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Getränkeherstellung

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Brennereitechnologie

Sulphuric acid, concentrated

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- Chemically pure sulphuric acid (75% or 97%) for acidifying mashes made from grain and Jerusalem artichokes -

Technical information and instructions for use

Background:
Artificial acidification during the mashing of distillery raw materials, which are naturally low in acid or acid-free, inhibits the development and metabolism of mash-damaging bacteria and wild yeasts during alcoholic fermentation. This "fermentation under acid protection" generally improves the quality of the resulting distillates. Although **sulphuric acid** is the cheapest acidifier for this purpose due to its low dosage, it is not the most suitable.

What speaks against it?
1. The danger of acid
Concentrated sulphuric acid is extremely dangerous to handle. It is severely corrosive and "burns" organic material. Eye or skin contact can cause blindness or irreversible burns.
2. End-use certificate
To prevent its misuse, we restrict the supply of sulphuric acid to traders whose personal details (copy of identity card or passport) are available to us.
3. The quality risk for fruit distillates
For fruit mashes, there is a definite correlation between their acidification during mashing with **sulphuric acid** and the occurrence of sulphur dioxide sting in the distillates obtained from them (for details, see our information sheet "Spirits defects"). In our experience, this phenomenon occurs in all fruit mashes, very frequently in pear mashes. Grain, potato and Jerusalem artichoke mashes, on the other hand, do not appear to be problematic in this respect.

What is the alternative?
PM acid, a concentrate of food-grade phosphoric and lactic acid, is less aggressive than sulphuric acid, cannot cause a sulphur dioxide sting and also supplies the fermenting yeast with vital phosphate.

Competent handling of concentrated sulphuric acid:
Safe handling of sulphuric acid, whether concentrated or already diluted, starts with personal protective equipment:

- Tight-fitting safety goggles
- Acid-resistant chemical protective gloves, apron and rubber boots

Concentrated sulphuric acid must never be added to the mash undiluted. This would be extremely dangerous (splashes) and would carbonise the raw material at the drip point (smoke development, black colouring, formation of off-flavours).
To dilute the concentrated sulphuric acid, first place about 9 times the volume of cold water in an acid-resistant stainless steel bucket. Then slowly and carefully add the required volume of concentrated acid in a thin stream. Finally, stir carefully (self-heating). After cooling, this sulphuric acid, now diluted to 7-10%, is carefully added to the mash or stirred in.

Dosage recommendations:
The following figures are guide values, expressed as 97% sulphuric acid per hectolitre of mash.
Cereals, malt, potatoes:
Approx. 50 ml to pH 4.7; add with constant stirring in the cooling phase between liquefaction and saccharification rest at approx. 55°C (a few minutes before adding the saccharification enzyme).
Jerusalem artichoke:
100-150ml to pH 3 when mashing in.
Fruit:
60-100ml to pH 3 when mashing in.

The sulphuric acid, which is only available in 75% concentration in the 1 litre bottle, requires slightly higher dosages.

As the set pH value is decisive for the achievable acid protection in the mash, it must be measured using test strips or, better still, a pH meter. Details can be found in our information sheet "Burner pH meter".

Container sizes:

1 L-bottle (**75%** !)	(No. 0423)
5 L-canister (97%)	(No. 0425)
10 L-canister (97%)	(No. 0424)

Hazard statements:

Danger

Causes severe skin burns
Skin burns and serious eye damage.
Reacts violently with water (self-heating).
Information on safe handling of the product can be found on the label and in the safety data sheet.

Storage:
Under lock and key, inaccessible to children and unauthorised persons, tightly closed, cool and dark only in the original container (UN-approved bottles and canisters made of HDPE).