Technical Information

SIHA

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Wine-deacidification

Which method and at what stage?

Our climate varies from year to year. Every year has a different acidity, which can sometimes produce rather disharmonious wines. In such cases adjustment of the acid content is strongly recommended. The wine producer who handles this process wisely and carefully will be rewarded with harmonious, mild and balanced wines.

This information describes the traditional methods of deacidification and their basic rules.

In practice, a multitude of factors that influence the method and stage of deacidification have to be taken into consideration:

- total acid content
- tartaric acid content
- required deacidification degree
- required tartaric acid content
- location of the company (local regulations!)
- character and flavour of the wine
- vine sort
- time specified for bottling the wine

Experience repeatedly shows that the important tartaric acid content of the total acid amount fluctuates considerably from year to year and from area to area. Therefore BEGEROW generally recommends that the experts in local laboratories or advisory services for the wine-growing trade be consulted before defining the method, time and extent of deacidification. For specific and successful deacidification the type and quantity of the acid constituents must always be known. The best is to ask for a full proposal to be prepared.

1. Deacidification with SIHA-Special Wine Lime

This method is preferred at the must stage. Wine lime (purest $CaCO_3$) deposits only the tartaric acid as tartrate of lime (calcium tartrate). For reasons of flavour a sufficient quantity of tartaric acid should remain in the wine.

To deposit 1 g/l (= 1 o/oo) tartaric acid you need 67 grammes SIHA-Special Wine Lime for every 100 litres must.

The wine lime is mixed to a paste with 2 - 3 times the amount of wine or must and added slowly to the beverage, stirring vigorously all the time. Intensive formation of carbon dioxide, which usually occurs immediately, indicates the start of deacidification. Musts and young wines may develop a lot of foam at the beginning, therefore make sure that there is enough unfilled space in the deacidification vessel.

After about 2 hours, the must or wine can be separated from the deposit by sedimentation, separating or coarse diatomaceous earth filtration. However, the complete separation of tartrate of lime takes several weeks. Therefore small quantities of calcium tartrate may continuously precipitate in the vessel. These can remain in the vessel for weeks or months without causing harm. A special tapping stage is therefore not necessary. Young wine that has been deacidified with wine lime should not be bottled until at least 3 to 4 weeks later, otherwise crystals can separate in the bottle.

The best method is therefore to deacidify the must because the fermenting time can be fully utilized for separating the tartaric acid crystals.

2. Double-salt deacidification with SIHADEX®

Double-salt deacidification with SIHADEX® not only removes the tartaric acid with its particularly intensive flavour, but also malic acid which is generally considered to be "sharp" or "unripe". SIHADEX® is a specially selected lime formulated to precipitate tartaric acid and malic acid from wine and must in equal proportions as a double salt.

This method of deacidification sometimes has significant advantages over the standard method:

- if the musts of a year are particularly acid
- if a very intensive deacidification process is required
- if the must or wine contains little tartaric acid compared to the malic acid content

The double-salt precipitation only works well if the pH value is over 4.5. For this reason a part-volume of the must or wine is added to SIHADEX®, but never the other way around. The required quantities of SIHADEX® and the actual part-volume are given in the enclosed tables.

Deacidification by the double-salt method and in particular a deacidification vessel with a powerful agitator. The agitator blade must be capable of thoroughly mixing even small quantities. SIHADEX® is sprinkled in powder form into the empty tank and about 10% of the calculated part-volume is added and mixed in well to produce a uniform paste. This results in first crystals which subsequently promote double-salt crystallization. The rest of the part-volume is then poured directly onto the agitator blade, taking at least a quarter of an hour. It must be added slowly, evenly and especially without interruption to ensure that the desired uniform double-salt crystals are formed.

If the pH is under 4.5 the part-volume is being added too quickly, or the stirring apparatus is not powerful enough.

Continue stirring vigorously the whole time to drive out the carbon dioxide that forms from the beverage. In this way, the pH value of the liquid increases at the same time, which helps double-salt separation. Continue stirring even when the part-volume has been completely added, until no further CO_2 is formed. It is recommended that a sample be taken with a glass because the beverage is usually covered with a thick layer of froth.

It is now best to separate the crystal sludge by filtration (coarse sheet filtration with sludge frame, yeast or rotary vacuum filter or coarse DE filtration). If there is no other possibility, sedimentation for several hours followed by pumping off of the clear liquid will also help.

The double-salt crystals can be easily identified under a microscope, by their typical porcupine and tuft-like structure.

The deacidified and clarified part-volume should now be blended as quickly as possible with the non-deacidified portion and mixed well. Avoid long waiting periods because the deacidified part-volume is rather sensitive to air oxygen and harmful microorganisms at this stage due to its relatively high pH value.

On no account must the crystal sediment be carried into the non-deacidified part-volume. It would dissolve again and not precipitate again until much later, as tartrate of lime.

When deacidifying young wine, and not must, the SO_2 content of the deacidified part-volume should be checked prior to blending and if necessary adjusted. The deacidification process binds a part of the sulphurous acid and precipitates it.

During the following weeks small deposits of double salt may be found in the blended must. These are not harmful and will be separated together with cream of tartar during the first tapping with the yeast.

3. Deacidification with SIHA-Potassium Bicarbonate

SIHA-Potassium Bicarbonate is a controlled, highly pure, finely crystalline product. It is preferred for young wine and wine, but can also be used at the must stage. Compared to lime deacidification it has the special advantage that allows particularly quick and complete separation of tartaric acid.

By a cold treatment the tartaric acid is deposited practically completely as cream of tartar (potassium tartrate) within a few days. This is a bonus when a wine has to be deacidified quickly for bottling.

To deposit 1 g/l (= 1 o/oo) tartaric acid, 67 g/hl SIHA-Potassium Bicarbonate is required for wine or must. It must be added in powder form directly to the beverage and mixed in thoroughly and uniformly using suitable stirring apparatus. Intensive foam formation indicates the effect of deacidification by the development of CO_2, therefore we again recommend a deacidifying vessel with enough unfilled space above the liquid.

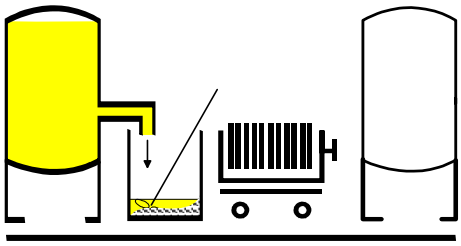
At normal cellar temperatures the calculated acid quantity will separate within a few weeks. If an acid analysis does not reveal the desired acid reduction, the separation of tartar crystals has not yet been completed. This means that the tartaric acid has already been neutralized but it is still present in a dissolved state. Therefore you have to wait until crystallization has taken place completely. Sometimes no separation of potassium tartrate at all is found. This occurs especially if the wine's natural potassium content is extremely low, if the potassium tartrate is particularly stable or the wine is only to be deacidified slightly (0.5 to 1 g/l).

☏ +49 67 04 20 4-0 1
🖷 +49 67 04 20 4-1 21
info@begerow.com

E. Begerow GmbH & Co.
An den Nahewiesen 24
55450 Langenlonsheim
Germany · www.begerow.com

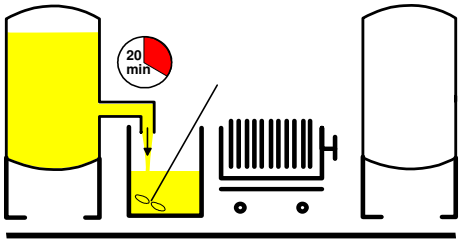
The best way to proceed: Double-salt deacidification with SIHADEX®

1



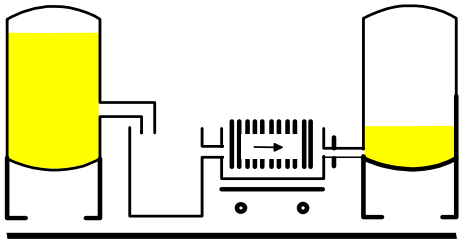
Determine the necessary quantity of SIHADEX® from the table. Add the dry powder to the deacidification vessel, making sure that there is sufficient unfilled space above the liquid for the froth that will develop! Mix SIHADEX® thoroughly and uniformly in about 2 to 3 times the quantity of liquid.

2



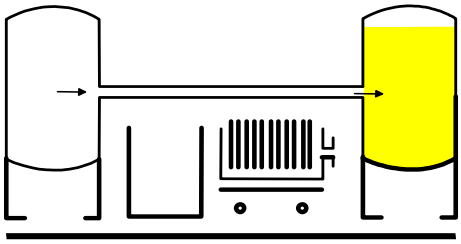
Add the part-volume specified in the table slowly and without interruption directly onto the blade of the agitator. This should take at least 20 minutes. Always stir vigorously to drive out the carbon dioxide that forms!

3



The crystal sludge must now be carefully separated; the best way is by means of filtration with coarse diatomaceous earth or in a yeast or vacuum filter.

4



Pump the non-deacidified quantity to the deacidified beverage as soon as possible and mix well.

Double-salt deacidification of wine with SIHADEX ®, according to Würd

(for 1000 l respectively)

Desired total acid content of the deacidified wine in g/l

	12		11		10		9		8		7		6		5	
	SIHADEX in kg	Wine in l	SIHADEX in kg	Wine in l	SIHADEX in kg	Wine in l	SIHADEX in kg	Wine in l	SIHADEX in kg	Wine in l	SIHADEX in kg	Wine in l	SIHADEX in kg	Wine in l	SIHADEX in kg	Wine in l
7,0													0,7	250	1,3	500
7,5													1,0	333	1,7	556
8,0											0,7	200	1,3	400	2,0	600
8,5											1,0	273	1,7	455	2,3	636
9,0											1,3	333	2,0	500	2,7	667
9,5									1,0	231	1,7	385	2,3	538	3,0	692
10,0									1,3	286	2,0	429	2,7	571	3,4	714
10,5							1,0	200	1,7	333	2,3	467	3,0	600	3,7	733
11,0							1,3	250	2,0	375	2,7	500	3,4	625	4,0	750
11,5							1,7	294	2,3	412	3,0	529	3,7	647	4,4	765
12,0					1,3	222	2,0	333	2,7	444	3,4	556	4,0	667	4,7	778
12,5					1,7	263	2,3	368	3,0	474	3,7	579	4,4	684	5,0	789
13,0			1,3	200	2,0	300	2,7	400	3,4	500	4,0	600	4,7	700	5,4	800
13,5			1,7	238	2,3	333	3,0	429	3,7	524	4,4	619	5,0	714	5,7	810
14,0	1,3	182	2,0	273	2,7	364	3,4	455	4,0	545	4,7	636	5,4	727	6,0	818
14,5	1,7	217	2,3	304	3,0	391	3,7	478	4,4	565	5,0	652	5,7	739	6,4	826
15,0	2,0	250	2,7	333	3,4	417	4,0	500	4,7	583	5,4	667	6,0	750	6,7	833
15,5	2,3	280	3,0	360	3,7	440	4,4	520	5,0	600	5,7	680	6,4	760	7,0	840
16,0	2,7	308	3,4	385	4,0	462	4,7	538	5,4	615	6,0	692	6,7	769	7,4	846
16,5	3,0	333	3,7	407	4,4	481	5,0	556	5,7	630	6,4	704	7,0	778	7,7	852
17,0	3,4	357	4,0	429	4,7	500	5,4	571	6,0	643	6,7	714	7,4	786	8,0	857
17,5	3,7	379	4,4	448	5,0	517	5,7	586	6,4	655	7,0	724	7,7	793	8,4	862
18,0	4,0	400	4,7	467	5,4	533	6,0	600	6,7	667	7,4	733	8,0	800	8,7	867
18,5	4,4	419	5,0	484	5,7	548	6,4	613	7,0	677	7,7	742	8,4	806	9,0	871
19,0	4,7	438	5,4	500	6,0	563	6,7	625	7,4	688	8,0	750	8,7	813	9,4	875
19,5	5,0	455	5,7	515	6,4	576	7,0	636	7,7	697	8,4	758	9,0	818	9,7	879
20,0	5,4	471	6,0	529	6,7	588	7,4	647	8,0	706	8,7	765	9,4	824	10,1	882
20,5	5,7	486	6,4	543	7,0	600	7,7	657	8,4	714	9,0	771	9,7	829		
21,0	6,0	500	6,7	556	7,4	611	8,0	667	8,7	722	9,4	778	10,1	833		
21,5	6,4	514	7,0	568	7,7	622	8,4	676	9,0	730	9,7	784				
22,0	6,7	526	7,4	579	8,0	632	8,7	684	9,4	737	10,1	789				
22,5	7,0	538	7,7	590	8,4	641	9,0	692	9,7	744						
23,0	7,4	550	8,0	600	8,7	650	9,4	700	10,1	750						
23,5	7,7	561	8,4	610	9,0	659	9,7	707								
24,0	8,0	571	8,7	619	9,4	667	10,1	714								
24,5	8,4	581	9,0	628	9,7	674										
25,0	8,7	591	9,4	636	10,1	682										
25,5	9,0	600	9,7	644												
26,0	9,4	609	10,1	652												
26,5	9,7	617														
27,0	10,1	625														
27,5																
28,0																

Total acid content of the non-deacidified wine in g/l (column on the far left)

Double-salt deacidification of must with SIHADEX ®, according to Würdig

(for 1000 l respectively)

Desired total acid content of the deacidified must in g/l

	12		11		10		9		8		7		6		5		4	
	SIHADEX in kg	Must in l	SIHADEX in kg	Must in l	SIHADEX in kg	Must in l	SIHADEX in kg	Must in l	SIHADEX in kg	Must in l	SIHADEX in kg	Must in l	SIHADEX in kg	Must in l	SIHADEX in kg	Must in l	SIHADEX in kg	Must in l
7,0													0,7	200	1,3	400	2,0	600
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9,0											1,3	286	2,0	429	2,7	571	3,4	714
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Total acid content of the non-deacidified must in g/l (column on the far left)