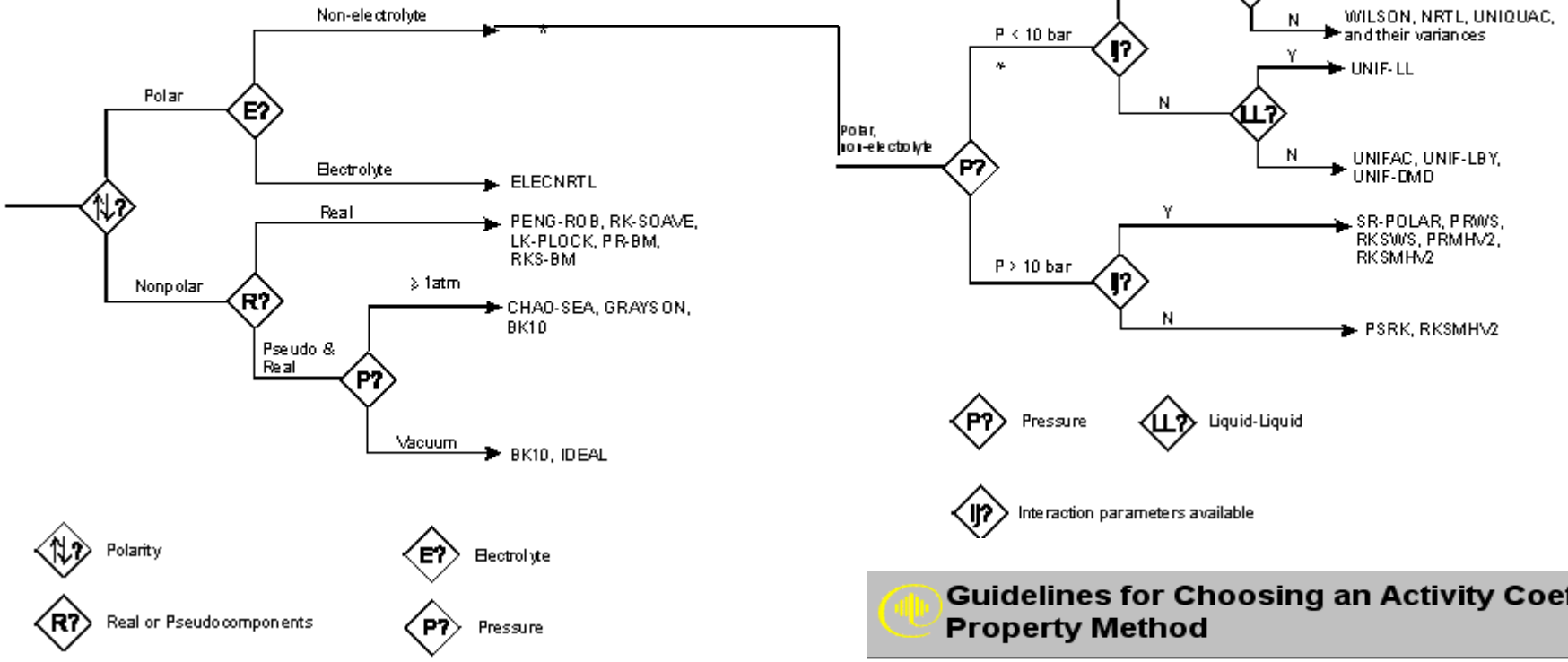
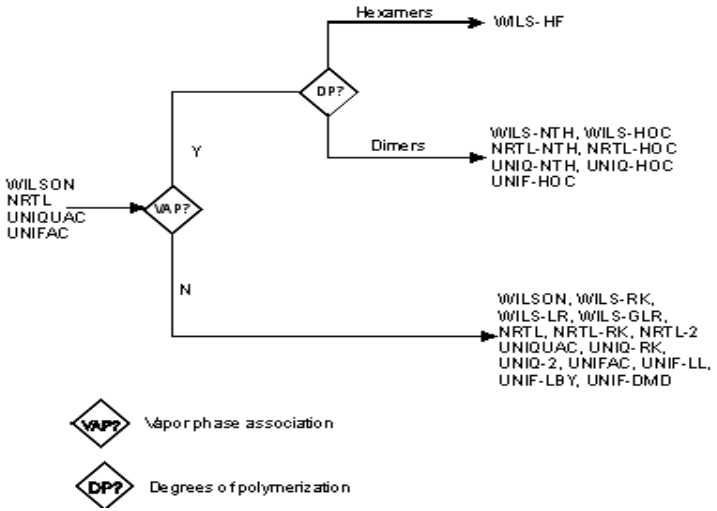
Guidelines for Choosing a Property Method

The following diagrams show the process for choosing a property method.



Guidelines for Choosing an Activity Coefficient Property Method



Oil and Gas Production

Application	Recommended Property Methods
Reservoir systems	PR-BM, RKS-BM
Platform separation	PR-BM, RKS-BM
Transportation of oil and gas by pipeline	PR-BM, RKS-BM

Refinery

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

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Gas Processing

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

Petrochemicals

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 variances
Substituted hydrocarbons VCM plant Acrylonitrile plant	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)

Chemicals

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

Coal Processing

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

Power Generation

Application	Recommended Property Methods
Combustion Coal Oil	PR-BM, RKS-BM (combustion databank)
Steam cycles Compressors Turbines	STEAMNBS, STEAM-TA

Environmental

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

Water and Steam

Application	Recommended Property Methods
Steam systems Coolant	STEAMNBS, STEAM–TA

Mineral and Metallurgical Processes

Application	Recommended Property Methods
Mechanical processing: Crushing Grinding Sieving Washing	SOLIDS
Hydrometallurgy Mineral leaching	ELECNRTL
Pyrometallurgy Smelter Converter	SOLIDS