

PREPARATION OF 1% W/W AQUEOUS SOLUTION OF ASCORBIC ACID

In the case of an unclear reading or in the absence of iron(II) ions after a direct Fe(II) test it is useful to apply a reducing agent to the bathophenanthroline test strip, e.g. a drop of a 1 % w/w aqueous solution of L(+)-ascorbic acid (99% p.a.). This compound reduces potentially migrated iron(III) ions to iron(II) ions, which react with the indicator to form the magenta coloured complex (indirect iron(II) test). Here, the preparation of 100 ml of ascorbic acid 1% w/w is described. If you rarely do this test, then the preparation of a smaller amount of solution might be more suitable. For health and safety precautions wear protective clothing including gloves, goggles and a lab-coat and consult the Material Safety Data Sheets provided by the supplier. Aqueous ascorbic acid solutions are oxidized by air, therefore only use a clear solution.

Chemicals

- L(+)-ascorbic acid (99% p.a., Acros)
- Distilled or demineralised water

Materials and equipment

- laboratory balance
- spatula
- 25 ml glass beaker
- glass rod
- glass funnel
- 100 ml Erlenmeyer or volumetric flask
- glass storage bottle with lid
- label



Procedure

- Weighing 1g of ascorbic acid
 - Choose a weighing vessel (25 ml glass beaker)
 - Check if the balance pan is clean and dry
 - Place the beaker on the laboratory balance
 - Tare the balance
 - Take some ascorbic acid from the original chemical container with a spatula
 - Add a little amount of ascorbic acid to the beaker until 1 g is reached
- Dissolving of ascorbic acid in water
 - Add some (ca. 25 ml) distilled water to the ascorbic acid in the glass beaker
 - Mix by stirring with a glass rod at least once a minute
 - Wait until all ascorbic acid is dissolved (ca. 5-10 min)
- Transfer to volumetric flask
 - Pour the dissolved ascorbic acid through a funnel into the volumetric flask
 - Use distilled water to rinse all of the solution from the beaker, the glass rod and the funnel into the flask
 - Add water to the flask until the solution level is just below the neck of the flask.
 - Stopper the flask, and thoroughly mix by turning upside down and back, keep a finger on the stopper
 - Slowly add drops of distilled water until the meniscus is aligned with the 100 ml mark when viewed directly at eye level
- Transfer solution to a storage bottle
 - Pour the solution through a funnel into the storage bottle, screw the lid tight
 - Label the storage bottle (ascorbic acid 1% w/w + date)
- Clean all equipment
 - Clean the balance and the area around the balance
 - Dispose of any excess or unused ascorbic acid in an appropriate waste container. Never return excess or unused chemicals to their original containers to prevent contamination!
 - Rinse the beaker, glass rod, funnel and volumetric flask in demineralised water and let them dry.

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Weigh the ascorbic acid



Dissolve the ascorbic acid in some demineralised water



Pour this solution into a volumetric flask



Use some demineralised water to rinse all of the solution out of the beaker



Add demineralised water until the level of the solution is 100 ml



Level is reached.



Transfer the solution to a storage bottle



Label the storage bottle.