

## Sangraf Typical Physical Properties for UHP Grade Electrodes

SPECIFICATION		UNIT	NOMINAL DIAMETER OF ELECTRODE	
			UHP	
			Φ300-Φ500	Φ550-Φ700
Electrical Resistivity	Electrode	μΩ.m	4.8 ~ 6.0	4.5 ~ 6.0
	Nipple		3.3 ~ 4.5	3.0 ~ 4.2
Bending Strength	Electrode	MPa	9.0 ~ 15.0	10.0 ~ 15.0
	Nipple		20.0 ~ 28.0	22.0 ~ 30.0
Young's Modulus	Electrode	GPa	9.0 ~ 13.0	10.0 ~ 14.0
	Nipple		12.0 ~ 20.0	14.0 ~ 22.0
Bulk Density	Electrode	g/cm <sup>3</sup>	1.65 ~ 1.75	1.67 ~ 1.77
	Nipple		1.75 ~ 1.82	1.78 ~ 1.85
CTE (100°C-600°C)	Electrode	x10 <sup>-6</sup> /°C	1.1 ~ 1.5	1.1 ~ 1.4
	Nipple		0.8 ~ 1.3	0.81 ~ 1.2
Ash Content (<)		%	<0.3	<0.3

## Sangraf Typical Physical Properties for HP Grade Electrodes

SPECIFICATION		UNIT	NOMINAL DIAMETER OF ELECTRODE	
			HP	
			Φ250-Φ700	
Electrical Resistivity	Electrode	μΩ.m	5.8 ~ 7.0	
	Nipple		4.0 ~ 5.5	
Bending Strength	Electrode	MPa	9.0 ~ 15.0	
	Nipple		16.0 ~ 24.0	
Young's Modulus	Electrode	GPa	9.0 ~ 14.0	
	Nipple		12.0 ~ 20.0	
Bulk Density	Electrode	g/cm <sup>2</sup>	1.62 ~ 1.73	
	Nipple		1.74 ~ 1.8	
CTE (100°C-600°C)	Electrode	x10 <sup>-6</sup> /°C	1.6 ~ 2.0	
	Nipple		1.0 ~ 1.8	
Ash Content (<)		%	<0.3	

