OIV-MA-F1-01 Conductivity

Type IV method

1. Principle

The electrical conductivity of a column of liquid defined by two parallel platinum electrodes at its ends is measured by incorporating it in one arm of a Wheatstone bridge.

The conductivity varies with temperature and it is therefore expressed at 20°C.

2. Reagents

Use only reagent grade chemicals

2.1. Purified water for laboratories, with specific conductivity below 2 µS cm^{-1} at 20°C, for example EN ISO 3696 type II water.

2.2. Reference solution of potassium chloride.

Dissolve 0.581 g of potassium chloride, KCl previously dried to constant mass at a temperature of 105°C, in demineralised water (2.1). Make up to one litre with demineralised water (2.1). This solution has a conductivity of 1 000 µS cm^{-1} at 20°C. It should not be kept for more than three months.

A commercial preparation can be used.

3. Apparatus

3.1. Conductivity meter enabling measurements of conductivity to be made over a range from 1 to 1 000 microsiemens per cm (µS cm^{-1}).

3.2. Water bath for bringing the temperature of samples to be analysed to approximately 20°C (20 ± 2°C).

4. Procedure

1. Preparation of the sample to be analysed

Use a solution with a total sugar concentration of 25 ± 0.5 % (m/m) (25° Brix): weigh a mass equal to 2500/P and make up to 100 g with water (2.1),

P = percentage (m/m) of total sugars in the rectified concentrated must.

4.2. Determination of conductivity

Bring the sample to be analysed to 20°C by immersion in a water bath. Maintain the

temperature to within ± 0.1°C.

Rinse the conductivity cell twice with the solution to be examined.

Measure the conductivity and express the result in µS cm^{-1}.

5. Expression of the Results

The result is expressed in microsiemens per cm (µScm^{-1}) at 20°C to the nearest whole number for the 25% (m/m) (25° Brix) solution of rectified concentrated must.

5.1. Calculations

If the apparatus does not have temperature compensation, correct the measured conductivity using Table I. If the temperature is below 20°C, add the correction; if the temperature is above 20°C, subtract the correction.

6. Characteristics of the method

Repeatability (r)

- r = *3* µ*S/cm*

Reproducibility (R)

- R = *16* µ*S/cm*

Table I

Corrections to be made to the conductivity for temperatures different from 20°C (µS cm^{-1})

Conductivity	Temperature (°C)									
	20.2 19.8	20.4 19.6	20.6 19.4	20.8 19.2	21. 19.0	21.2 18.8	21.4 18.6	21.6 18.4	21.8 18.2	22,0[1] 18.0[2]
0	0	0	0	0	0	0	0	0	0	0
50	0	0	1	1	1	1	1	2	2	2
100	0	1	1	2	2	3	3	3	4	4
150	1	1	2	3	3	4	5	5	6	7

200	1	2	3	3	4	5	6	7	8	9
250	1	2	3	4	6	7	8	9	10	11
300	1	3	4	5	7	8	9	11	12	13
350	1	3	5	6	8	9	11	12	14	15
400	2	3	5	7	9	11	12	14	16	18
450	2	3	6	8	10	12	14	16	18	20
500	2	4	7	9	11	13	15	18	20	22
550	2	5	7	10	12	14	17	19	22	24
600	3	5	8	11	13	16	18	21	24	26

(1)Subtract the correction.
(2)Add the correction.