8-8 Test Method – Formed Foil for Cathode 1 of 2

1. Scope of Test

0.9 ≦ Vfs ≦ 5.0

2. Definitions of Technical Codes

1) Vfs : Nominal Formation Voltage
2) Vt : Dielectric Withstanding Voltage

3. Test Procedure

1) Procedure ①Capacitance Measurement
②Vt Measurement

4. Test Equipment for Capacitance Measurement

1) Capacitance Measurement Device
Capacitance Meter in accordance with JIS C 5101-1,4.7
Measurement Frequency : 120Hz±5%
Measurement Voltage : 0.5Vrms or less
2) Measurement Vessel
Material : Glass
Volume : 200ml or 300ml
3) Counter Electrode
Test Specimens

5. Test Equipment for Vt Measurement

1) DC Power Supply
Ripple Content : 2% or less for 50,60Hz
1% or less for 100,120Hz
DC Voltage Stability : ±3%
2) DC Voltmeter
Internal Resistance : 1MΩ or higher
Accuracy : ±0.5%
3) DC Ammeter
Internal Resistance shall be sufficiently small compared to Load Resistance (10Ω or less)
4) Measurement Vessel
Material : SUS304
Volume : 500±50ml
Depth : 100±20mm
5) Counter Electrode
Measurement Vessel : SUS304
6) Referential Electrode
Material : Platinum Plate
Purity : 99.99% or more
Dimensions : 10×20×0.1mm
7) Volt Recorder
Internal Resistance : 1MΩ or higher
Accuracy : ±0.5%

6. Test Specimen

Test Specimen : In accordance with *8-1 Selecting Test Specimens for Electrical Characteristics Measurements.*

7. Capacitance Measurement

1) Electrolyte for Capacitance Measurement
Ammonium Adipate : 150g
Deionized Water : 1,000ml
Specific Resistance : 6.5(+2.0 −1.5)Ω cm/70±2℃
pH : 6.7(+0.5 −1.5) /50±2℃

2) Condition for Capacitance Measurement
Measurement Temperature : 30±2℃

3) Measurement Circuit

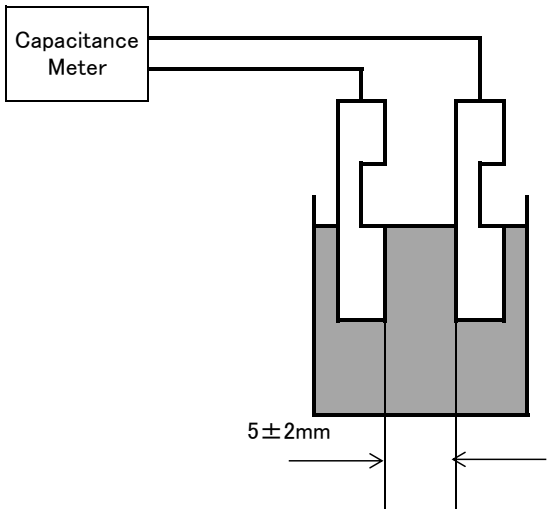

Figure 40

The test specimen shall be immersed in the measuring electrolyte so that the top edge of the Projected Area (area to be measured) is level with the surface.

4) Measurement Calculation
Capacitance per 1c㎡ is calculated by the following formula

$$C = \frac{Cm \times 2}{5}$$

Where : Cm = Measured Value (μF)
: C = Capacitance (μF/c㎡) per 1c㎡

8-8 Test Method – Formed Foil for Cathode 2 of 2

8. Vt Measurement

1) Electrolyte for Vt Measurement

Ammonium Adipate	: 150g
Deionized Water	: 1,000ml
Specific Resistance	: 6.5(+2.0 −1.5)Ω cm/70±2℃
pH	: 6.7(+0.5 −1.5) /50±2℃

2) Conditions for Vt Measurement

Measurement Temperature : 85±2℃

Current Density : 0.5±0.05mA/ 1 Test Specimen 5c㎡

3) Measurement Circuit

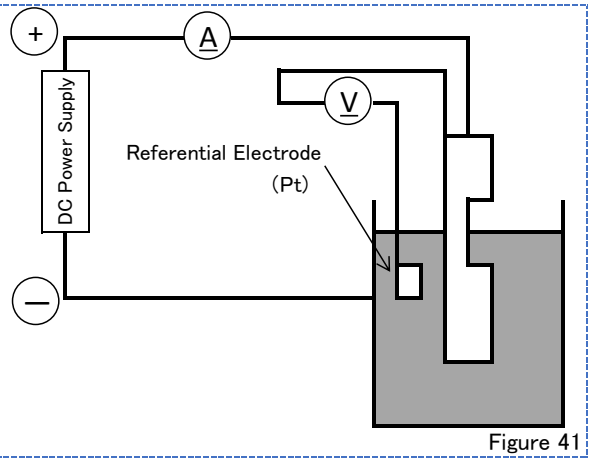

Figure 41

4) Measurement Method

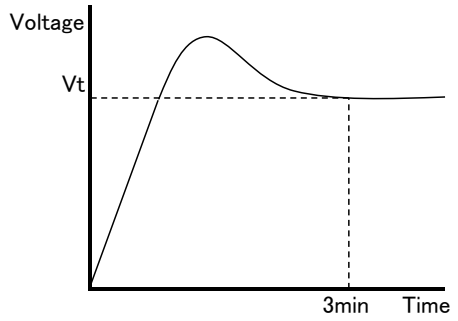

Figure 42

①The test specimen shall be immersed in the measuring electrolyte so that the top edge of the Projected Area (area to be measured) is 6-8mm below the surface.

②The increase in voltage shall be measured after applying constant DC current.

③Dielectric Withstanding Voltage (Vt) shall be defined as the voltage measured 3 minutes after applying DC current.

9. Determination

1) 0.9 Vfs : ≧ −1.1V acceptable

2) 1.2 Vfs : ≧ −0.7V acceptable