



# Flexisorb™ AN-668

Low Corrosion Acid replacement

## Overview

- Acid replacement technology
- Use in Hard Surface Cleaners for improved cleaning of hard water stains and build-ups
- Safer replacement for conventional acids including:
  - hydrochloric
  - phosphoric
  - acetic
  - glycolic
- No heat of dilution (non-exothermic)
- Low fuming
- Phosphate free
- Contains no VOCs
- Low BOD and COD
- Safer to handle than many conventional acids
- pH <1 for quick and easy pH reduction
- Phosphate free
- VOC-free alternative to acetic and other organic acids

## Applications

- Economical and efficient pH adjustment tool
- Forms water soluble hard-water salts
- Acidic hard surface cleaners
- Low pH solubilizers
- Concrete and masonry preparation
- Effluorescence removers
- Scale removal
- Bathroom, Toilet bowl, Tub-n-Tile cleaners

## Technical Information

Flexisorb AN-668 offers reduced risk, easy-to-handle, reduced-corrosion alternatives to hydrochloric and other strong acids to rapidly dissolve calcium scales and hard water deposits with the efficiency of hydrochloric acid without the harmful or dangerous aspects of hydrochloric acid.

Flexisorb AN-668 is a cost effective alternative to phosphoric acid and other organic acids for dissolving calcium scales and hard water deposits. The product exhibits reduced fuming and metal corrosivity with a corrosion rate on mild (1020) steel of less than 6.25 mmy, the cut off for DOT corrosive.

Flexisorb AN-668 is an acid replacement product based on an inhibited urea hydrochloride solution. With zero heat of dilution, AN-668 provides a safer alternative to strong mineral acids for pH reduction, so it can be safely mixed into water or have water mixed into it.

## Formulary

Flexisorb AN-668 is effectively formulated with low pH stable surfactants to produce exceptional hard surface cleaners such as acid toilet bowl, bathroom, and Tub-n-Tile cleaners.

As with all acid products, care should be taken to avoid prolonged contact with certain ornamental metal fixtures to prevent damage or discoloration, limit surface exposure and fully rinse surfaces after use. Do not use on polished marble or similar acid sensitive surfaces.

When using Flexisorb AN-668 in formulations in concentrations greater than 15%, vented caps are recommended. Take extra precautions with oven stability testing for risk of burst containers and HCl corrosion.

## Typical Properties

PROPERTY	VALUE
Appearance	Clear, colorless to amber liquid
Odor	Mild
Ionic character	Anionic
Water solubility	Soluble
pH	<1
Normality	7.5±0.45
Density@25°C	1.20±0.02
Boiling point	100°C
Flash point	Does not ignite below 100°C
Storage	Stable to freezing
Shelf life	12 months

## Packaging and Handling

Flexisorb AN-668 is available in 275 gallon totes (Net Wt. 2700 lbs), 55 gallon plastic drums (Net Wt. 550 lbs) and 5 gallon pails (Net Wt. 40 lbs).

Refer to the Safety Data Sheet (SDS) for information on the safe use, handling, and disposal of this product.

DOT Classification: Corrosive.  
(refer to the SDS for additional information)

*Please refer to back page for important information*

## Flexisorb AN-668: Acid Replacement for Hard Surface Cleaners

Flexisorb AN-668 is an effective replacement for hydrochloric acid in hard surface cleaners, dissolving and forming easily rinsed water soluble hard water salts. Hard water, meaning water high in mineral content, often leaves water insoluble hard water salt residue on fixtures and other hard surfaces. These hard water salts are typically calcium and/or magnesium carbonate, phosphate, sulfate and/or silicate. These salts are characterized as being insoluble or only slightly soluble in water, forming scale on surfaces that attract dirt and oily soil, and are difficult to clean.

Acidic hard surface cleaners based on phosphoric or sometimes sulfuric acid convert insoluble hard water carbonate salts into insoluble hard water phosphate or sulfate salts, replacing one insoluble hard water salt with another.

Acidic hard surface cleaners based on hydrochloric acid convert insoluble hard water carbonate salts into water soluble, and easily rinsed, calcium and magnesium chlorides. Additionally, being a stronger acid, hydrochloric acid will convert insoluble calcium and magnesium phosphates, sulfates and silicates into soluble chloride salts.

However, conventional hydrochloric acid has some serious drawbacks when used as a hard surface cleaner. It easily corrodes soft metal surfaces, and releases acrid fumes. It is difficult and expensive to formulate, compound, package and transport due to its metal corrosivity and fuming characteristics.

As an alternative acid replacement, Flexisorb AN-668 is an organic hydrochloric acid complex that exhibits reduced metal corrosivity and fuming than conventional hydrochloric acid, yet is as effective as hydrochloric acid at dissolving hard water salts. Additionally, AN-668 is as easy to formulate, and compound as an organic acid.

The following example formulations illustrate the flexibility of Flexisorb AN-668. Whether you're looking for a replacement product, or an ingredient with a specific attribute, give us a call. We can provide assistance based upon your particular formulation requirements and composition; please feel free to contact us.

Commercial Descaling Acid Cleaner	
Ingredient	Wt. %
Water	to 100
Flexisorb AN-668	35-50
Flexisurf X-5	8.0
Use at 2-4 ounces per gallon	
Retail Tub-n-Tile Cleaner	
Ingredient	Wt. %
Water	to 100.0
Flexisorb AN-668	8.0
Flexisurf X-5	5.0
Ethyleneglycol monobutyl ether	1.5
Ready-to-Use For Commercial/Institutional strength, increase AN-668 to 12.0%	
Retail Tub-n-Tile Cleaner with Soil Barrier & Enhanced Rinsing performance	
Ingredient	Wt. %
Water	to 100
Flexisorb AN-668	8.0
Flexiwet WBD	3.0
Flexipel SR-80	1.0
Diethyleneglycol monobutyl ether	2.0
Ready-to-Use	
Calcium/Lime Remover	
Ingredient	Wt. %
Water	to 100
Flexisorb AN-668	12.0
Flexipel SR-95HF	2.5
Linear alcohol ethoxylate, C9-11, 6 ETO	0.5
Ready-to-Use	

This information relates only to the specific material referred to herein and not to its use in combination with any other material or in any process, unless explicitly stated herein. Such information is, to the best of our knowledge and belief, accurate and reliable as of the date compiled; however, no warranty, guarantee or other representation is made as to its accuracy, reliability, or completeness, or regarding any liabilities arising from others' intellectual property rights. ID# 20230622. revision 1.