ShiraSol™

What is ShiraSol?

ShiraSol is a VOC-compliant, safe, low toxicity solvent replacement for slow evaporating solvents such as Methyl Amyl Ketone (MAK), Aromatic 100, Aromatic 150 and mineral spirits.

ShiraSol:

- is formulated to be benzene-free
- does not contain
  - hazardous air pollutants (HAPs)
  - environmentally hazardous ingredients
  - ozone depleting or creating chemicals
- is VOC-compliant throughout North America
- is REACH-compliant in European Union

Advantages

- may be used as a primary or co-solvent in Aromatic, Aliphatic and Ketone applications and systems.
- designed to replace MAK, Aromatic 100, 150 and Mineral Spirits as a primary or co-solvent in a wide variety of applications.
- has similar evaporation rate to MAK, Aromatic 100, 150 and Mineral Spirits
- has higher flash point than Mineral Spirits, Aromatic 100, and Methyl Amyl Ketone
- dries completely and leaves no surface residue
- offers superior solvency and solubility in many resin and polymer systems

Uses

ShiraSol is designed for a variety of uses and purposes.

- **ShiraSol can be used in:**
  - as a diluent in paints, coatings, inks and adhesives
  - in conjunction with cutting oils and as a threat cutting and reaming lubricant
  - ink thinners used in making monoprints
  - dissolution of a variety of polymers and resins
- **ShiraSol can also be used as a primary or co-solvent in:**
  - aerosols, stains, wood preservatives, lacquers, varnishes, concrete and asphalt products
  - release agents
  - automobile cleaning products
  - cleaners/degreasers
  - liquid-filled compasses and gauges
  - as an alternative to kerosene
  - cleaning and unclogging screens after printing with oil-based textile and plastisol inks

ShiraSol™

Physical/Chemical characteristics

Upper Explosive Limit (UEL %)	11.94
Lower Explosive Limit (LEL %)	1.28
Auto Ignition Temp (°C)	452.5 (846.5 °F)
Flashpoint	43.5 (110 °F)
Molecular Weight (g/mol)	180.97
Initial Boiling Point (°C)	147.5 (297.5 °F)
Melting Point (°C)	-44.1 (-47.4 °F)
Density (g/ml @ 25 °C)	1.20 (10.01 lb/gal)
Viscosity (cP @ 25 °C)	1.18
Surface Tension (dynes/cm)	24.53
Specific Gravity	1.20
Solubility in H_2O (g/ml @ 25 °C)	0.026
Evaporation Rate (n-Butyl Acetate=1)	0.1
Vapour Pressure (mm Hg @ 20°C)	3.46
Vapour Density (mm Hg Air=1)	4.53
Kauri Butanol (kb) Value	54.47
Maximum Incremental Reactivity (MIR)	0.097
Purity (Wt % Min)	99.0%
Water Content (ppm)	<500
Colour (alpha, max)	10 (Clear)
Volatility (%)	100
Heat of Combustion (Btu/lb) (Kcal/kg) (Kj/Mol)	8046.8 4473.2 3387.0
Heat of Vaporization (Btu/lb) (cal/g) (Kj/Mol)	97.8 54.3 41.1
VOC (g/L) (ASTM 313-91)	2.9***
Global Warming Potential (100 year GWP)	5.4
Hansen solubility parameters, total $(MPa)^{1/2}$ δD (Dispersion) δP (Polar) δH (Hydrogen bonding)	17.2 13.9 8.3 3.4

*SCAQMD - South Coast Air Quality Management District CARB - California Resources Board
**2014 NPRI reporting guide, the reporting requirements for the Part 4 Total VOCs:
http://www.ec.gc.ca/inrp-npri/default.asp?lan=En&n=1FAA2366-1
Should a facility have 20,000 emplouee hours or more, all sources of CACs that are released to the air (including VOCs) will need to be considered.
Part 4 Total VOC requires all releases, regardless of concentration, need to be calculated and summed. The total is then compared to the 10-tonne reporting threshold. Should the threshold be met or exceeded, the facility will need to submit a Part 4 Total VOC report whereby the report contains the total VOC release value for the facility.

ShiraSol is considered comprised of 100% exempt materials as per CEPA and NPRI. In the European Union (EU), all components of ZemaSol are registered under REACH.

***ShiraSol is a patented, proprietary blend of VOC-exempt materials and is therefore considered Zero VOC by the EPA.
***ShiraSol is considered Ultra-Low VOC in SCAQMD.