

## Deacidification

### SIHADEX™

SIHADEX special lime for deacidification is a special lime that has been specifically developed for double salt deacidification in grape must and wine. Due to the special characteristics of the product and the proven process (partial quantity deacidification) it is possible to precipitate tartaric acid and malic acid in equal parts as double salt, which is particularly significant during years in which the tartaric acid content is low.

The specific advantages of SIHADEX special lime for deacidification:

- Precipitation of tartaric acid and malic acid at a ratio of 1:1 in partial quantities
- Fast precipitation of the double salt

### Application

The double salt deacidification process was developed by Kielhöfer and Würdig. It is mainly used for vintages in which the proportion of tartaric acid is extremely low while the total acid content is very high. This is often the case with unripe and frost-damaged grapes.

During double salt deacidification a calculated quantity of the must or wine is fully deacidified, i.e. tartaric acid and malic acid are precipitated. The deacidified quantity is then returned to the main quantity. This ensures that the wine has a sufficient ratio of tartaric acid after blending. It is important to aim for this for taste reasons. Total removal of tartaric acid from the beverage would lead to an unpleasant salty, papery taste and at the same time increase the pH value to such an extent that microbiological problems might occur.

### Determining double salt deacidification

#### 1. The following information is required:

- Precise total quantity of the must or wine to be deacidified
- Precise total acid content in lb/gal (g/l) of the must or wine
- Precise tartaric acid quantity in lb/gal (g/l) of the must or wine
- Required acid quantity in lb/gal (g/l) of the must or wine

#### 2. What is the maximum possible reduction in total acidity?

The maximum reduction in total acidity depends on the tartaric acid content of the must or wine. The higher the content, the more deacidification is possible. The maximum possible acidity reduction can be calculated based on the following formula:

$$= \frac{\text{Total acid content (g/l)} \times (\text{tartaric acid (g/l)} - 0.5)}{\text{Total acid content (g/l)} - \text{tartaric acid (g/l)}}$$

#### 3. Calculation of the SIHADEX special lime for deacidification quantity

SIHADEX special lime for deacidification quantity (g):

$$= \frac{\text{Total acid content (g/l)} - \text{required acid content (g/l)}}{\text{total quantity (l)} \times 0.67}$$

#### 4. Calculation of the quantity to be deacidified

Quantity (l) for must:

$$= \frac{\text{Total quantity (l)} \times (\text{total acid content (g/l)} - \text{required acid})}{\text{Total acid content (g/l)} - 2}$$

Quantity (l) for wine:

$$= \frac{\text{Total quantity (l)} \times (\text{total acid content (g/l)} - \text{required acid})}{\text{Total acid content (g/l)} - 3}$$

#### 5. Example calculation

Total quantity:	1,300 l
Total acid content of the must/wine:	15.2 g/l
Tartaric acid content of the must/wine:	5.2 g/l
Required acid content:	8.3 g/l

Calculation of the maximum acidity reduction:

$$\frac{[15.2 \times (5.2 - 0.5)]}{(15.2 - 5.2)} = 7.1 \text{ g/l maximum acidity reduction}$$

Calculation of the SIHADEX special lime for deacidification quantity:

$$(15.2 - 8.3) \times 1,300 \times 0.67 = 6,009.9 \text{ g SIHADEX} \\ = 6.0 \text{ kg SIHADEX}$$

Calculation of the quantity for must:

$$\frac{1,300 \times (15.2 - 8.3)}{15.2 - 2} = 679.5 \text{ l must} \approx 679 \text{ l}$$

Calculation of the quantity for wine

$$\frac{1,300 \times (15.2 - 8.3)}{15.2 - 3} = 735.24 \text{ l wine} \approx 735 \text{ l}$$

## 6. Procedure

Once all required quantities have been calculated, the calculated SIHADEX special lime for deacidification quantity is prepared in a vat that is at least 10% larger than the quantity of must/wine to be deacidified. The vat must be equipped with a stirrer, so that the contents can be mixed thoroughly with SIHADEX special lime for deacidification immediately after addition of the first gallon (liter) of the partial quantity.

Alternatively, the SIHADEX special lime for deacidification quantity may be suspended in a small quantity of the must/wine to be deacidified, in order to facilitate addition and initial stirring. It is best to pour the liquid into the vortex of the stirrer. The must/wine must not be added too quickly and the addition must be stopped immediately once the required quantity is reached, otherwise the required deacidification effect cannot be guaranteed. Once the quantity of must or wine has been added to SIHADEX special lime for deacidification (never the other way round!), continue stirring until foaming ceases.

The double salt that forms can be separated only approx. 20 – 30 minutes after completion of the addition of must/wine, since the crystals form quite spontaneously. The double salt crystals must be separated from the partial quantity because addition of the remaining quantity could redissolve the double salt, so that the effect of the malic acid precipitation could no longer be guaranteed.

The crystals can be separated using the following systems:

1. For small batches, sedimentation of the crystals and racking of the clear liquid
2. Separation via a yeast press filter
3. Separation via a centrifuge
4. Separation via diatomaceous earth frame filters with support sheets (no pre-coating with diatomaceous earth required) or vessel filters (pre-coating with diatomaceous earth is essential)
5. With this type of filtration, addition of diatomaceous earth is not always required. However, if racking haze is to be removed at the same time, it may be beneficial to add approx. 8.35 – 16.69 lb/1,000 gal (100 – 200 g/hl) of diatomaceous earth during the filtration process.
6. For separation of large quantities of double salt, the use of a rotary vacuum filter has proved very successful. In this case, pre-coating with diatomaceous earth or perlite is also required.

After double salt deacidification the product should be stored for six weeks before bottling as, just like in normal deacidification, crystal precipitation may occur during this time.

## Product Characteristics

SIHADEX special lime for deacidification is a specially selected lime that is particularly suitable for double salt deacidification.

Fast increase of the pH value in the must or wine quantity to be deacidified facilitates optimum precipitation of the tartaric and malic acid at a ratio of 1:1. This process enables optimum harmonization of wines with a high malic acid and low tartaric acid content.

## Safety

When used and handled correctly, there are no known unfavorable effects associated with this product. No safety specifications are required for SIHADEX special lime for deacidification. Storage, handling and transport do not present any environmental and health risks.

Further safety information can be found in the relevant Material Safety Data Sheet, which can be downloaded from our website.

## Storage

SIHADEX special lime for deacidification should be stored in its original packaging in a dry and odor-free place. Never store the product near evaporating chemicals, oils or fuels etc.

## Delivery Information

SIHADEX special lime for deacidification is sold under article no. 63.390 and is available in the following package sizes:

11.02 lb (5 kg)	PE bags
4 x 11.02 lb (5 kg)	in cartons
55.1 lb (25 kg)	paper bags

HS Customs Tariff: 2836 50 00

## Certified Quality

SIHADEX special lime for deacidification is inspected regularly during the production process to ensure consistently high product quality. These inspections include technical functional criteria as well as safety in accordance with the relevant laws governing the production of foods. Strict controls also take place immediately before and during final packaging.



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