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Posted by Anonymous on Fri, 2017-09-01 11:29

Sulfuric acid - going brown: Would you please tell me why concentrated sulfuric acid goes brown?

Also, if you use a diluted solution (2M) of the brown acid as part of the standardisation of potassium permanganate, will it work and are results reliable?

Voting:



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Year Level:

7

8

9

10

Senior Secondary

Laboratory Technicians:

Laboratory Technicians

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Sulfuric acid - going brown

Submitted by sat on 23 September 2017

Answer Reviewed 02 February 2023

Asked By: Anonymous

Expert Answer

Physical appearance of sulfuric acid

Concentrated sulfuric acid when pure is generally a clear, viscous, colourless to slightly yellow corrosive oily liquid¹. Occasionally during manufacture it is dyed a brown colour to highlight its hazards¹.

Part 9 of the manufacturer's SDS (Physical and Chemical Properties) for sulfuric acid should be consulted for information on the form and appearance if there is any uncertainty about what it should look like².

Contamination of sulfuric acid

If your concentrated sulfuric acid has changed colour since purchase then it is likely to be an indication of an impurity or contaminant. Sulfuric acid can appear as a yellow to brown colour when contaminated with certain metals mainly iron and organic material^{3,4}. Sulfuric acid is a very strong dehydrating chemical and is hygroscopic.

Issues using contaminated sulfuric acid in experiments

If you are unable to identify the type of contamination in your sulfuric acid you would not be able to determine if it would be safe to use as you could not assess for any unwanted reactions. It is important to know what you are working with to be able to identify and assess any hazards and implement controls.

You also need to consider whether the sulfuric acid will be suitable for the purpose. The activity you describe requires conducting a titration. In a titration you are required to read an end point due to a sensitive colour change. This colour change may be masked and difficult to read due to the presence of any colour in the reagents being used.

Recommendations

Science ASSIST recommends that you dispose of the contaminated sulfuric acid and prepare a fresh solution from a pure uncontaminated acid.

Science ASSIST also recommends that schools assess their chemical stocks periodically. Chemicals should be purchased in minimal quantities and should be inspected for any change in the colour and form, absorption of any water and any cloudiness or crystals which may develop in a liquid.

Further information on sulfuric acid can be obtained from our Chemical Management Handbook [Chemical Management Handbook for Australian schools](#)

References:

¹ Chem Supply website, (2022) '*Safety Data Sheet*'. Please search the product information page on the website for the latest version for Sulfuric acid <https://shop.chemsupply.com.au/>

²Flinn Scientific. 2016. *Acid Safety – Safety Tips for Using Acids in School Laboratories*, <https://www.flinnsci.com/api/library/Download/1f8f76d330554992ae36ef25b1...> (Link updated May 2020)

'Sulfuric acid', National Pollutant Inventory website (Australian Government Department of Environment and Energy, <http://www.npi.gov.au/resource/sulfuric-acid> (Accessed September 2017))

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