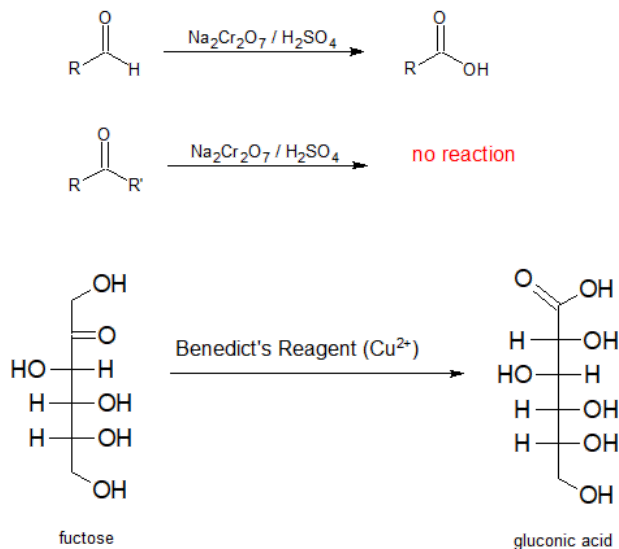


19.14: OXIDATION OF ALDEHYDES

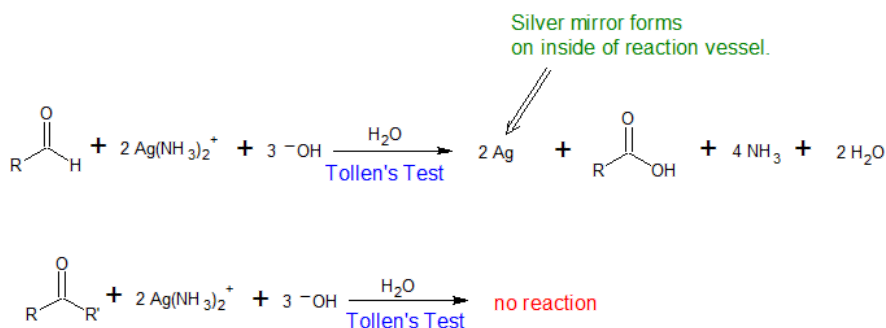
OXIDATION AND CARBONYLS

Aldehydes are so easily oxidized that oxidation reactions can be an unwanted side reaction. Isolated ketones cannot be oxidized. The polyhydroxy ketones of monosaccharides can be oxidized as seen in carbohydrate chemistry.



Tollen's Test

The Tollen's Test differentiates between aldehydes and ketones based on one of their few differences in chemical reactivity. Aldehydes can be oxidized and ketones cannot. In the Tollen's Test, silver ions (Ag^+) oxidize aldehydes to carboxylic acids and are reduced to silver metals which can form a beautiful coating on the inside of the reaction flask.



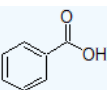

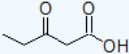
Exercise

26. Draw and name the oxidation products for the following compounds.

- benzaldehyde
- acetaldehyde
- 3-hydroxypentanal

Answer

26.

- a)  benzoic acid
- b)  acetic acid
- c)  3-oxopentanoic acid

CONTRIBUTORS AND ATTRIBUTIONS

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