Quality, Consistency & Support

TECHNICAL INFORMATION SHEET: PHOSPHORIC ACID 75%

PRODUCT NAME:
PHOSPHORIC ACID 75%

PRODUCT CODE:
PHOSA75

COMMODITY CODE:
28092000

PACKAGING:
8, 25 AND 1500 KG

Description

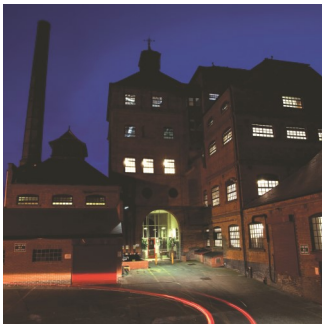
Phosphoric Acid 75% (E338) is a clear solution made from food grade phosphoric acid. It is used in the brewing industry for acid washing yeast and reducing alkalinity in brewing liquor.

Benefits

- Eliminates bacterial contaminants from pitching yeast
- Reduces alkalinity in brewing liquor without affecting Chloride/Sulphate ratio

Guidelines for use

- Ensure suitability for the intended application
- In case of contact with skin and eyes wash



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

Murphy & Son Limited,
Alpine Street, Old Basford,
Nottingham NG6 0HQ
United Kingdom

Tel: (+44) 115 978 5494
Fax: (+44) 115 924 4654
Email: info@murphyandson.co.uk
Web: www.murphyandson.co.uk

Registered in England No. 106442
VAT No. 196 8782 88

bsi. ISO 9001 Quality Management

immediately with plenty of water

- Wash away spillages with plenty of water
- Read the Safety Data Sheet prior to use

Principle of **acid washing**

Acid washing is a tool that brewers use to eliminate contaminant bacteria from pitching yeast. Acid washing kills bacteria with minimal harm to the brewing yeast, providing that the process is carried out correctly. The effectiveness of the process relates to the time and temperature it is carried out at and the pH achieved.

NOTE: Acid Washing will not remove wild yeast.

Application and rates of use for acid washing

Preparation is essential. Ensure that you have the yeast and the acid fully chilled as the wort nears the end of boil, and start the washing process at this time. The washed yeast will then be ready for pitching when the wort is cooled.

Do not be tempted to wash yeast on a quiet day when you are not brewing. Viability of washed yeast will fall markedly as storage time increases.

DO's of acid washing:

Use food grade phosphoric acid, diluted about 1 in 10.

Chill the acid and yeast below 5°C before use.

Ensure that the liquids are stirred together well so that there are no areas

Murphy & Son Limited,
Alpine Street, Old Basford,
Nottingham NG6 0HQ
United Kingdom

Tel: (+44) 115 978 5494
Fax: (+44) 115 924 4654
Email: info@murphyandson.co.uk
Web: www.murphyandson.co.uk

Registered in England No. 106442
VAT No. 196 8782 88

bsi. ISO 9001 Quality Management

of higher acid concentration.

Ensure pH lies between 2.0-2.2

Pitch yeast after set time of one hour

DON'TS of acid washing:

Don't deviate from temperature, time and pH limits indicated above

Don't store washed yeast

Don't wash "unhealthy" yeast (yeast which has been stored for long periods, heavily contaminated yeast, yeast from slow fermentations.) If it is essential that such yeast is washed, use a high pH value for the wash (pH 2.3 - 2.5) and/or shorter contact times 30-60 minutes) until the yeast has been used to pitch one or more fermentations and recovers full activity.

Don't (or at least try to avoid) washing yeast from very high gravity fermentation (>8% v/v ethanol).

Common faults when acid washing and their solutions

pH of yeast too high:

Cautiously add more diluted and chilled acid with constant stirring

pH of yeast slurry too low:

Reduce the contact time between acid and yeast of add more yeast

Temperature of yeast slurry too high:

Reduce the contact time between acid and yeast

Murphy & Son Limited,
Alpine Street, Old Basford,
Nottingham NG6 0HQ
United Kingdom

Tel: (+44) 115 978 5494
Fax: (+44) 115 924 4654
Email: info@murphyandson.co.uk
Web: www.murphyandson.co.uk

Registered in England No. 106442
VAT No. 196 8782 88

Principle of **liquor treatment**

	Bitter	Strong Bitter	Lager (65°C)	Porter	Mild	Wheat	Stout
Calcium	180-220	200-220	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

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

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

Murphy & Son Limited,
Alpine Street, Old Basford,
Nottingham NG6 0HQ
United Kingdom

Tel: (+44) 115 978 5494
Fax: (+44) 115 924 4654
Email: info@murphyandson.co.uk
Web: www.murphyandson.co.uk

Registered in England No. 106442
VAT No. 196 8782 88

to the cold liquor tank has the added benefit of preventing scale build up on the heating elements. Phosphoric Acid can react with calcium and form a precipitate leading to calcium levels in the mash being lower than expected.

Rates of use for liquor treatment

Addition rates for Phosphoric Acid 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- 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.

Murphy & Son Limited,
Alpine Street, Old Basford,
Nottingham NG6 0HQ
United Kingdom

Tel: (+44) 115 978 5494
Fax: (+44) 115 924 4654
Email: info@murphyandson.co.uk
Web: www.murphyandson.co.uk

Registered in England No. 106442
VAT No. 196 8782 88

bsi. ISO 9001 Quality Management

Storage and shelf life

- Store in dry, cool conditions away from direct sunlight
- Keep in original container
- Keep containers sealed when not in use
- The shelf life at the recommended storage temperature is at least one year from the date of manufacture

RODUCT	PHOSPHORIC ACID 75%	**PRODUCT CODE**	PHOSA75
ISSUE No.	4	**DATE**	10/03/2023
WRITTEN BY	Iain Kenny	**AUTHORISED BY**	Iain Kenny

Murphy & Son Limited,
Alpine Street, Old Basford,
Nottingham NG6 0HQ
United Kingdom

Tel: (+44) 115 978 5494
Fax: (+44) 115 924 4654
Email: info@murphyandson.co.uk
Web: www.murphyandson.co.uk

Registered in England No. 106442
VAT No. 196 8782 88

bsi. ISO 9001 Quality Management