XURAN

GRAPHITE ELECTRODE

UHP/HP/RP GRADE GRAPHITE ELECTRODES

Reliable Supplier

Proven by Major Steelmaking Workshops

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Xuran New Materials Limited

XURAN

GRAPHITE ELECTRODE

UHP/HP/RP GRADE GRAPHITE ELECTRODES

Xuran New Materials Limited was founded in 2008. The company is located in Hebei Province, China. We are proud of our highly qualified technical team, which can give pro-fessional and reasonable advice to the customers.

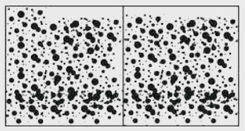
As a China graphite electrodes manufacturer, we owns complete production lines, including raw material mixing, kneading, form-ing, baking, impregnation equipment, graphitization, machining and shaping, etc.

We provide the full range products all along, including UHP, HP and RP grade graphite electrodes. With adequate inventory and caring services, we are recognized by more and more old and new customers!

CONTENT

Production Process

1. Raw Material

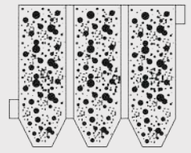


Adopt petroleum coke, needle coke and coal pitch as material.

Store each raw material separately according to grades and supply source.

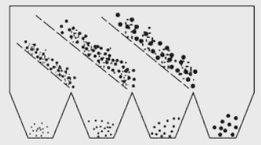
2. Crushing

3. Calcining



4. Medium Crushing

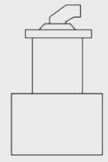
5. Screening



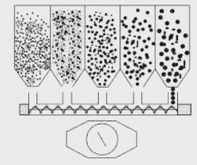
Pulverize and screen the coke pitch.

Through crushing, calcining, medium crushing and screening processes, raw material is screened into specified grain sizes. Then store the screened material in individual silos.

6. Raymond Mill



7. Burden

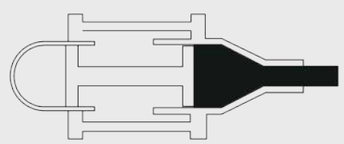


8. Kneading

Weighing & mixing, combined according to recipes.

Kneading is the main factor which influences the quality of graphite electrode. Weigh and mix coke according to the mixing standard based on quality design.

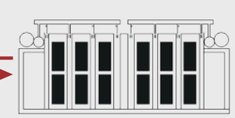
9. Forming



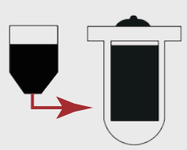
Forming into various sizes by the compressor.

After kneading, the material is formed using an extrusion press. A variety of sizes are available by changing the nozzle on the forming machine.

10. Baking



11. Impregnation



Extruded electrode models are baked and impregnated as needed.

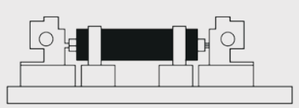
Bake the electrode bodies to improve thermal stability, mechanical strength and electrical conductivity. In order to improve the material density and strength, impregnation and re-baking the products are very important.

12. Graphitizing

Carbon atoms rearrange into specific crystalline form structure.

Treat the re-baked material at extremely high temperature (up to 3000 ˚C) to change its structure from amorphous carbon to graphite.

13. Machining



Graphite electrodes machining & nipple machining.

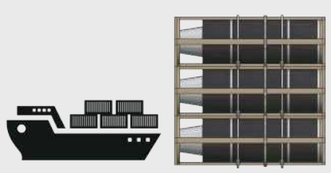
Machine the graphitized material to create accurate sizes and shapes.

14. Finished Product

Finished graphite & nipple.

Through the above 13 complex processes, top quality graphite electrode is finished.

15. Package & Shipment



After testing & inspection, graphite electrodes are packed for shipment.

Graphite electrodes are placed upon wooden pallet and braced strongly with high quality steel tape to be suitable for land and sea transportation.

Graphite Electrode Overview

Graphite electrodes are used in both DC and AC electric arc furnaces. Steelmaking workshops have to cover the cost of these consumable electrodes during new steel production process. So optimizing the usage of graphite electrodes is a cost-saving tactic.

Performance parameters determine quality.

- **Specific Electrical Resistance (SER or ER),** low specific resistance of graphite electrodes allows maximum current carrying capability without overheating of the electrode column.
- **Bulk or apparent density,** a higher bulk density will generally be reflected in improved mechanical properties.
- **Flexural strength,** higher flexural strength in electrodes will generally result in lower electrode breakage frequency.
- **Tensile strength,** higher tensile strength in nipples will generally result in lower nipple breakage frequency.
- **Coefficient of Thermal Expansion (CTE),** lower CTE will generally give better resistance to thermal shock. Also, CTE compatibility between the graphite electrode and connecting nipple is important for satisfactory performance of the electrode joint.

Graphite electrodes are made in various grades based on electric current capability.

- **UHP graphite electrodes** — ultra high power.
- **HP graphite electrodes** — high power.
- **RP graphite electrodes** — regular power.

Graphite electrodes play an important role in steelmaking.

- Electric Arc Furnace (EAF).
  - DC electric arc furnace.
  - AC electric arc furnace.
- Submerged arc furnace.
- Ladle Furnace (LF).

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UHP Graphite Electrode

UHP graphite electrode is mainly used for ultra high power electric arc furnaces with the current density greater than 25 A/cm^2.

- Withstand large currents, high discharge rate.
- Good dimension stability, not easy to deform.
- Resistant to cracking & spalling.
- High resistance to oxidation and thermal shock.
- High mechanical strength, low electrical resistance.
- High machining accuracy, good surface finishing.

Specification

Table 1: Technical Specification of UHP Graphite Electrode

Dia. (inch)	Resistance (≤, μΩ·m)	Density (≥, g/cm^3)	Flexure Strength (≥, MPa)	Elastic Modulus (≤, GPa)	Ash Content (≤, %)	CTE (100 °C – 600 °C) (≤, 10-6/°C)	Current Load (A)	Current Density (A/cm^2)
10	5.5	1.67	11	14	0.3	1.5	8100–12200	20–30
12	5.5	1.67	11	14	0.3	1.5	15000–22000	20–30
14	5.5	1.67	11	14	0.3	1.5	20000–30000	20–30
16	5.5	1.67	11	14	0.3	1.5	25000–40000	19–30
18	5.5	1.66	11	14	0.3	1.5	32000–45000	19–27
20	5.5	1.66	11	14	0.3	1.4	38000–55000	18–27
22	5.5	1.66	11	14	0.3	1.4	42000–66000	17–26
24	5.5	1.66	11	14	0.3	1.4	49000–76000	17–26

Table 2: Graphite Electrode Size & Tolerance

Nominal Diameter		Actual Diameter			Length (mm)		
					Nominal Length	Tolerance	Short Length
(inch)	(mm)	(max.)	(min.)	(rough spot)			
10	250	256	251	248	1600/1800	±100	-275
12	300	307	302	299	1600/1800		
14	350	357	352	349	1600/1800		
16	400	409	403	400	1600/1800/2000/2200		
18	450	460	454	451	1600/1800/2000/2200		
20	500	511	505	502	1800/2000/2200/2400		
22	550	562	556	553	1800/2000/2200/2400		
24	600	613	607	604	2000/2200/2400		

Application

Eccentric bottom tapping electric furnace

Graphite electrode for vacuum ladle furnace

Graphite electrode for electric arc furnace

HP Graphite Electrode

HP graphite electrode is mainly used for ultra high power electric arc furnaces with the current density range of 18—25 A/cm^2.

- Anti-oxidation treatment for longevity.
- High-purity, high-density, strong chemical stability.
- High machining accuracy, good surface finishing.
- High mechanical strength, low electrical resistance.
- Resistant to cracking & spalling.
- High resistance to oxidation and thermal shock.

Specification

Table 1: Technical Specification of HP Graphite Electrode

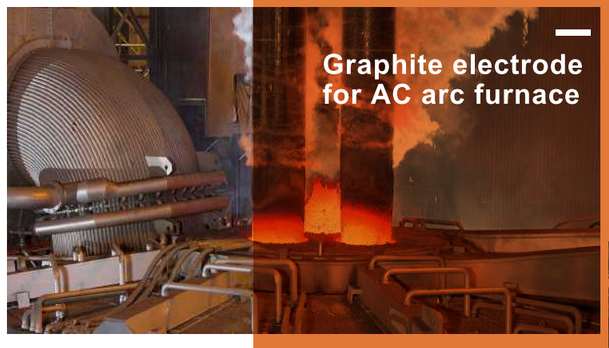
Dia. inch	Dia. mm	Resistance (≤, μΩ·m)	Density (≥, g/cm^3)	Flexure Strength (≥, MPa)	Elastic Modulus (≤, GPa)	Ash Content (≤, %)	CTE (100 ℃–600 ℃) (≤, 10^{-6}/℃)	Current Load (A)	Current Density (A/cm^2)
8	200	6.5	1.62	10.5	12	0.3	2.4	5500–9000	18–25
9	225	6.5	1.62	10.5	12	0.3	2.4	6500–10000	18–25
10	250	6.5	1.62	10.5	12	0.3	2.4	8000–13000	18–25
12	300	6.5	1.62	10.5	12	0.3	2.4	13000–17400	17–24
14	350	6.5	1.62	10.5	12	0.3	2.4	17400–24000	17–24
16	400	6.5	1.62	10.5	12	0.3	2.4	21000–31000	16–24
18	450	6.5	1.60	9.8	12	0.3	2.4	25000–40000	15–24
20	500	6.5	1.60	9.8	12	0.3	2.4	30000–48000	15–24
22	550	6.5	1.60	9.8	12	0.3	2.4	37000–57000	15–23
24	600	6.5	1.60	9.8	12	0.3	2.4	44000–67000	15–23

Table 2: Graphite Electrode Size & Tolerance

Diameter (mm)					Length (mm)		
Nominal Diameter		Actual Diameter			Nominal Length	Tolerance	Short Length
(inch)	(mm)	(max.)	(min.)	(rough spot)			
8	200	205	200	197	1600	±100	-275
9	225	230	225	222	1600		
10	250	256	251	248	1600/1800		
12	300	307	302	299	1600/1800		
14	350	357	352	349	1600/1800		
16	400	409	403	400	1600/1800/2000/2200		
18	450	460	454	451	1600/1800/2000/2200		
20	500	511	505	502	1800/2000/2200/2400		
22	550	562	556	553	1800/2000/2200/2400		
24	600	613	607	604	2000/2200/2400		

Application

Graphite electrode for submerged arc furnace

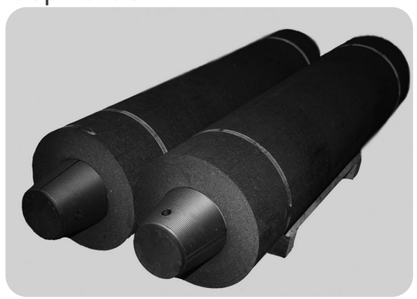


Graphite electrode for AC arc furnace

Graphite electrode for DC arc furnace

RP Graphite Electrode

RP graphite electrode is mainly used for regular power electric arc furnaces to smelt scrap steel, silicon and yellow phosphorus.



- High current carrying capacity.
- Outstanding resistance to breakage.
- High resistance to oxidation and thermal shock.
- Good dimension stability, not easy to deform.
- High mechanical strength, low electrical resistance.
- High machining accuracy, good surface finishing.

Specification

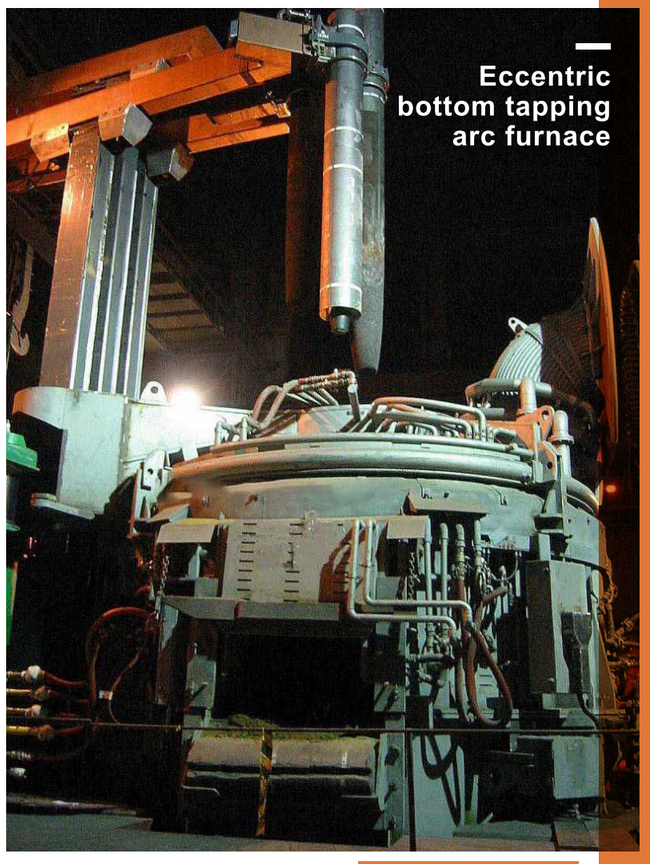
Table 1: Technical Specification of RP Graphite Electrode

Dia. (inch)	Resistance (≤, μΩ·m)	Density (≥, g/cm³)	Flexure Strength (≥, MPa)	Elastic Modulus (≤, GPa)	Ash Content (≤, %)	CTE (100 ℃–600 ℃) (≤, 10⁻⁶/℃)	Current Load (A)	Current Density (A/cm²)
8	8.5	1.53	8.5	9.3	0.5	2.9	5000–6900	15–21
9	8.5	1.53	8.5	9.3	0.5	2.9	6100–8600	15–21
10	8.5	1.53	8.5	9.3	0.5	2.9	7000–10000	14–20
12	8.5	1.53	8.5	9.3	0.5	2.9	10000–13000	14–18
14	8.5	1.52	7.0	9.3	0.5	2.9	13500–18000	14–18
16	8.5	1.52	7.0	9.3	0.5	2.9	18000–23500	14–18
18	8.5	1.52	7.0	9.3	0.5	2.9	22000–27000	13–17
20	8.5	1.52	7.0	9.3	0.5	2.9	25000–32000	13–16
22	8.5	1.52	7.0	9.3	0.5	2.9	32000–40000	13–16
24	8.5	1.52	7.0	9.3	0.5	2.9	38000–47000	13–16

Table 2: Graphite Electrode Size & Tolerance

Diameter (mm)					Length (mm)		
Nominal Diameter		Actual Diameter			Nominal Length	Tolerance	Short Length
(inch)	(mm)	(max.)	(min.)	(rough spot)			
8	200	205	200	197	1600	±100	-275
9	225	230	225	222	1600		
10	250	256	251	248	1600/1800		
12	300	307	302	299	1600/1800		
14	350	357	352	349	1600/1800		
16	400	409	403	400	1600/1800/2000/2200		
18	450	460	454	451	1600/1800/2000/2200		
20	500	511	505	502	1800/2000/2200/2400		
22	550	562	556	553	1800/2000/2200/2400		
24	600	613	607	604	2000/2200/2400		

Application



Eccentric bottom tapping arc furnace

RP graphite electrode for EAF steelmaking

RP graphite electrode for regular power EAF

Surface Quality

1. There should be less than two defects or holes on the electrode surface, the maximum size of which is mentioned in the below chart.

2. There should be no transverse crack on the electrode surface. For the lon–gitudinal crack, the length should be less than 5% of the electrode circum–ference and the width should be 0.3 to 1.0 mm.

3. The width of black area on electrode surface should be less than 1/10 of the electrode circumference and the length should be less than 1/3 of the electrode.

Specification / Defect Dimension	Nominal Diameter of Graphite Electrode (mm)	
	300–400	450–600
Diameter (mm)	20–40 (< 20 mm should be negligible)	30–50 (< 30 mm should be negligible)
Depth (mm)	5–10 (< 5 mm should be negligible)	10–15 (< 10 mm should be negligible)

GRAPHITE ELECTRODE

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Graphite Electrode Nipple

Graphite electrode nipple is the accessory of the graphite electrode. It is used to connect the electrode bodies for the continuous use of electrodes.

- High bulk density, precision thread accuracy.
- Check the tolerance of nipples one by one.
- Bending strength limits are measured.
- High machining accuracy, good surface finishing.
- Outstanding resistance to breakage.
- Original factory production, not outsourcing.

Specification

Table 1: Technical Specification of Graphite Electrode Nipple

Item	Resistance (≤, μΩ·m)	Density (≥, g/cm³)	Flexure Strength (≥, MPa)	Elastic Modulus (≤, GPa)	Ash Content (≤, %)	CTE (100 °C – 600 °C) (≤, 10⁻⁶/°C)
Regular power	6.5	1.69	15.0	15.0	15.0	15.0
High Power	5.5	1.73	16.0	16.0	16.0	16.0
Ultra High Power	4.5	1.75	20.0	20.0	20.0	20.0

Dimensions of nipple & socket

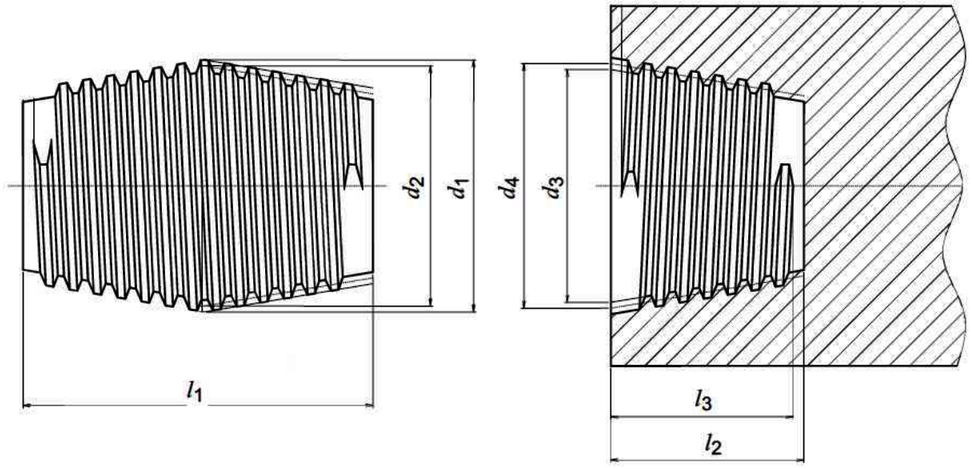


Table 2: Dimensions of Nipple & Sockets (TPI 3)

Electrode Dia. (inch)	Electrode Dia. (mm)	Nipple Designation	Nipple Major Dia.(mm) d_1	Nipple Length(mm) l_1	Socket Pitch Dia.(mm) d_4	Socket Depth(mm) l_2	Socket l_3
9	225	139T3N	139.7	203.20	135.49	107.60	103.60
10	250	155T3N	155.57	220.00	151.36	116.00	112.00
12	300	177T3N	177.16	270.90	172.95	141.50	137.50
14/16	350/400	215T3N	215.90	304.80	211.69	158.40	154.40
14/16	350/400	215T3L	215.90	355.60	211.69	183.80	179.80
16/18	400/450	241T3N	241.30	338.70	237.09	175.30	171.30
16/18	400/450	241T3L	241.30	355.60	237.09	183.80	179.80
20	500	273T3N	273.05	355.60	268.84	183.80	179.80
20	500	273T3L	273.05	457.20	268.84	234.60	230.60
22	550	298T3L	298.45	457.20	294.24	234.60	230.60

- Pin pitch diameter d2 is equal to socket pitch diameter d4.
- Socket minor diameter d3 is equal to pitch diameter d4 minus 3.16 mm.
- Other combinations of nominal diameter and joint are to be agreed upon between the supplier and user.

Table 3: Dimensions of Nipple & Sockets (TPI 4)

Electrode Dia. (inch)	Electrode Dia. (mm)	Nipple Designation	Nipple Major Dia.(mm) d_1	Nipple Length(mm) l_1	Socket Pitch Dia.(mm) d_4	Socket Depth(mm) l_2	Socket Thread Length(mm) l_3
9	225	139T4N	139.70	177.80	136.54	94.90	90.90
10	250	152T4N	152.40	190.50	149.24	101.30	97.30
12	300	177T4N	177.80	215.90	174.64	114.00	110.00
14	350	203T4N	203.20	254.00	200.04	133.00	129.00
14	350	203T4L	203.20	304.80	200.04	158.40	154.40
16	400	222T4N	222.25	304.80	219.09	158.40	154.40
16	400	222T4L	222.25	355.60	219.09	183.80	179.80
18	450	241T4N	241.30	304.80	238.14	158.40	230.60
18	450	241T4L	241.30	355.60	238.14	183.80	179.80
20	500	269T4N	269.88	355.60	266.72	183.80	179.80
20	500	269T4L	269.88	457.20	266.72	234.60	230.60
22	550	298T4N	298.45	355.60	295.29	183.80	179.80
22	550	298T4L	298.45	457.20	295.29	234.60	230.60
24	600	317T4N	317.50	355.60	314.34	183.80	179.80
24	600	317T4L	317.50	457.20	314.34	234.60	230.60

- Pin pitch diameter d2 is equal to socket pitch diameter d4.
- Socket minor diameter d3 is equal to pitch diameter d4 minus 3.16 mm.
- Other combinations of nominal diameter and joint are to be agreed upon between the supplier and user.

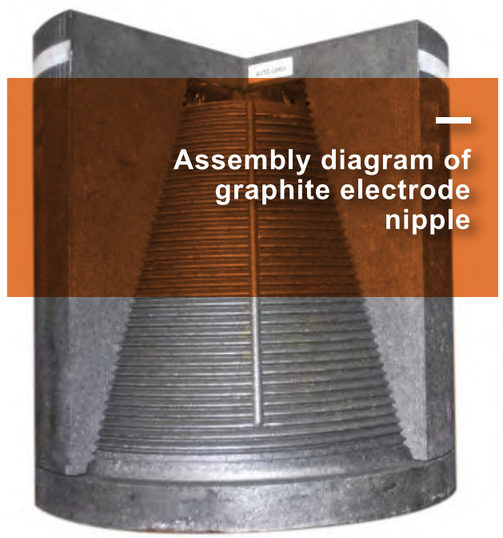
Table 4: Standard Electrode Sizes & Nipple Weights

Electrode Nominal Electrode Size Dia. × L (inch)	Electrode Nominal Electrode Size Dia. × L (mm)	Standard Weight of Nipples TPI 3 T3N lbs	T3N kg	T3L lbs	T3L kg	TPI 4 T4N lbs	T4N kg	T4L lbs	T4L kg
14 × 72	350 × 1800	32.0	14.5	-	-	24.3	11.0	-	-
16 × 72	400 × 1800	45.2	20.5	46.3	21.0	35.3	16.0	39.7	18.0
16 × 96	400 × 2400	45.2	20.5	46.3	21.0	35.3	16.0	39.7	18.0
18 × 72	450 × 1800	62.8	28.5	75.0	34.0	41.9	19.0	48.5	22.0
18 × 96	450 × 2400	62.8	28.5	75.0	34.0	41.9	19.0	48.5	22.0
20 × 72	500 × 1800	79.4	36.0	93.7	42.5	61.7	28.0	75.0	34.0
20 × 84	500 × 2100	79.4	36.0	93.7	42.5	61.7	28.0	75.0	34.0
20 × 96	500 × 2400	79.4	36.0	93.7	42.5	61.7	28.0	75.0	34.0
20 × 110	500 × 2700	79.4	36.0	93.7	42.5	61.7	28.0	75.0	34.0
22 × 84	550 × 2100	-	-	-	-	73.4	33.3	94.8	43.0
22 × 96	550 × 2400	-	-	-	-	73.4	33.3	94.8	43.0
24 × 84	600 × 2100	-	-	-	-	88.2	40.0	110.2	50.0
24 × 96	600 × 2400	-	-	-	-	88.2	40.0	110.2	50.0
24 × 110	600 × 2700	-	-	-	-	88.2	40.0	110.2	50.0

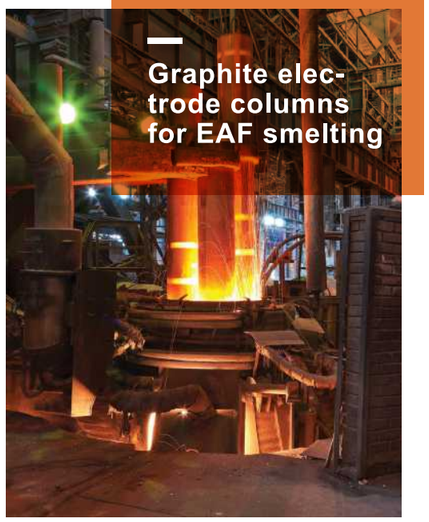
Table 5: Coupling Torque Reference for Nipple & Electrode

Electrode Diameter	8	9	10	12	14	16	18	20	22	24
	200	225	250	300	350	400	450	500	550	600
Easing Moment	200	300	400	550	800	900	1100	1500	1900	2400
	–	–	–	–	–	–	–	–	–	–
	260	340	450	650	950	1100	1400	2000	2500	3000

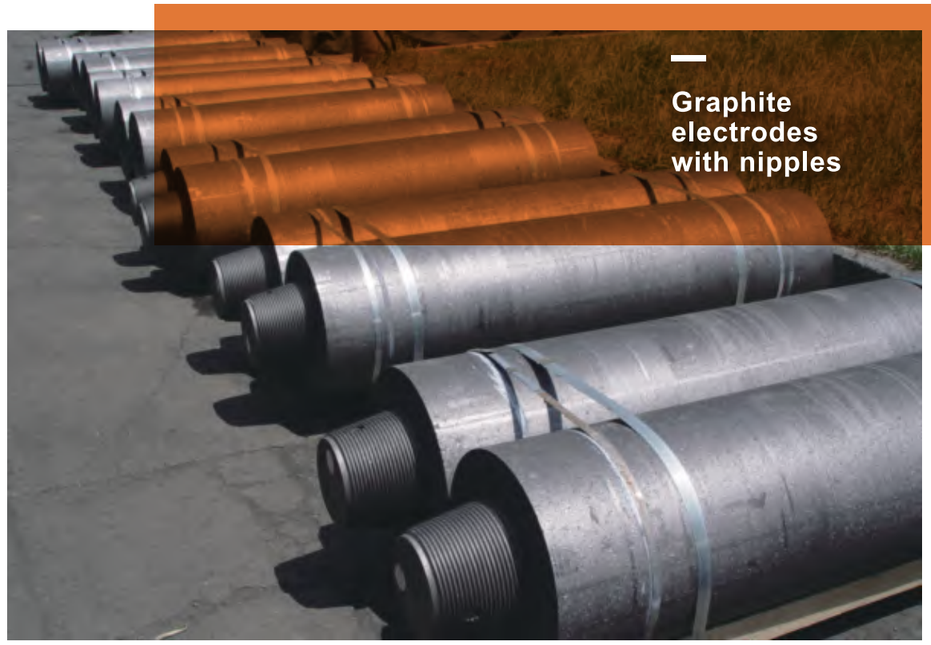
Application



Assembly diagram of graphite electrode nipple



Graphite electrode columns for EAF smelting



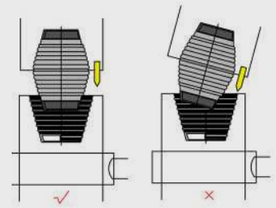
Graphite electrodes with nipples

Production Cautions

When a new electrode is connected to the nipple, it is necessary to clean out the dirt in the socket with com–pressed air.

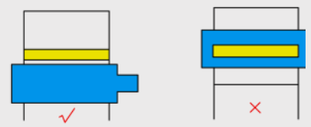
01

02



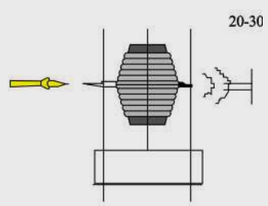
When connecting, the electrode should be aligned with the center axis of the nipple.

The electrode clamp holder should be placed outside of the two security lines, where the nipple is to be posi–tioned.



03

04



Before screwing the electrode, the dust on the surface of the electrode should be blown out with compressed air.

Graphite Electrode Lift Plug

Graphite electrode lift plug, an effective handing tool, is used to lift and handle graphite electrodes or graphite electrode columns during furnace operations.

- High precision thread accuracy.
- Resistant to elevated temperature.
- High machining accuracy, good surface finishing.
- Outstanding resistance to breakage.
- Safe and effective for electrode transfer.
- Proof–tested by a certified calibrated hydraulic testing machine.

Specification

Table 1: Specification of Graphite Electrode Lift Plug

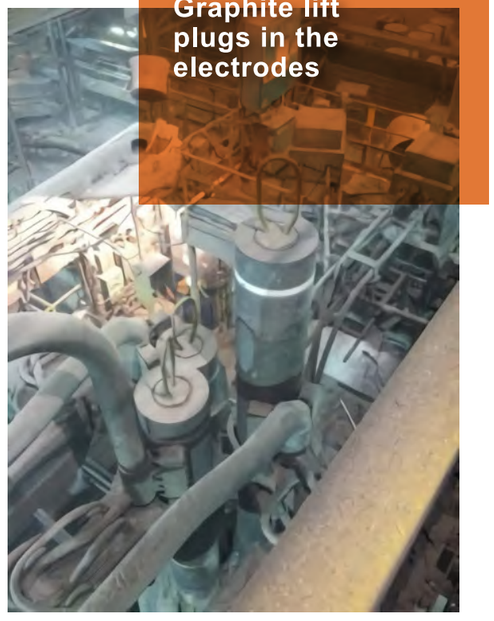
Item	Graphite Pin Size		Small Lifting Bail 9" H × 8" W		Medium Lifting Bail 19" H × 8" W		Large Lifting Bail 39" H × 8" W		Plug Capacity	
	mm	in	kg	lbs	kg	lbs	kg	lbs	kg	lbs
GPL-01	177.17	6.975	17	38	24	54	45	99	1089	2400
GPL-02	203.2	8.5	19	41	26	58	47	103	1860	4100
GPL-03	222.25	8.75	19	42	27	59	47	104	1860	4100
GPL-04	241.3	9.5	21	46	29	63	49	108	2359	5200
GPL-05	269.88	10.625	29	63	38	84	59	131	3583	7900
GPL-06	298.45	11.75	33	73	43	94	64	141	5897	13000
GPL-07	317.5	12.5	34	75	44	96	65	143	5897	13000
GPL-08	374.65	14.75	52	115	62	136	83	183	8165	18000
GPL-09	406.4	16	60	133	70	154	91	201	9525	21000
GPL-10	431.8	17	73	161	83	182	104	229	9979	22000

- The weights of graphite electrode lift plug are approximate based on standard bail.

Application

Graphite lift plugs in EAF smelting process

Graphite lift plugs for electrode transfer



Graphite lift plugs in the electrodes

Test & Storage

Tested by nipple thread measure-ment device

Packed graphite electrode lifting plugs

Packed in carton

Graphite Electrode Selection

Electrode oxidation, sublimation, dissolution, spalling and breaking are all related to the cost of EAF steelmaking. Proper graphite electrode selection, use and maintenance can effectively reduce electrode consumption.

Below chart is the matching relationship between electric furnace capacity, transformer power load and electrode size.

Furnace Capacity	Inner Dia.	Transformer Capacity (MVA)			Electrode Dia.
t	m	RP	HP	UHP	mm
10	3.35	5	7.5	10	300/350
15	3.65	6	10	12	350
20	3.95	7.5	12	15	350/400
25	4.3	10	15	18	400
30	4.6	12	18	22	400/450
40	4.9	15	22	27	450
50	5.2	18	25	30	450
60	5.5	20	27	35	500
70	6.8	22	30	40	500
80	6.1	25	35	45	500
100	6.4	27	40	50	500
120	6.7	30	45	60	550/600
150	7	35	50	70	600
170	7.3	-	60	80	600
200	7.6	-	70	100	600/700
250	8.2	-	-	120	700
300	8.8	-	-	150	700

Export package

• Nominal package type

Electrodes are placed upon wooden pallet and braced strongly with high quality steel tape to be suitable for land and sea transportation. Nipples are packed in crates.

• Pre-set package type

Assembled electrodes and nipples are packed in crates. Nipples and sockets are protected with polyester caps. Keep the protective caps at each end in place and undamaged, this can protect the threads from damage by bumping and other abrasions.

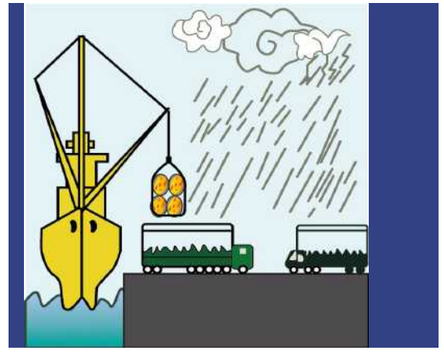
Package Dimensions for Graphite Electrodes

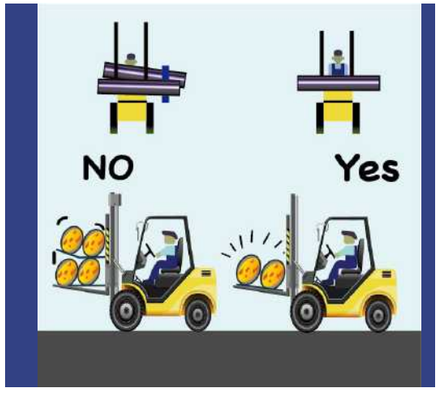
Nominal Diameter		Norminal Package			Pre-Set Package	
mm	inch	pcs/crate	approx.N.W. (kg)	measurement (mm)	approx.N.W. (kg)	measurement (mm)
225 × 1800	9 × 72	10	1160	1900 × 1060 × 600	1200	2100 × 1160 × 560
250 × 1500	10 × 60	8	960	1700 × 1060 × 600	1000	1900 × 1060 × 600
250 × 1800	10 × 72	8	1120	1900 × 1060 × 600	1150	2100 × 1060 × 600
300 × 1800	12 × 72	3	640	1900 × 930 × 390	665	2100 × 930 × 390
300 × 1800	12 × 72	6	1280	1900 × 930 × 390	1325	2100 × 930 × 740
350 × 1800	14 × 72	3	857	2000 × 1050 ×450	890	2160 × 1050 × 450
400 × 1850	16 × 72	3	1104	1950 × 1280 × 500	1161	2130 × 1280 × 500
400 × 2100	16 × 84	3	1260	2200 × 1280 × 500	1317	2380 × 1280 × 500
450 × 1850	18 × 72	2	924	1950 × 970 × 550	980	2130 × 970 × 550
450 × 2100	18 × 84	2	1056	2200 × 970 × 550	1112	2380 × 970 × 550
500 × 1850	20 × 72	2	1143	1950 × 1070 × 600	1210	2150 × 1070 × 600
500 × 2100	20 × 84	2	1306	2200 × 1070 × 600	1372	2390 × 1070 × 600

Operation Guide

Graphite is a brittle material, with limited flexibility. For reducing the consumption & cost, please handle your graphite electrodes carefully.

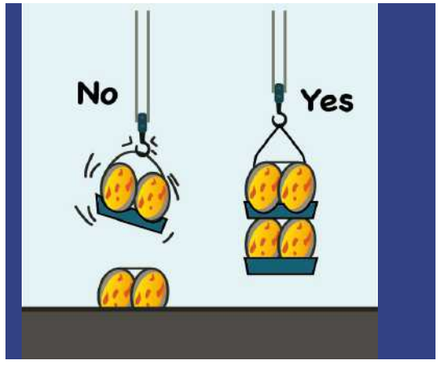
01 Graphite electrode should be covered with rain-proof tarpaulin in the process of transportation.





02 Be careful when transport-ing and pilling the elec-trodes with forklift and avoid collisions. One layer of goods at a time, notice the balance and alignment to avoid falling or break-age.

03 When loading and unloading with forklift, additional wire rope must be used and steel wrapping tape can not be employed directly to fetch electrode.

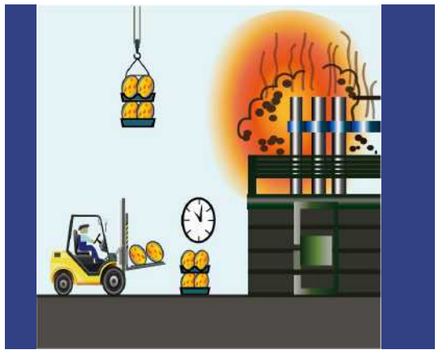


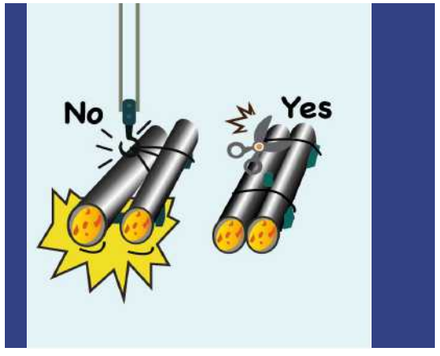
04

Electrode should be stored in clean and dry place. When stocked in open area, it should be covered with rain-proof tarpaulin and the number of piling layers ought not to exceed four.

05

Electrodes should be dried next to electric furnace before using. The temperature should not exceed 120 ℃ and the time should not be less than 48 hours.



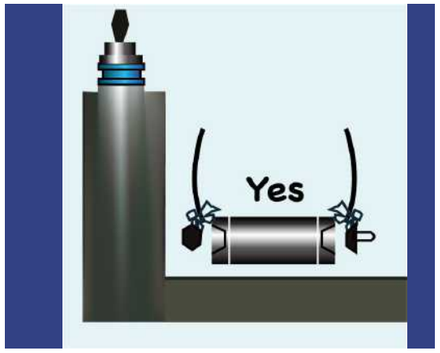


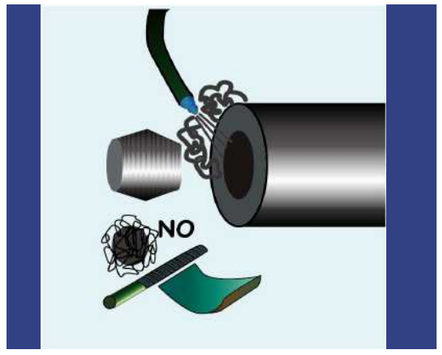
06

When using electrode, special tools should be employed to cut the steel wrapping tape, and crane should not be adopted to avoid bursting.

07

Please clean the electrode threads first before connection, then screw the nipple into one end of the electrode. Don't touch the thread, and don't put the joint directly into the work-ing electrode on furnace.



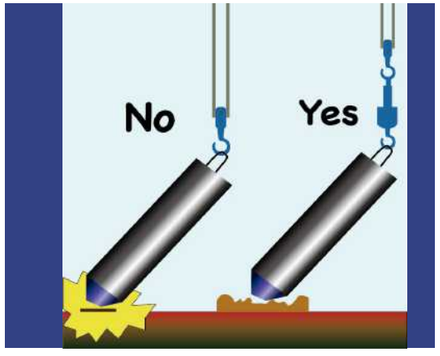


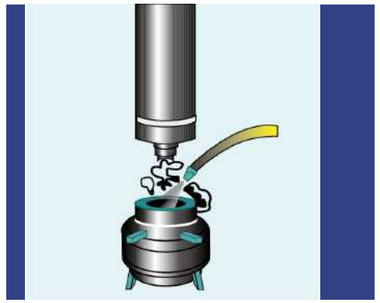
08

Steel-wire ball, metallic brush or emery cloth is not allowed for cleaning electrode thread, but compressed air free of oil and water is available.

09

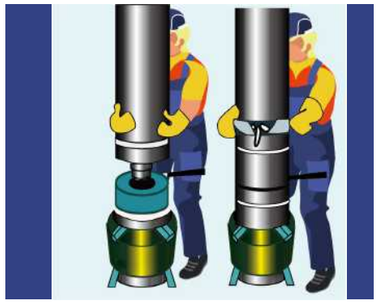
Use revolved resilient hanger and put soft cushions under the electrode nipple to avoid breakage of thread.

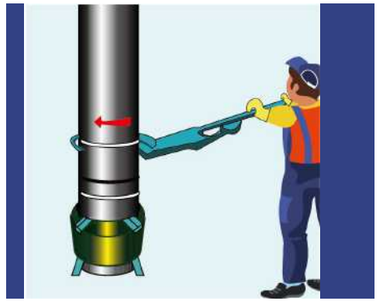




10 Before connecting, clean the screw thread of electrode with com–pressed air free of oil and water.

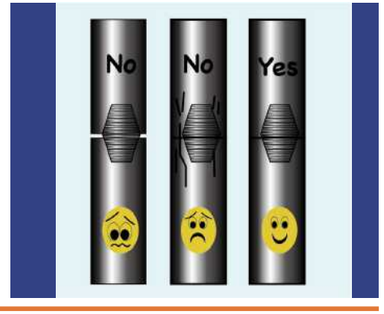
11 When connecting, the electrode is aligned with the center axis of the nipple to which is the connected.





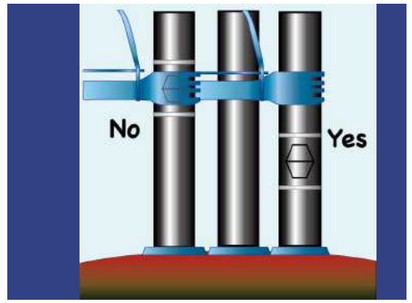
12 Use special caliper to tight electrode according to rated torque by mechanical way, hydraulic pressure or wind pressure equipment should also be available.

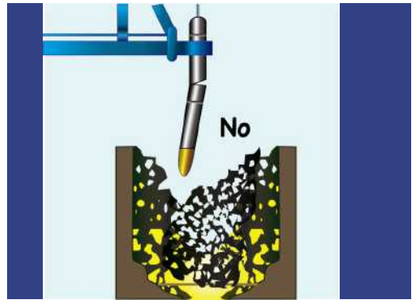
13 If the two poles of electrode are untouched or touched in overpressure, this may cause bad effect. Please refer to the rated torque in the below form.



Diameter		Torque Norm	Diameter		Torque Norm
inch	mm	kg/m	inch	mm	kg/m
8	200	35	16	400	110
10	250	50	18	450	160
12	300	70	20	500	210
14	350	90	24	600	350

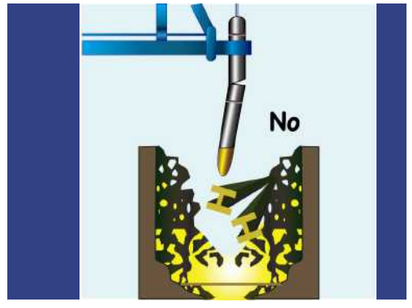
14 Electrode clamp holder must be placed between the two white guard lines. Clamp holder and interfaces of the electrode must be cleaned regularly to keep





15 To avoid the electrode break–age, insulating materials should not be put into the furnace. The working current of electrode must be conformity with the

16 In order to avoid electrode breakage, put the large ma–terials in lower part and small materials on the upper part.



Useful Tips

Using a steel electrode cover to prevent the upper part of electrode group from being oxidized by flame coming from the electrode inserting holes. The cover can prevent the electrode from being polluted by the ash coming from the electrode inserting holes.

To keep joining parts from loosening, place a nipple-pin on the nipple. At normal temperature, the pin will remain in a solid state. As the temperature rises, the melting nipple pin will bind the electrode and nipple together.

XURAN | GRAPHITE ELECTRODE

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