8-7 Capacitance Test Method – Etched Foil for Anode, Middle to High Voltage 1 of 4					
1. Scope of Test Etched Foil for Anode, Middle to High Voltage		3) DC Ammeter Internal Resistance shall be sufficiently small compared			
2. Definitions of Technical Codes 1) Vfs : Nominal Formation Voltage 2) Vfe : Voltage across Terminals 2) Vfe : Did to the Unit of the		4) Measurement Vessel Material Volume	: SUS304 : 500±50ml : 100±20mm		
3) Vt : Dielectric Withstanding Voltage 3. Test Procedure		5) Counter Electrode Measurement Vessel	: SUS304		
 The following tests and measurements shall be performed on the same test specimen. Procedure ①Specified Formation 		6) Volt Recorder Internal Resistance Accuracy	: $1M\Omega$ or higher : $\pm 0.5\%$		
2) Proceeding (Coperind Formation) (2) Vt Measurement (3) Capacitance Measurement		6. Test Equipment for Ca	pacitance Measurement		
 4. Test Equipment for Formation 1) DC Power Supply 		Capacitance Measurement Capacitance Meter in acc Measurement Frequency	ordance with JIS C 5101-1,4.7 : 120Hz±5%		
Ripple Content : 29 1 ¹ DC Voltage Stability : ±	% or less for 50,60Hz % or less for 100,120Hz =3%	Measurement Voltage DC Bias Voltage 2) Measurement Vessel	: 0.5Vrms or less : 1.5V		
2) DC Voltmeter Internal Resistance	: $1M\Omega$ or higher	Material Volume	: Glass : 200ml or 300ml		
Accuracy 3) DC Ammeter Internal Resistance shal	:0.ɔ% I be sufficiently small compared	Material : Platinum p	plate of 40,000 μF or higher		
to Load Resistance (10Ω or less) 4) Formation Vessel		7. Test Specimen Test Specimen : In accordance with 8-1 Selecting Test Specimens for Electrical			
Volume Temperature Control	: Approx. 1L Capable of maintaining the	Characte	eristics Measurements.		
5) Counter Electrode	solution temperature at 95°C or higher.	8. Formation 1) Solution BM Boric Acid	: 150g		
Formation Vessel 6) Heat Treatment Device Temperature Control: Co	: SUS304	28% Aqueous Ammonia Deionized Water Specific Resistance	: 1.3ml : 1,000ml : 350–550, 0 cm /80°C		
7) Vessel for Depolarizatio Material	n : SUS 304	2) Solution BH Boric Acid	: 95g		
Volume Temperature Control	: 600±60ml : Capable of maintaining the temperature of approx. 500ml of deionized water at 90±2°C	28% Aqueous Ammonia Deionized Water Specific Resistance 3) Solution BSH Borio Asid	: 0.4ml : 1,000ml : 800−1,200 Ωcm/80°C : 90∞		
8) Vessel for Boiling Treat Material	ment : Glass	28% Aqueous Ammonia Deionized Water	: 0.25ml : 1,000ml		
Volume Temperature Control	: 600±60ml : Capable of maintaining the temperature of approx. 500ml of deionized water at 98°C or higher	Specific Resistance 4) Chemical Treatment Phosphoric Acid Deionized Water Specific Resistance	: 1,600-1,800 Ωcm/80°C : 60g : 1,000ml : 27-33 Ωcm/56°C		
9) Vessel for Chemical Tre Material	eatment : Glass	5) Formation Circuit	,		
Volume Temperature Control	: 600±60ml : Capable of maintaining the temperature of approx. 500ml of chemical treatment solution at 70°C±2°C	wer Supply			
5. Test Equipment for Vt Measurement 1) DC Power Supply Ripple Content : 2% or less for 50,60Hz		DC PC			
DC Voltage Stability 2) DC Voltmeter	1% or less for 100,120Hz : ±3%		Figure 33		
Internal Resistance Accuracy	: 1MΩ or higher : ±0.5%	The test specimen shall be i electrolyte so that the top e (area to be measured) is 8-	immersed in the measuring edge of the Projected Area 15mm below the surface.		

8-7 Capacitance Test Method - Etched Foil for Anode, Middle to High Voltage 2 of 4

6)Formation Conditions for 257Vfs					
Process	Items	Unit	Conditions		
Boiling	Temperature	°C	99±1		
Treatment	Time	min	6±0.5		
	Vfe	V	Varies by Foil		
Formation	Current Density	mA∕c m ႆ	25		
	Temperature	°C	≧95		
U	Time	min.	10±1		
	Formation Electrolyte	—	Solution BM		
Deionized Water Wash	-	°C	Room Temperature		
Depolarization	Temperature	°C	90±2		
	Time	min	1.5±0.15		
Formation ②	Vfe	V	Varies by Foil		
	Current Density	mA∕cm [*]	25		
	Temperature	°C	≧95		
	Time	min	10±1		
	Formation Electrolyte	—	Solution BM		
Deionized Water Wash	_	S	Room Temperature		
Formation Procedure			Figure 34		

7) Formation Conditions for 529Vfs

Process	Items	Unit	Conditions
Boiling	Temperature	°C	99±1
Treatment	Time	min	7±0.5
Formation ①	Vfe	V	Varies by Foil
	Current Density	mA∕cm [*]	25
	Temperature	°C	≧95
	Time	min	20±2
	Formation Electrolyte	—	Solution BH
Deionized Water Wash	-	°C	Room Temperature
Heat	Temperature	°C	500 ± 25
Treatment	Time	min	1.15±0.12
	Vfe	V	Varies by Foil
	Current Density	mA∕c m ႆ	25
Formation	Temperature	°C	≧95
Z	Time	min	5±0.5
	Formation Electrolyte	_	Solution BH
Deionized Water Wash	-	°C	Room Temperature
Heat	Temperature	°C	500 ± 25
Treatment	Time	min	1.15±0.12
Dopolorization	Temperature	C°	90±2
Depolarization	Time	min	1.5±0.15
Formation ③	Vfe	V	Varies by Foil
	Current Density	mA∕cm [*]	25
	Temperature	°C	≧95
	Time	min	5±0.5
	Formation Electrolyte	—	Solution BH
Deionized Water Wash	_	°C	Room Temperature
Formation Procedure Figure 35			

8) Formation Conditions for 628Vfs				
Process	Items	Unit	Conditions	
Boiling	Temperature	°C	99±1	
Treatment	Time	min	15±1	
	Vfe	V	Varies by Foil	
–	Current Density	mA∕cm [*]	25	
Tormation	Temperature	°C	≧90	
U	Time	min	20±2	
	Formation Electrolyte	—	Solution BSH	
Deionized Water Wash	-	°C	Room Temperature	
Heat	Temperature	°C	500 ± 25	
Treatment	Time	min	3+02	
	Vfe	V	Varies by Foil	
	Current Density	mA∕c m ẩ	25	
Formation	Temperature	°C	≧90	
Z	Time	min	5 ± 0.5	
	Formation Electrolyte	—	Solution BSH	
Deionized Water Wash	-	°C	Room Temperature	
Chemical	Temperature	°C	70±2	
Treatment	Time	min	2±0.2	
Deionized Water Wash	_	°C	Room Temperature	
Formation ③	Vfe	V	Varies by Foil	
	Current Density	mA∕c m ႆ	25	
	Temperature	°C	≧90	
	Time	min	5 ± 0.5	
	Formation Electrolyte	—	Solution BSH	
Deionized Water Wash	-	°C	Room Temperature	
Formation Procedure			Figure 36	



