

# Cannizzaro reaction and reaction of benzaldehyde with ethylene glycol

Article no: P3101600



## Principle

In the first part of the experiment, benzaldehyde disproportionates under the effect of alkalis to alcohol-soluble benzyl alcohol and water-soluble benzoic acid that precipitates when the aqueous solution is acidified. In the second part, benzaldehyde reacts with ethylene glycol to form a cyclic acetal. This ethylene acetal is resistant against basic and oxidising reagents. In an acid medium, it once again splits up into its original products. It is because of these characteristics that cyclic acetals are used for blocking the carbonyl function in preparative, organic chemistry.

## Benefits

- Experiment including Abbe refractometer
- Controlled and safe heating via heating mantle and power regulator
- Secure connection of the items by GL screw joint system

## Tasks

1. Show the Cannizzaro reaction of benzaldehyde under basic conditions.
2. Prepare benzaldehyde ethylene acetal from benzaldehyde with ethylene glycol.

## Learning objectives

- Cannizzaro reaction
- Benzaldehyde
- Acetals
- Distillation
- Micro distillation

## Necessary accessories

- Precision balance 620g/0.001g

## Scope of delivery

Support base DEMO	02007-55	1
Support rod, stainless steel, different lengths	02037-00	2
Right angle boss-head clamp	37697-00	3
Universal clamp	37715-01	3
Support ring, i.d. 70mm,	37721-01	1
Test tube, Duran ®, various lengths	36304-01	2
Round-bottom flask, 250 ml, GL 25	MAU-27220002	2
Water separator GL25/12	35790-15	1
Dimroth-Condensor, GL 25/12	MAU-27223500	1
Short distillation head, GL 18/8	MAU-27224500	1
Adapter for 4 flasks, GL25	MAU-27227500	1
Round bottom flask, 100ml, GL 25/12	MAU-27100001	1
Round-bottom flask, 50 ml	MAU-27220001	4
Lab thermometer, -10..+250C	38065-00	2
Secure bottle, 500 ml, 2 x Gl 18/8, 1 x 25/12	34170-01	1
Spring manometer, 0...-1000 mbar	34170-02	1
Glass tubes, right-angled, 150 x 80 mm	MAU-10022500	1
Stopcock, 3-way, t-shaped, glass	36731-00	1
Water jet pump, plastic	02728-00	1
Heating mantle f. roundbottom flask, 100 ml	49541-93	1
Heating mantle f. roundbottom flask, 250ml	49542-93	1
Clamp for heating mantle	49557-01	2
Power regulator	32288-93	1
Graduated cylinder, Borosilicate, 1000 ml	36627-00	1
Beaker, Boro, high-form	46032-00	1
Separatory funnel 250 ml pear-sh.	36884-00	1
Erlenmeyerkolben, Boro, wide neck	46152-00	1

Funnel, glass, top dia. 50 mm	34459-00	1
folded filter, different sizes	47580-05	1
Abbe refractometer	35912-00	1
Immersion thermostat Alpha A, 230 V	08493-93	1
External circulation set for thermostat Alpha A	08493-02	1
Bath for thermostat, makrolon	08487-02	1
Weighing dishes, square shape, 84 x 84 x 24 mm, 500 pcs.	45019-50	1
Hose clip, diam. 8-16 mm, 1 pc.	40996-02	2
Rubber hose	39282-00	6
Rubber hose for vacuum	39286-00	2
Spoon, special steel	33398-00	1
Wash bottle, plastic, 500 ml	33931-00	1
Glass rod, boro 3.3, l=300mm, d=7mm	40485-05	1
Pasteur pipettes, 250 pcs	36590-00	1
Rubber caps, 10 pcs	39275-03	1
Boiling beads, 200 g	36937-20	1
Benzaldehyde 500 ml	30036-50	1
Ethyl alcohol, absolute 500 ml	30008-50	1
Ethylene glycol 250 ml	30085-25	1
Toluene 250 ml	30236-25	1
Ortho-phosphoric acid 85% 250 ml	30190-25	1
Hydrochloric acid 37 %, 1000 ml	30214-70	1
Potassium carbonate, 98-100% 250 g	30096-25	1
Potassium hydroxide pellets, 500 g	30103-50	1
Water, distilled 5 l	31246-81	1
Tubing connector, ID 6-10mm	47516-01	2