organic chemicals

Posted by Anonymous on Thu, 2016-08-18 17:25

Organic chemicals: I have been asked to purchase examples of esters, amides, amines, alkanes and alkenes.

Can someone recommend which of these chemicals are best for school use please?

I have looked on the ASSIST Page of Recommended Chemicals, but I'm still confused as to which would be the best ones to purchase for use by Year 12 students.

Voting:
No votes yet

Year Level:
Senior Secondary
Laboratory Technicians:
Laboratory Technicians

Showing 1-1 of 1 Responses

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Submitted by on 02 September 2016

Answer reviewed 10 February 2023

It is important that a full risk assessment is conducted addressing the proposed use of all chemicals prior to their purchase.

All of the chemicals that you have mentioned have hydrocarbon chains with different functional groups of organic chemicals.[1,2]

In the absence of any knowledge of the particular curriculum purpose or activity for these chemicals, we make the following general comments and have given consideration to the chemicals included in our List of recommended chemicals for science in Australian schools 2021.[3]

- Esters: These are often manufactured in the school laboratory, however, we have sixteen esters included in our list. A common ester is ethyl acetate.
- Amides: We have one amide included in our list, which is acetanilide
- Amines: tris(hydroxymethyl)aminomethane (Tris) is a primary amine and is used for preparing buffers. Hexane-1,6-diamine has two amine groups and is often used in making nylon in school activities. See Making Nylon.[4] You may consider using an amino acid such as histidine or lysine, depending upon what you are planning on using it for. If you would like to suggest adding an amino acid to the list, please let us know.
- Alkanes and alkenes: These are both in the family of non-halogenated hydrocarbons. We have nine chemicals in this group. The names of alkanes typically end in ‘ane’ and alkenes end in ‘ene’. A common alkane used in schools is cyclohexane and a common alkene used in schools is cyclohexene.

Alternative activities:

- Using molecular models: this is a safe way to show the structure of different functional groups of organic chemicals.
- YouTube videos: these are safe alternatives when investigating functional groups and their properties.[5]

References:

[1] 'Organic functional groups'. Chemistry drills website, http://www.chemistry-drills.com/functional-groups.php?q=simple (Accessed February 2023)

[2] 'Ball, David, W; Hill, John, W and Scott, Rhonda, J. 2011. ‘Section 4.6 Introduction to Organic Chemistry' *in Introduction to Chemistry: General, Organic and Biological*, Lard Bucket website, http://2012books.lardbucket.org/books/introduction-to-chemistry-general-...

[3] Science ASSIST. 2021. *List of recommended chemicals for science in Australian schools 2021*, Retrieved from the Science ASSIST website, https://assist.asta.edu.au/resource/4669/list-recommended-chemicals-scie...

[4] Science ASSIST. (2015). ‘Making Nylon’ Science ASSIST Q&A, Retrieved from the Science ASSIST website, https://assist.asta.edu.au/question/2657/making-nylon

[5] ATAR Chemistry for the QCE. (nd). *U4 Topic 1: Properties and structure of organic materials*, Retrieved (10 February 2023) from the ATAR Chemistry for the QCE website: https://www.atarchemistryqce.com/topic-1-properties-and-structure-of-org...

BBC Bitesize. (nd). Organic chemistry, Retrieved (10 February 2023) from the BBC website, https://www.bbc.co.uk/bitesize/guides/z33j6sg/revision/2 (Accessed February 2023)