Quality, Consistency & Support

# TECHNICAL INFORMATION SHEET:
# AMS - LIQUOR TREATMENT

**PRODUCT NAME:**
**AMS**

**PRODUCT CODE:**
**AMS**

**COMMODITY CODE:**
**2807000**

**PACKAGING:**
**12.5, 25, 200 AND 1000 KG**

## Description

AMS is a formulated blend of ready for use food grade acids used to reduce alkalinity and to increase desirable ions in product waters. It is especially used in the brewing industry as a liquor treatment.

## Benefits

- Reduces the alkalinity levels of brewing liquor
- Gives optimum pH levels throughout the whole brewing process
- Stimulates maximum enzyme activity during mashing .
- Improves extract yield and fermentability
- Improves wort run off, clarity and stability
- Adds desirable chloride and sulphate ions in suitable proportions
- Reduces extraction of undesirable compounds that cause astringent off flavours

**TECHNICAL SUPPORT**
tel: +44 (0) 115 978 5494 | e: 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

**HEALTH & SAFETY INFORMATION**
Refer to the **Safety Data Sheet (SDS)**



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| | 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 AS 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



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## Application

AMS 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 affect alkalinity levels. Addition of AMS to the cold liquor tank has the added benefit of preventing scale build up on the heating elements.

## Rates of Use

Addition rates for AMS are dependant on the levels of alkalinity and other important ions present 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 50ml 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 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.

35ml of AMS per hl of this water reduces the alkalinity by 64 mg/litre (ppm) and increases chloride levels by 22.5 mg/litre (ppm) and sulphate levels by 31 mg/litre (ppm).

Knowing this information you can calculate the amount of AMS needed to reduce your alkalinity to the ideal level. This also helps you to monitor how much sulphate and chloride you have added. This addition of chlorine and sulphate ions has to be considered when adding other salts to the grist.

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



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## 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
- Precipitation may occur at low temperatures
- The shelf life at the recommended storage temperature is at least one year from the date of manufacture



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