GENERAL INFORMATION

Specifications for Regenerant Chemicals

The use of quality regenerant chemicals in correct concentration is critical for achieving optimal elution and prolonging the life of ion exchange resins. This General Information Guide presents typical chemical and physical properties for regenerant chemicals as well as maximum acceptable levels for contaminants.

Purolite®

SPECIFICATIONS FOR REGENERANT CHEMICALS

This General Information Guide presents easy-to-read tables containing the typical chemical and physical properties for regenerant chemicals, as well as the maximum acceptable levels for contaminants. For more information, go to go to www.purolite.com or contact your closest Purolite regional office, as listed on the back cover.

INTRODUCTION

Purolite is a leading innovator and manufacturer of ion exchange, catalyst, adsorbent and specialty resins. With global headquarters in the United States, Purolite is the only company that focuses 100% of its resources on the development and production of resin technology.

Responding to the needs of our customers, Purolite has built the largest technical sales force in the industry, the widest variety of products and five strategically located Research and Development groups. Our ISO 9001 certified manufacturing facilities in the U.S.A, Romania and China, combined withmore than 40 sales offices in 30 countries, ensure complete worldwidecoverage.

PREMIER PRODUCTS

The quality and consistency of our products is fundamental to our performance. Throughout all Purolite plants, production is carefully controlled to ensure that our products meet the most stringent criteria, regardless of where they are produced.

RELIABLE SERVICE

We are technical experts and problem solvers. Reliable and well trained, we understand the urgency required to keep businesses operating smoothly. Purolite employs the largest technical sales organization in the industry.

INNOVATIVE SOLUTIONS

Our continued investment in research & development means we are always perfecting and discovering innovative uses for ion exchange resins and adsorbents. We strive to make the impossible possible.

Regenerating ion exchange resins restores resin to its original ionic form. The use of proper regenerant chemicals in correct concentration is critical to achieve optimal elution and prolong the resin's useful life.

However, the use of poor quality regenerant can result in resin fouling and degradation. It is important to follow the maximum level of acceptability for contaminants in regenerant chemicals as well as the specific suggested values for the strength of dilute regenerant for each individual system and resin type. Any deviation from the specifications can cause loss of operating capacity and deterioration in output quality at minimum, and in extreme cases, osmotic shock, poisoning and irreversible fouling of the resin.

This General Information Bulletin presents typical chemical and physical properties for regenerant chemicals, as well as maximum acceptable levels for contaminants.

Hydrochloric (muriatic) acid	
Grade	Muriatic acid, technical (HCl)
Color	White to yellow
Concentration	(18° Bé) 28% HCl
Sulfuric acid, as SO_3	0.4% maximum
Iron (Fe)	0.01 % maximum
Freezing point	-40° F
Organic contaminants	0.01% maximum
Density 15°C	1.39 kg / m^3 (9.5 lb / gallon)

NOTE: Acid should be free of turbidity.

Soda ash – Sodium carbonate	
Grade	Soda ash, technical, dense (Na_2CO_3)
Color	White
Typical analysis average	
Na_2O	58.26%
Na_2CO_3	99.60%
$NaHCO_3$	Nil
NH_3	Nil
H_2O	0.15%
NaCl	0.21%
Na_2SO_4	0.02%
Fe_2O_3	0.0022%
Water insolubles	0.013%

Aqua ammonia	
Grade	Ammonium hydroxide (NH_4OH), 26° Bé
Concentration	26.0° Bé (minimum)
Total ammonia as NH_3	29.40%
Freezing point	-40°F
Color	Water white
Density 15°C	0.9 kg /. m³ (7.5 lb / gallon)

Sulfuric acid	
Grade	Sulfuric acid, technical (H_2SO_4)
Color	Water white to light brown
Concentration	(66° Bé) 93.2% H_2SO_4 (Note: An equivalent amount of 60° Be acid may be used.)
Iron (Fe)	50 ppm maximum
Nitrogen compounds	20 ppm maximum
Arsenic	0.2 ppm maximum
Freezing point	-24° F
Organic contaminants	0.01% maximum
Density 15°C	1.83s kg / m³ (15.3 lb / gallon)

Acid should be free of turbidity and sediment.
Acid containing inhibitors should not be used.

Sodium hydroxide liquid caustic soda – Diaphragm cell grade	
Grade	Diaphragm cell
Typical analysis average	
NaOH	100% nominal
NaCl	1200ppm
$NaCO_3$	0.30%
$NaClO_3$	30 ppm
Fe	10 ppm
Na_2SO_4	2000 ppm

Sodium hydroxide liquid caustic soda – Mercury cell grade	
Grade	Mercury cell
Typical analysis average	
NaOH	50.60%
Na_2CO_3	0.02%
NaCl	0.002%
$NaClO_3$	< 1 ppm
Na_2SO_4	10 ppm
SiO_2	10 ppm
Al_2O_3	3 ppm
CaO	3 ppm
MgO	0.6 ppm
Fe	2 ppm
Ni	0.6 ppm
Cu	0.2 ppm
Mn	< 0.2 ppm
Hg	1.0 ppm

Sodium hydroxide liquid caustic soda – Rayon grade	
Grade	Rayon grade
Typical analysis average	
Na_2O	76.61%
NaOH	98.25%
Na_2CO_3	0.76%
NaCl	1200 ppm
$NaClO_3$	< 2 ppm
Fe_2O_3	0.001%
SiO_2	0.0039%
Al_2O_3	0.001%
CaO	0.0027%
MgO	0.0038%
Cu	0.00002%
Mn	0.00005%
Pb	0.00005%
Ni	0.00009%
Na_2SO_4	0.20%
As	0.01ppm

Sodium chloride – Common salt NaCl	
Purity	97%
Water content	0
Insoluble Matter	0.1%
SO_4	1.0%
Ca	0.5%
Mg	0.5%
Fe (soluble)	Non-detect
Sand or clay	Nil
Soluble alkalinity as $CaCO_3$	Nil

Additional information

Safety: Use of regenerant chemicals must be done under the care and supervisions of persons knowledgeable in handling these types of materials, and with the proper safety equipment.

MSDS/SDS: Material Safety Data Sheets/Safety Data sheets are available on www.purolite.com. MSDS sheets should be consulted for additional information on product safety, handling and disposal.

Storage and Transportation: Information on the proper storage and transportation can be found on www.purolite.com.

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Purolite—the leading manufacturer of quality ion exchange, catalyst, adsorbent and specialty high-performance resins—is the only company that focuses 100% of its resources on the development and production of resin technology.

We're ready to solve your process challenges.
For further information on Purolite® products and services, visit www.purolite.com or contact your nearest Technical Sales Office.

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