Viniflora® Oenos
Product Information
Version: 1 PI GLOB EN 04-04-2016

Description
Viniflora® Oenos is a freeze-dried pure culture of *Oenococcus oeni*. It is a heterofermentative malolactic bacteria which has been selected to ensure a fast and safe malolactic fermentation when inoculated directly into wine. It has an excellent allround tolerance towards pH, alcohol, temperature and SO₂.

The culture can be used both in red and white wines.

Culture composition:
*Oenococcus oeni*.

<table>
<thead>
<tr>
<th>Material No:</th>
<th>688719</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>5X25000 L</td>
</tr>
<tr>
<td>Type</td>
<td>Pouch(es) in box</td>
</tr>
</tbody>
</table>

Storage
-18 °C / < 0 °F

Shelf life
When stored according to recommendation the product has a shelf life of 37 months.

At +5°C (41°F) the shelf life is at least 6 months.

Application
This culture has been selected for its overall outstanding performance and capability to perform a fast and safe malolactic fermentation in most red and white wines. Among the features are:

- Direct inoculation into wine
- High numbers of active cells which ensure a quick start of fermentation
- High level of microbiological purity
- Low production of volatile acidity
- Excellent all round tolerance towards pH, alcohol, temperature and SO₂
- Does not produce biogenic amines*

* During malolactic fermentation indigenous bacteria produce biogenic amines from amino acids. Viniflora® strains have been selected by Chr. Hansen using state-of-the-art techniques in screening, analyses or production to deliver malolactic cultures unable to produce the following biogenic amines: histamine, tyramine, putrescine, phenylethylamine, isoamylamine, cadaverine.

For further information about biogenic amines in wines and how Viniflora® products can help to reduce this food safety concern, please visit the following site: www.chr-hansen.com/wine.
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Directions for use
Viniflora® freeze-dried cultures are adapted for direct inoculation into wine. No rehydration or reactivation is required.

1. Remove the pouch from the freezer 15 min. before use and place at room temperature. Make sure that the dosage complies with the amount of wine to be inoculated.

2. Open the pouch and add the granulated culture directly to wine. The culture can be dissolved in a smaller volume first and added to the total volume right after, if required. Make sure that the culture is completely dissolved in the wine.

Technical Data
Performance
Viniflora® Oenos degraded the malic acid before 14 days of fermentation, compared to the spontaneous tank, where only a small amount of malic acid was degraded after 30 days.

Shiraz Sonoma valley winery
Ethanol 13.6 vol%, pH 3.3, SO₂ 18 ppm

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Physiological data

<table>
<thead>
<tr>
<th>Inoculation temperature range</th>
<th>17-25°C (62-77°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH minimum</td>
<td>3.2</td>
</tr>
<tr>
<td>Total SO₂ max. at inoculation*</td>
<td>40 ppm</td>
</tr>
<tr>
<td>Alcohol maximum</td>
<td>14 % vol</td>
</tr>
</tbody>
</table>

* note that these inhibitory factors are antagonistic towards each other.
The individual tolerances are valid only if other conditions are favourable.
Check level of SO₂ produced by the yeast used for primary fermentation and be aware of level of free SO₂.

Legislation
Chr. Hansen's cultures comply with the general requirements on food safety laid down in Regulation 178/2002/EC. Malolactic bacteria are generally recognized as safe and can be used in food, however, for specific applications we recommend to consult national legislation.

Food Safety
No guarantee of food safety is implied or inferred should this product be used in applications other than those stated above. Should you wish to use this product in another application, please contact your Chr. Hansen representative for assistance.

Labeling
No labeling required, however please consult local legislation if in doubt.

Trademarks
Product names, names of concepts, logos, brands and other trademarks referred to in this document, whether or not appearing in large print, bold or with the ® or TM symbol are the property of Chr. Hansen A/S or used under license. Trademarks appearing in this document may not be registered in your country, even if they are marked with an ®.

Additional Information
Check the latest news on www.chr-hansen.com/wine
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Technical support
Chr. Hansen's Application and Product Development Laboratories and personnel are available if you need further information.

GMO Information
In accordance with the legislation in the European Union* Viniflora® Oenos does not contain GMOs and does not contain GM labeled raw materials**. In accordance with European legislation on labeling of final food products** we can inform that the use of Viniflora® Oenos does not trigger a GM labeling of the final food product. Chr. Hansen's position on GMO can be found on: www.chr-hansen.com/About us/Policies and positions/Quality and product safety.


Allergen Information
List of common allergens in accordance with the US Food Allergen Labeling and Consumer Protection Act of 2004 (FALCPA) and EU Regulation 1169/2011/EC with later amendments

<table>
<thead>
<tr>
<th>Cereals containing gluten* and products thereof</th>
<th>Present as an ingredient in the product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crustaceans and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Eggs and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Fish and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Peanuts and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Soybeans and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Milk and products thereof (including lactose)</td>
<td>No</td>
</tr>
<tr>
<td>Nuts* and products thereof</td>
<td>No</td>
</tr>
</tbody>
</table>

List of allergens in accordance with EU Regulation 1169/2011/EC only

| Celery and products thereof                  | No                                    |
| Mustard and products thereof                 | No                                    |
| Sesame seeds and products thereof            | No                                    |
| Lupine and products thereof                  | No                                    |
| Mollusks and products thereof                | No                                    |
| Sulphur dioxide and sulphites at concentrations of more than 10 mg/kg or 10 mg/litre expressed as SO₂ | No |

* Please consult the EU Regulation 1169/2011 Annex II for a legal definition of common allergens, see European Union law at: www.eur-lex.europa.eu