

DETERMINATION OF CORROSIVITY OF SOLUBLE OIL EMULSIONS**Application**

This method is used to determine and compare the corrosion inhibiting characteristics of soluble oil emulsions. Two methods are described as follows:

- a) Determination of Break Point.
- b) Checking Break Point against Specification.

Apparatus and Chemical Required**Filter Papers**

9 cm diameter Whatman No. 40 or equivalent.

Petri Dish

9 - 10 cm diameter with lid.

Pipettes

2 mL capacity.

Measuring Cylinder

100 mL capacity - stoppered.

Sieve

16 mesh - to BS 410:1969 (DIN 4188 - 1 Nr. St.).

Guide

35 mm² - (perspex) for masking test area.

Synthetic Water

Water with a total hardness of 3.58 mmol CaC₁₂.6H₂O and MgSO₄.7H₂O per litre being prepared from:

17 mL of solution A

3 mL of solution B

980 mL of boiled and cooled down, distilled, chemical pure water*.

*Water prepared by means of ion exchange is only permitted when the evaporation residue is below 2 mg/1.

Date	Action	Revisions
2000 11 10	Revised	Editorial – no technical change A. Cockman
1994 02 28		

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Page 1 of 5

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Solution A:

39 g calcium chloride ($\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$), A.R., dissolved with distilled water to 1 litre.
1 mL of this solution A diluted with distilled water and 1 litre results in water of a hardness of 0.179 mmol $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$ per litre.

Solution B:

44 g magnesium sulphate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$), A.R., dissolved with distilled water to 1 litre.

1 mL of this solution B diluted with distilled water to 1 litre results in water of a hardness of 0.179 mmol $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ per litre.

Transparent Grid

35 x 35 mm - divided into 100 squares of 3.5 mm length of side.

Spoon-spatula

Acetone A.R.

Cast Iron Drillings

(Chips) dimensions: Approximately 5 x 5 mm prepared in accordance with the requirements of the Institute of Petroleum.

Source: PERA
Melton Mowbray
Leicestershire LE13 OPB

Preparation of the Test Chips and the Water Soluble Coolant

a. **Cast Iron Chips**

The chips are to be inspected visually prior to use with regard to freedom of any corrosion and then be sieved. They never should be touched with a bare hand.

b. **Soluble Oil**

Using the 2 mL pipette, transfer the required volume of the soluble oil sample to the measuring cylinder containing the required amount of the freshly prepared synthetic water. Replace stopper immediately and shake vigorously until dispersion is complete. Each mixture is to be tested twice; for each individual mixture (concentration) a freshly prepared dispersion is to be made.

Conditioning and Test Conditions

The tests must be performed in a temperature controlled room at 20 +/- 2 °C free from corrosive fumes and direct sunlight.