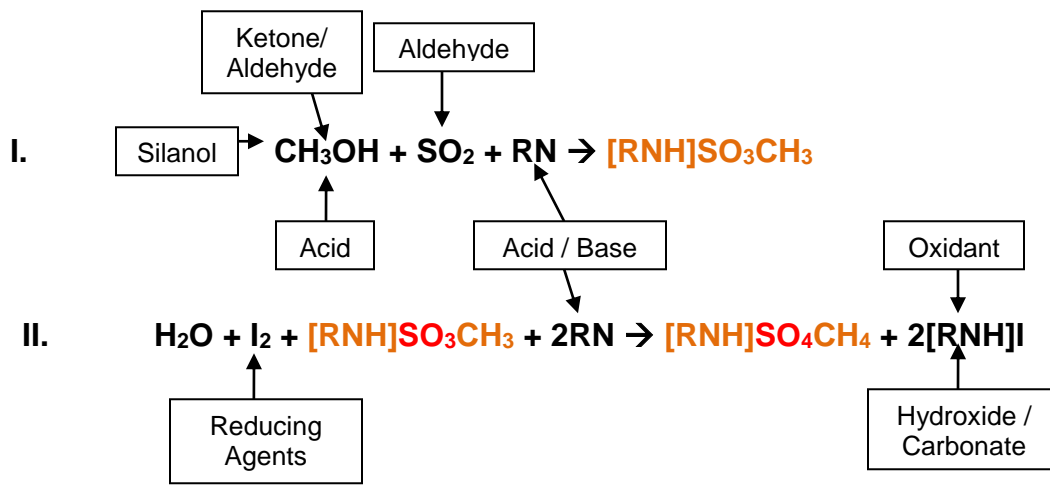


# KARL FISCHER QUICK REFERENCE

## KF Reaction and Side Reaction Locations



## KF Side Reaction Solutions

Side Reaction	Volumetric Solution	Coulometric Solution
Aldehydes/Ketones	Methanol-free reagents	
Acid	Buffer w/ imidazole and/or use methanol free reagents – or – Use Buffer Acid (contains MeOH)	Buffer w/ imidazole and/or use methanol free reagents
Base	Buffer w/salicylic or benzoic acid	Buffer w/benzoic acid
Silanol	Methanol-free reagents	
Oxidizing Agents	Lower temperature (peroxide) – or – Pretreat w/ excess SO <sub>2</sub> (chlorine, bromine)	
Reducing Agents	Phenols – add salicylic acid until pH<5 Salts – oven method Ascorbic acid/Hydrazines	
Oxides, Hydroxides, Carbonates	Oven	

# KARL FISCHER QUICK REFERENCE

## HYDRANAL Reagent Selection

Reagents for KFV – one-component	
Composite 5	Most widely used titrant – 5 mg water / mL
Composite 2	2 mg water / mL
Composite 1	Micro determinations – 0.7-1 mg water/mL
CompoSolver E	MeOH free working medium
Methanol dry	Most commonly used working medium
Methanol Rapid	For accelerated one-component titrations
LipoSolver CM	Working medium for fatty, oily samples (contains chloroform)
LipoSolver HM	Working medium for fatty, oily samples (free of halogenated hydrocarbons)

Acids – Buffer and/or use methanol-free reagents	
Volumetric	Coulometric
<ul style="list-style-type: none"> <li>Hydranal Buffer Acid – contains methanol!</li> <li>Imidazole – 5-7g per 30mL of solvent</li> </ul>	<ul style="list-style-type: none"> <li>Imidazole – 20g per 30mL of solvent</li> </ul>

Bases – Buffer	
Volumetric	Coulometric
<ul style="list-style-type: none"> <li>Hydranal Buffer Base – salicylic acid based buffer</li> <li>Hydranal Benzoic Acid – contains &lt;0.2% water</li> <li>Use 5-7g per 30mL solvent</li> </ul>	<ul style="list-style-type: none"> <li>Hydranal Benzoic Acid – 20g per 100mL solvent</li> <li>No salicylic acid (oxidizes at cathode)</li> <li>No acetic acid (water is produced)</li> </ul>

Silanol – Use methanol-free reagents	
Volumetric	Coulometric
<ul style="list-style-type: none"> <li>See Aldehydes / Ketones</li> </ul>	<ul style="list-style-type: none"> <li>See Aldehydes/Ketones</li> </ul>

Oxidizing and Reducing Agents	
Volumetric	Coulometric
<ul style="list-style-type: none"> <li>Look at pretreating or using Oven</li> <li>No special reagent selection</li> </ul>	<ul style="list-style-type: none"> <li>Look at Pretreating or using Oven</li> <li>No special reagent selection</li> </ul>