



# TMS PARTNERS WITH NIPPON CARBON

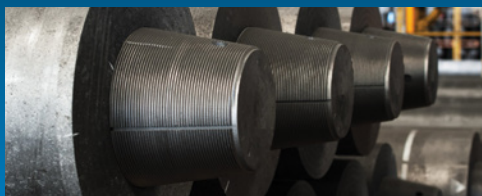


## Graphite Electrodes

Graphite electrodes are used primarily in electric arc furnace steel manufacturing. Graphite electrodes can provide high levels of electrical conductivity and capability of sustaining the extremely high levels of generated heat. They can melt scrap metal at temperatures of more than 2,900 degrees Fahrenheit or 1,600 degrees Celsius.

## TMS and Nippon Carbon Support for Graphite Electrodes

TMS and Nippon Carbon will provide on-site resources to analyze, evaluate and recommend changes to optimize EAF and electrode performance for each application.



### ELECTRODE TYPICAL CHARACTERISTICS

		AC Arc Furnaces		DC Arc Furnaces
		350-450mm	500-700mm	700-800mm
		14T-18T	20T-28T	28T-32T
		UHP	UHP	UHP
Bulk Density	g/cm <sup>3</sup>	1.65-1.79	1.65-1.76	1.67-1.77
Specific Resistance	μΩm	4.3-5.8	4.3-5.8	4.3-5.8
Young's Modulus	GPa	9.9-18.0	8.5-15.0	8.5-15.0
	kN/mm <sup>2</sup>	9.9-18.0	8.5-15.0	8.5-15.0
	kgf/mm <sup>2</sup>	990-1800	850-1500	850-1500
Bending Strength	MPa	10.0-18.0	8.5-15.0	9.0-15.0
Coefficient of Thermal Expansion as Measured from Room Temperature to 500 degrees °C	N/cm <sup>2</sup>	1000-1800	850-1500	900-1500
	kgf/cm <sup>2</sup>	100-180	85-150	90-150
	x10 <sup>-6</sup> /°C	1.1-1.6	1.1-1.6	1.1-1.5
Real Density	g/cm <sup>3</sup>	2.20-2.23	2.20-2.23	2.20-2.23
Porosity	%	19-26	19-26	19-26
Ash	Max.%	0.2	0.2	0.2

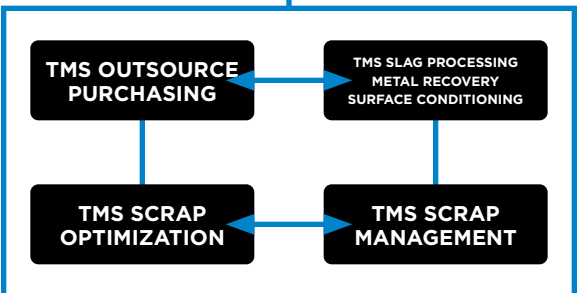
- The values in the above tables are for typical electrodes.
- The measurement for coefficient of thermal expansion (CTE) is from room temperature to -500°C.

## TMS ROLE WITH NIPPON CARBON

TMS and Nippon Carbon have had a longstanding business relationship and TMS will be the exclusive marketer of Nippon Carbon's graphite electrodes in North America. TMS will assist in helping to expand Nippon Carbon's footprint in North America. TMS is a natural partner in this venture since the company has a robust global trading network while being onsite at more than 80 graphite electrode user sites throughout the world.



# NIPPON CARBON ELECTRODES





## **ENVIRONMENTAL LEADERSHIP & MISSION**

TMS and Nippon Carbon are cooperatively working toward providing better services to the graphite electrode market in North America and developing green and low-carbon solutions to create a model of the comprehensive utilization of scrap steel, which will have a positive impact on the development of the North American steel industry. More importantly, TMS and Nippon Carbon believe we have a responsibility to take care of our planet and preserve its beauty, resources and strength for future generations.



## **INTEGRITY IN EVERYTHING WE DO**

TMS and Nippon Carbon have exemplary reputations for doing business with integrity and according to the highest ethical standards. Integrity is ingrained in every aspect of both companies' business cultures.



## ABOUT NIPPON CARBON

Founded in 1915, Nippon Carbon has developed a variety of products featuring carbon's prominent attributes. Nippon's main manufacturing and sales domains are carbon fiber products used for aerospace technology and general industry, High Purity Treatment Graphite used when producing crystalline silicon, Anode Materials for Lithium Ion Battery, Silicon Carbide Continuous Fibers mainly provided for the aerospace industry, impervious graphite and chemicals used for chemical industrial devices and equipment such as heat exchangers, flexible graphite for the automobile industry, and other carbon products. Nippon Carbon's headquarters are in Tokyo.





**TMS International has partnered with Nippon Carbon Co., Ltd, as its exclusive North American distributor of graphite electrodes.**

## **ABOUT TMS INTERNATIONAL**

TMS International is one of the largest global providers of outsourced environmental and industrial services. Since 1926, TMS has set high standards in environmental responsibility through recycling, maintaining energy-efficient operations, processing by-products for beneficial reuse and developing innovative, 24/7 programs designed to reduce greenhouse emissions and help customers reduce their carbon footprint.

## **FOR MORE INFORMATION**

For additional information email [electrodes@tmsinternational.com](mailto:electrodes@tmsinternational.com).

TMS International Website:  
[\*\*tmsinternational.com\*\*](http://tmsinternational.com)

Nippon Carbon Website:  
[\*\*carbon.co.jp/english/\*\*](http://carbon.co.jp/english/)



**SCAN TO LEARN MORE  
ABOUT ELECTRODES**