



PRODUCT NAME:LACTIC ACID

PRODUCT CODE:LACA

COMMODITY CODE:29181100

COUNTRY OF ORIGIN:CHINA

PACKAGING: 25 and 200 litres and Bulk

TECHNICAL INFORMATION SHEET

LACTIC ACID - LIQUOR TREATMENT

Description

LACTIC ACID is a liquid acid ready for use, to adjust alkalinity.

Benefits

- Reduces the alkalinity levels of brewing liquor stimulating maximum enzyme activity in the wort enabling optimum pH levels throughout the whole brewing process.
- Improves extract yield and fermentability
- Is suitable for beers where no other anions are needed for example lagers
- Improves clarity and stability of the finished product

Principle

The objective of liquor treatment is to convert your water supply into acceptable brewing liquor.

	Bitter	Strong Bitter	Lager (65°C)	Porter	Mild	Wheat	Stout
Calcium	180-220	220-220	120-140	130-160	120-140	180	120-140
Alkalinity	30-50	30-50	30-50	100	100	35	150
Chloride	150-300	200-300	Low	200-300	300	250	300
Sulphate	250-400	300-400	Low	200-300	150	220	100

TABLE 1. TYPICAL LEVELS OF IONS IN BREWING LIQUOR USED TO PRODUCE DIFFERENT TYPES OF BEER (ALL FIGURES ARE IN MILLIGRAMS PER LITRE COMMONLY KNOWN PPM)

Treating your brewing liquor is vitally important. When applied correctly all the steps throughout the brewing process will be at the optimum pH. If it is applied incorrectly you will get poor extract and beer that is difficult to clarify.

LACTIC ACID adjusts liquor alkalinity without the need for boiling by removing unwanted carbonate.

Alkalinity

Alkalinity is mainly caused by calcium carbonate and bicarbonate. The alkalinity of your liquor plays a very important role in pH control. It causes high pH values throughout the brewing process. Hydrogen ions are removed from solution, thus wort pH remains high which results in low extract yield; presence of undesirable protein components; worts and beers prone to infection; increased extraction of silicates, polyphenols and tannins during sparge and harsh "after tastes" in the finished beer.

pH

The pH of the liquor will have little effect on the pH of the wort and beer. Alkalinity and calcium are more important in pH control. Once you have established correct levels of these ions it is advisable to follow the guidelines of typical pH measurements in the brewing process shown below. Hand-held pH meters can be purchased from Murphy & Son Ltd.

Raw Liquor	pH 6.0-8.0
Treated Liquor	pH 6.0-8.0
Mash	pH 5.2-5.5
1st Runnings	pH 4.8-5.2
Last Runnings	pH 5.4-5.6
Wort in Copper	pH 5.1-5.4
Wort after boil	pH 4.9-5.3
Beer after fermentation	pH 3.7-4.2

TABLE 2. TYPICAL pH MEASUREMENTS THROUGHOUT THE BREWING PROCESS

Application

LACTIC ACID can be added to either the cold or hot liquor tank and should be thoroughly mixed. Time should be allowed to release the carbon dioxide produced by the neutralisation of excess carbonate. Please take into account any residual treated liquor when topping up your tank as this will adversely effect alkalinity levels. Addition of LACTIC ACID to the cold liquor tank has the added benefit of preventing scale build up on the heating elements.

Rates of Use

Addition rates for LACTIC ACID are dependant on the levels of alkalinity in your untreated liquor. Raw liquor can have an alkalinity of up to 300 mg/litre. Brewers need to reduce their alkalinity down to a range of 30– 100ppm (refer to table 1) depending on which beer styles they wish to produce. In some cases raw liquor can already be in that range so no acid treatment is required.

Levels of the relevant ions present in your liquor can be obtained from your Local Water Authority or you can send in 500ml of your raw liquor to Murphy's laboratory for a full analysis and suggested treatment rates. This service is free of charge once a year. Please note, Local Authority reports can provide results that are not up to date and may affect your calculations for ideal dosage rates. It is advisable to check the analysis of your water at least once a year, or on a more regular basis if the supply changes.

Another method of working out your alkalinity on a more regular basis, is to purchase alkalinity testing kits which Murphy & Son Ltd are able to supply.

Once you have obtained your analysis of your raw liquor you can then calculate your dosage rates by selecting which beer type you wish to brew and refer to table 1, this will help you determine how many ions to add or reduce.

ALL water used for brewing should be checked for suitability for beer style according to table 1. This includes any water that is used from the liquor tank, sparge or breakdown liquor.

6 ml of LACTIC ACID per hl reduces the alkalinity by 16 mg/litre (ppm).

Knowing this information you can calculate the amount of LACTIC ACID needed to reduce your alkalinity to the ideal level.

Murphy's are more than willing to calculate these dosage rates for you just simply contact our laboratory: +44 (0)115 978 5494

Guidelines for use

- Check that the product is within its shelf life before use
- Test you water regularly to obtain ideal dosage rates for the best results
- Read the Material Safety Data sheet prior to use

Specification

COMPOSITION	An acidic solution
APPEARANCE	Colourless or Yellowish Hygroscopic syrupy liquid
ODOUR	Acidic
<u>Analysis</u>	
Assay	76-84%
Sulphated Ash	≤ 0.1%
Chloride	≤ 0.2%
<u>Maximum Limits of Impurities</u>	
Iron	≤ 10 ppm
Arsenic	≤ 3 ppm
Lead	≤ 5 ppm
Mercury	≤ 1 ppm

Regulations

This material conforms to the requirements of Directive 2008/84/EC for E509 and FCC VII purity recommendations for food use substances.

This material is produced naturally by fermentation (bacteria)

Storage & Shelf life

- Store in cool conditions away from direct sunlight
- Keep in original container
- Keep containers sealed when not in use
- Storage temperature is 10°C - 20°C
- The shelf life at the recommended storage temperature is at least 2 years from the date of manufacture

Technical Support

For Health & Safety information on this product, please see the Safety Data Sheet (SDS)

For support and advice on the use of this product, please call or e-mail our Technical Support:-

Telephone:- + 44 (0)115 978 5494

techsupport@murphyandson.co.uk

For up to date information regarding, Kosher, Halal, Vegetarian, GMO status, or anything not mentioned on this tech sheet please email:-

compliance@murphyandson.co.uk or call +44 (0)115 978 5494

Reference

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