

# TECHNICAL INFORMATION SHEET: LACTIC ACID 80% - LIQUOR TREATMENT

**PRODUCT NAME:****LACTIC ACID 80%****PRODUCT CODE:****LACA****COMMODITY CODE:****29181100****PACKAGING:****25, 240 AND 1200 KG**

## Description

Lactic Acid (E270) is a ready for use acid used to reduce alkalinity in brewing liquor.

The lactic acid is Food Grade and made by fermentation of natural (beet or cane) sugar.

## 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

## Guidelines for use

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



### TECHNICAL SUPPORT

tel: +44 (0) 115 978 5494 | e: [techsupport@murphyandson.co.uk](mailto:techsupport@murphyandson.co.uk)

### REGULATORY COMPLIANCE INFORMATION

Refer to the **Product Specification Sheet** or contact us on  
tel: +44 (0) 115 978 5494 | e: [compliance@murphyandson.co.uk](mailto:compliance@murphyandson.co.uk)

### HEALTH & SAFETY INFORMATION

Refer to the **Safety Data Sheet (SDS)**

|            | 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)

## Principle

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

### 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. 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 hot 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 30–100 ppm (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 50 ml of your raw liquor to Murphy's laboratory for a full analysis and suggested treatment rates. 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 and 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.

10 ml of Lactic Acid per UK Brewers Barrel reduces the alkalinity by 16 mg/litre (ppm). This equates to 6ml per Hl to reduce the alkalinity by 16 mg/litre (ppm)..

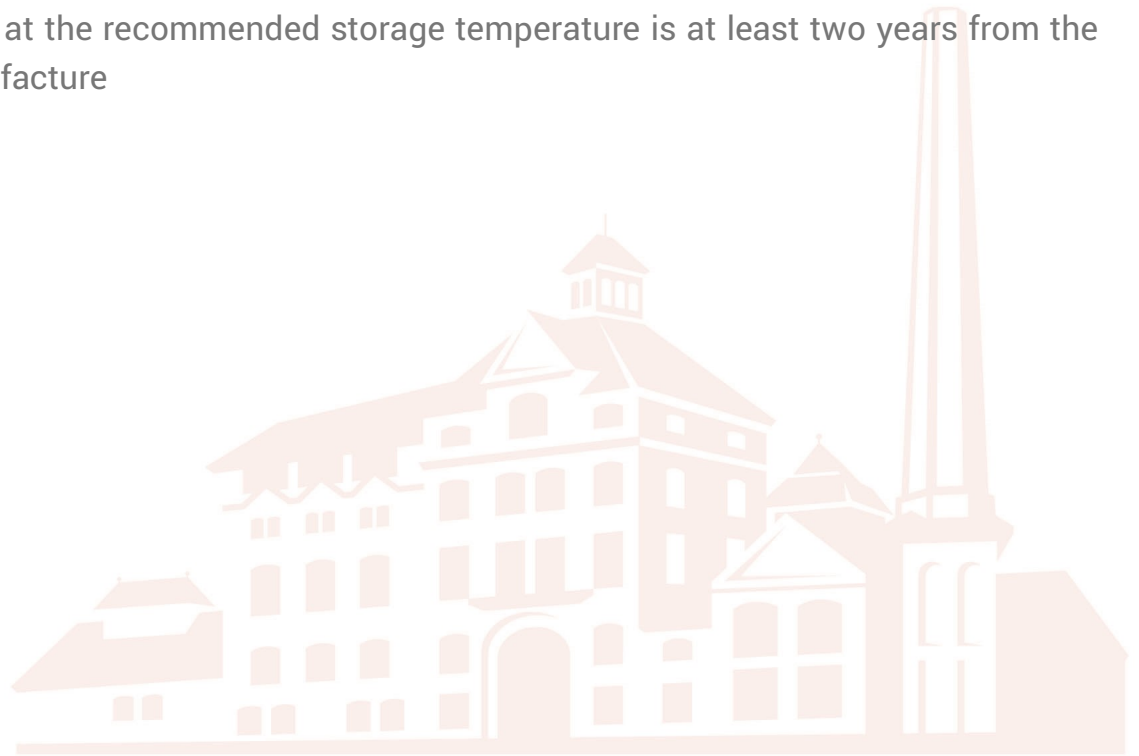
Knowing this information you can calculate the amount of Lactic Acid needed to reduce

your alkalinity to the ideal level.

Murphy's are more than happy to calculate these dosage rates for you.

## Storage and 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 two years from the date of manufacture



|                   |             |                      |            |
|-------------------|-------------|----------------------|------------|
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