Polyclar® wine stabilizers from ISP are based on proven Polyvinylpolypyrrolidone (PVPP) technology. This provides effective and highly selective reduction of polyphenols causing oxidative discoloration, haze, or loss of fresh aroma and flavor characteristics. More specifically:

- Prevention of ‘pinking’ and ‘browning’ reactions in white and sparkling wines
- Improved wine clarity in bottle
- Enhanced aroma and flavor in red wines - preserving more of the highly desirable fresh, fruity character
- Reduction in excessive astringency or color when needed

Methods of Use

Polyclar wine stabilizers are made up as 5 - 10% slurry in water or wine and allowed to mix for 1 hour before use. This permits the stabilizer to fully hydrate and maximizes its effectiveness. A minimum contact time of 5 -10 minutes with the wine is all that is required. After use, the insoluble stabilizers are completely removed from the wine by racking and/or filtration.

Polyclar stabilizers can be added at a number of convenient places in the wine making process shown in the diagram below:
**Polyclar® V**

**Description**

Polyclar® V is a highly effective 100% Polyvinylpolypyrrolidone (PVPP) wine stabilizer with an average particle size around 25 µm. It is optimized for maximum, fast-acting reduction of problematic polyphenols, such as the leucoanthocyanadins and catechins, that may cause ‘pinking’ and ‘browning’ through oxidative polymerization.

**Specific Benefits**

Polyclar V is the preferred option for use in wine due to its high surface area, which permits maximum efficacy. It is usually added to wine after initial clarification, during or after tartaric stabilization, or before pre-bottling filtration. If added during the filtration process, a minimum contact time of 5 minutes is recommended. A diatomaceous earth filter should also be used.

**Polyclar® VT**

**Description**

Polyclar® VT is a grade of 100% PVPP with an average particle size of around 140 µm designed for addition to vessels, where faster settling is required.

**Specific Benefits**

Polyclar VT is a coarser grade of PVPP, optimized for addition to wine in tanks. The larger particle size facilitates settling of the stabilizer, allowing the majority of the product to be left behind with the lees at racking. A typical contact time of between 3 to 10 days is required, although there are no adverse effects from leaving Polyclar in contact with the wine for longer periods. Filtration is still needed to produce a bright wine, but the amount of solids present should be much lower.

<table>
<thead>
<tr>
<th>Wine Type</th>
<th>Polyclar V Preventative Treatment (g/hl)</th>
<th>Polyclar V Remedial Treatment (g/hl)</th>
<th>Polyclar VT Preventative Treatment (g/hl)</th>
<th>Polyclar VT Remedial Treatment (g/hl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>10 - 30</td>
<td>10 - 60</td>
<td>15 - 40</td>
<td>15 - 70</td>
</tr>
<tr>
<td>Red</td>
<td>3 - 10</td>
<td>5 – 20</td>
<td>3 - 15</td>
<td>5 – 20</td>
</tr>
<tr>
<td>Rosé</td>
<td>10 - 30</td>
<td>10 - 60</td>
<td>15 - 40</td>
<td>15 - 70</td>
</tr>
<tr>
<td>Sparkling</td>
<td>5 - 30</td>
<td>10 - 60</td>
<td>10 - 40</td>
<td>15 - 70</td>
</tr>
<tr>
<td>Fortified</td>
<td>10 - 30</td>
<td>10 - 60</td>
<td>15 – 40</td>
<td>15 - 70</td>
</tr>
</tbody>
</table>

A significant improvement in clarity was seen following the addition of 5 - 20 g/hl of Polyclar V to Chardonnay.

Polyclar PVPP preferentially forms very strong bonds with the more problematic polyphenols, that can cause visual and flavor problems in wine. It is insoluble in water, alcohol, acid and alkali and removed from the wine, to allow an additives-free ‘clean label’.
**Polyclar® Ultra K-100**

*Description*

Polyclar® Ultra K-100 is a combined wine stabilizer and clarifier made from an optimized blend of Polyclar PVPP, insoluble casein and silica minerals. It is specifically designed to be easy to use, as a cost-effective preventative treatment for red and other wines:

- Easy to disperse—can be added directly as powder to the must
- Can be used in all wines
- Helps prevent oxidative color defects such as ‘pinking’ and ‘browning’
- Brightens the wine
- Enhances the aroma and taste character of the wine by protecting against oxidative damage from staling polyphenols
- Highly cost effective

*Other Benefits of Polyclar*

- Some polyphenols delay yeast growth by blocking cell membranes and inhibiting mitosis
- Polyclar reduces these negative effects and may improve fermentation rates
- Polyclar can be added to the must with the yeast nutrients
- The cost is approximately half that of the wine yeast

*Addition Rates*

Typical addition rates for the product are given in the table below:

<table>
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<tr>
<th>Wine Type</th>
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<td>10 - 40</td>
</tr>
<tr>
<td>Fortified</td>
<td>10 - 30</td>
<td>10 - 60</td>
</tr>
</tbody>
</table>

**Red Wines**

Popular red wines such as Merlot and Cabernet-sauvignon treated preventative at up to 20 g/hl, showed significantly reduced development of oxidized aroma characteristics, during forced aging at 50°C, better keeping their fresh and fruity character.

**White Wines**

European Chardonnay treated preventative with Polyclar Ultra K-100 showed better clarity, and when forced aged, showed less ‘browning’ than the unstabilized wine.

Similarly, American Zinfandel also showed improved clarity during simulated aging. This helps to preserve the visual appeal of wines.
Manufacture, Quality & Support

Quality
Polyclar products are manufactured to Internationally recognized quality standards. Details are available upon request.

Regulatory
PVPP is permitted for use in beverages in all countries with regulations covering the use of additives and process aids. Always seek guidance from your local regulatory authorities.

Safety
Material Safety Data Sheets are available upon request.

Technical Support
Technical support for ISP’s Beverage Product portfolio is provided by a team of dedicated industry specialists, from locations in Europe, USA and Asia. For further information on the use of our products, please contact your local ISP representative or authorized distributor.

ISP also supplies products and services to the wine, beverage and wider food industries. We are constantly introducing innovative new products to better serve our increasing number of customers in these industries.

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