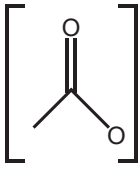
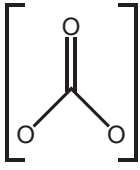



SOLUTIONS: MINING

PIPE AND VALVE RECOMMENDATIONS FOR TYPICAL MINING CHEMICALS

| Chemical Name | Chemical Formula | Common Uses | Typical Concentrations/ Conditions | Pipe Recommendation | Chem Proline [®] Valve Body/Seal Material |
|-------------------------------------|---|---|---------------------------------------|---------------------------|---|
| Acetates (Esters) |  | - Solvent Extraction - Solvent Processing | - | - | Dymatrix [™] PFA/PTFE microvalves up to 1" |
| Ammonia | NH ₃ | - Chemical Processing | Up to 13% | Chem Proline [®] | PVC/EPDM |
| Ammonia Carbonate | (NH ₄) ₂ CO ₃ | - Chemical Processing | Up to 13% | Chem Proline [®] | PVC/EPDM |
| Calcium Hydroxide | Ca(OH) ₂ | - Chemical Processing - Lithium Processing | Up to 10% | Chem Proline [®] | PVC/EPDM |
| Carbonates |  | - Solvent Extraction - Solvent Processing | - | - | Dymatrix [™] PFA/PTFE microvalves up to 1" |
| Copper Sulfate / Inorganic Salts | CuSO ₄ | - Electrowinning | Up to 1% | Chem Proline [®] | PVC/EPDM |
| Ethers |  | - Solvent Extraction - Solvent Processing | - | - | Dymatrix [™] PFA/PTFE microvalves up to 1" |

Please Note: These are general recommendations. Please consult Asahi/America's Engineering Department.



| Chemical Name | Chemical Formula | Common Uses | Typical Concentrations/ Conditions | Pipe Recommendation | Chem Proline [®] Valve Body/Seal Material |
|-------------------|---|--|---------------------------------------|-----------------------------------|---|
| Hydrochloric Acid | HCl | <ul style="list-style-type: none"> - Heap Leaching - Chemical Processing - Electrowinning | Up to 37% | Chem Proline [®] (10yr) | PVC/FKM |
| | | | | PVDF (25yr) | |
| | | | > 37% | Halar [®] E-CTFE (25yr) | |
| Isopropyl Alcohol | (CH ₃) ₂ CHOH | - Solvent Extraction | - | Chem Proline [®] | PVC/FKM |
| Kerosene | Hydrocarbon Mixture (12-15 Carbon units) | - Solvent Extraction | Only for temperatures <100° F | PVDF or Halar [®] E-CTFE | Dymatrix [™] PFA/PTFE microvalves up to 1" |
| Sodium Carbonate | Na ₂ CO ₃ | <ul style="list-style-type: none"> - Chemical Processing - Lithium Processing | Up to 30% | Chem Proline [®] | PVC/EPDM |
| Sodium Cyanide | NaCN | <ul style="list-style-type: none"> - Heap Leaching - Chemical Processing | Up to 1% | Chem Proline [®] | PVC/FKM |
| Sodium Hydroxide | NaOH | - Chemical Processing | Up to 10% | Chem Proline [®] | PVC/EPDM |
| Sulfuric Acid | H ₂ SO ₄ | <ul style="list-style-type: none"> - Heap Leaching - Chemical Processing | Up to 85% | Chem Proline [®] | PVC/FKM |
| | | | 86% - 93% | PVDF | PVDF/PTFE |
| | | | 94% - 98.3% | Halar [®] E-CTFE | Halar [®] E-CTFE |
| Thiosulfates | S ₂ O ₃ ⁻² | <ul style="list-style-type: none"> - Heap Leaching - Chemical Processing | Up to 1% | Chem Proline [®] | PVC/FKM |

Please Note: These are general recommendations. Please consult Asahi/America's Engineering Department.