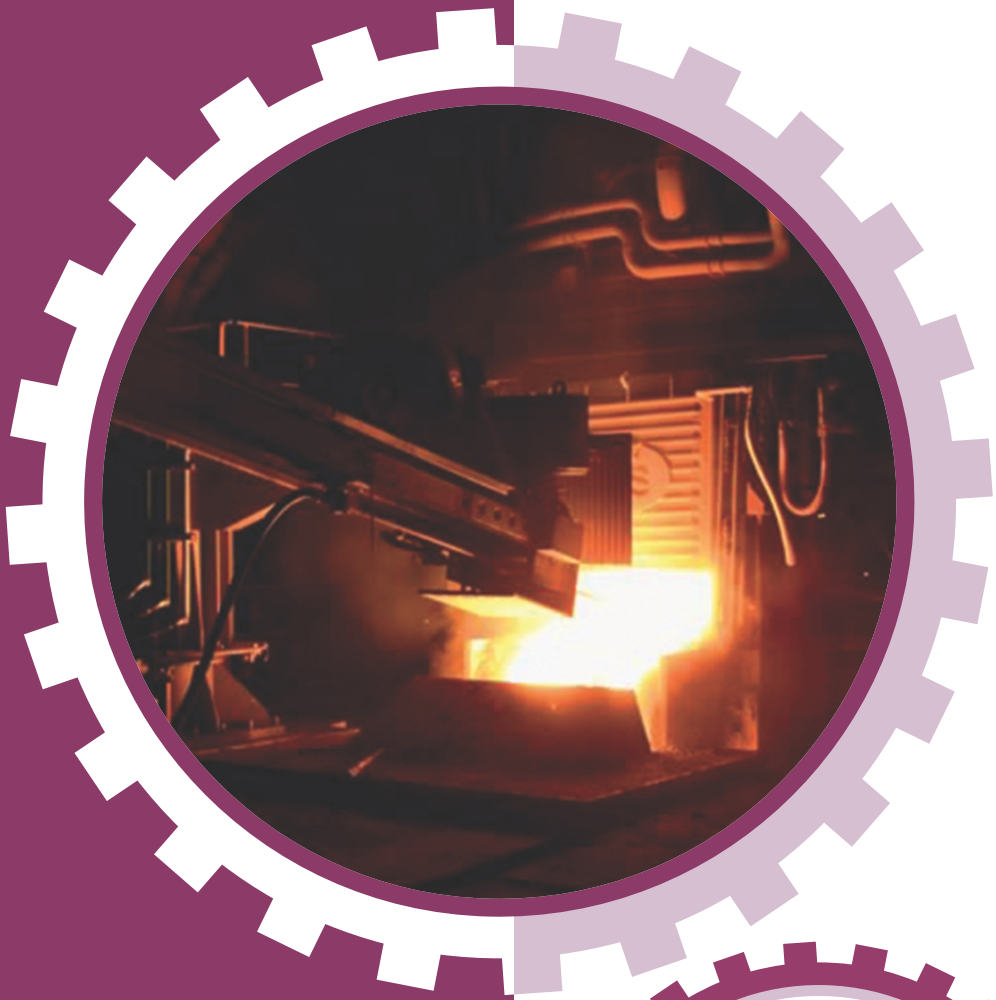
HKANDI ENGINEERING

CALORISED AND CERAMIC COATED PIPES



DBS CERT

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MSCB-157

KANDI ENGINEERING

CALORISED & CERAMIC COATED PIPES (CCCP)

KANDI introduced **CALORISED & CERAMIC COATED PIPES (CCCP)** for Indian & Global Steel Making Shops to **increase the lance life beyond conventional black steel pipes and coated pipes.**

Calorised lance pipe is made up of 5 layers. At the core is a high quality mild steel lance pipe.

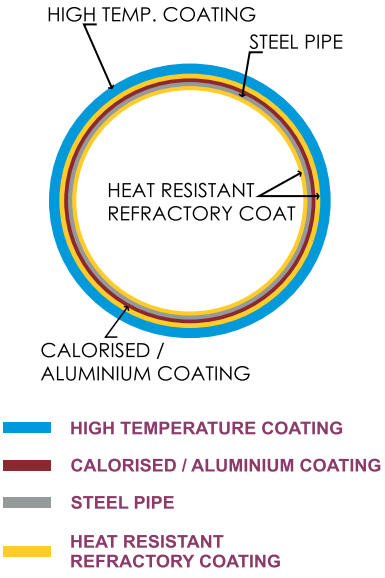
By calorisation, a thickness of 100-150 microns is imparted on outer surface, and further coating with refractory materials in 200-300 microns thickness on both inner and outer surfaces, the diffusion is an inter-metallic bond, which doesn't get damaged either by mechanical working like bending or straightening or by high temperatures. In the case of metal diffused pipes, the metal existing at the surface of the diffused zone is oxidised to its respective oxide, which prevents the further progress of oxidation and also melting. For instance, by calorisation, aluminium is oxidised to alumina, which has a **very high melting point 2050^{0}C compared** to the melting point of aluminium, which is mere 658^{0}C.

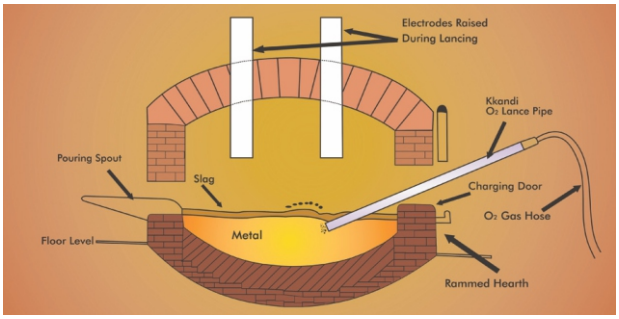
Why Calorised Lance Pipes were developed for Oxygen Steel Making ?

In the process of steel manufacturing by open hearth or electric furnace, the consumption rate of lance pipes for oxygen injection slows rather high ratio owing to high temperature and severe oxidation. In general, steel pipes are used as lance pipes for oxygen injection. **If MS pipes are treated by Calorisation process, consumption rate of lance pipes will decrease 5~8 times.** Research conducted over many years revealed that the most effectual method is to diffuse aluminium into the pipe's surface, so as to promote wear proof properties on steel pipe. **Calorising is carried outside of the steel pipe to promote wear and fire proof properties of the pipe.** To enumerate, the advantages of these pipes in oxygen steel making process are:

1. The exothermic reaction and agitation promote decarbonisation and heat rise in the furnace, while foaming slag can be eliminated.
2. Fusion of sub material can be accelerated.
3. Quality of steel will be improved.
4. As the process raises the temperature.
5. Selection of raw materials to be charged becomes easy.
6. The process raises the production capacity of an electric furnace.
7. Hydrogen, Nitrogen and non-metallic inclusions can be eliminated through oxidation.
8. It makes it possible to recover chrome with the use of high chrome steel scrap.

CROSS-SECTION OF ELECTRIC ARC FURNACE SHOWING Kkandi O_2 LANCE PIPE





When Calorised pipe is exposed to high heat, the refractory material and the Calorised layer form an Aluminum Oxide Film which increases the melting temperature to **2050° C (3750° f). Bare lance pipe melts at temperatures of 1300 to 1500°C (2400 to 2800° f.)**

CALORISATION ON CERAMIC COATED PIPE

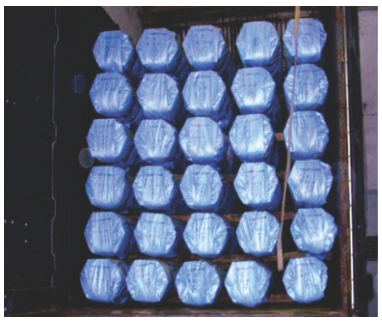
MS pipes are **Calorised** on outer surface, and are thereafter given **Ceramic Coating** on both inner and outer surface after the calorising treatment. Ceramic coating gives an extra ordinary higher life and resistance to corrosion at high temperature than ordinary MS pipes and expensive stainless and alloy steel pipes normally used in oxygen lancing in electric arc furnaces and chemical factories and refineries. **The average life of calorised with ceramic coated pipes is 5~8 times more than that of ordinary MS pipes and stainless steel pipes.**

Some of the various USES of CCCP include the following:

- Cutting scrap, raising bath temperatures and decarburizing
- Opening nozzles in tundish and ladles
- Injecting carbon and other powders into the electric furnace and ladle
- Opening the iron notch of a blast furnace
- Injecting argon into ladles
- Injecting argon and oxygen into the A.O.D. furnace
- Injecting flux for degassing in aluminum melting furnaces

KKANDI ENGINEERING

STANDARD SIZES AND PACKING



FULLY LOADED CONTAINER

NOMINAL BORE SIZE (mm)	PACKING* (per bundle)	LENGTH* (mm)
15(½")	100 Pcs	5500 mm OR 2750 mm
20(3/4")	100 Pcs	
25(1")	100 Pcs	
32(1 1/4")	50 Pcs	
40(11/2")	50 Pcs	

*And/or as per customer's requirment

LOOSE CARGO

SPECIFICATION

TYPE 1	Both ends threaded with one coupling & one plastic cap.	Threads — Screw Coupling — Plastic cap
TYPE 2	Both ends threaded with one coupling & one plastic cap.	150 - 170mm uncoated
TYPE 3	No threads, plain ends	200 mm.
TYPE 4	No threads with pressed coupling	Press Coupling — 200 mm.

- Refractory / Calorised & Ceramic Coating

To summarize, Calorised & Ceramic Coated Pipes (CCCP) is carbon steel pipe with calorisation on outer surface of pipe, and thereafter multiple, thin layers of ceramic coating both exteriorly and interiorly. The outer surface of ceremic coating on pipe is resistant to slag attack and extends the life of the pipe when it is immersed into molten metal or in high temperature atmosphers. The CCCP applications include powder injections, tap-hole cleaning and opening nozzles in ladles, tundish and launders.

N.B & SERIES	OD	WALL THICKNESS	STD LENGTH*	COATING THICKNESS COVERED
mm	mm	mm	mm	MICRONS
08	13.4	1.7 - 1.8	5500	250avg.
10	16.9	1.8 - 1.9	5500	250avg.
15	21.2	2.0 - 2.1	5500	300avg.
20	26.9	2.3 - 2.4	5500	350avg.
25	33.8	2.5 - 2.6	5500	400avg.
32	42.5	2.5 - 2.7	5500	400-450avg.
40	48.4	2.8 - 3.0	5500	400-450avg.

*** OR AS PER CUSTOMER'S REQUIREMENT**

CHARACTERISTICS OF KKANDI LANCE PIPES

- **EXCELLENT REFRACTORINESS**
- **SPEEDY DE-CARBURISATION** for optimal metal oxgen interaction
- **GREATER EFFICIENCY** of reaction
- **COST REDUCTION** in Steel making

KANDI ENGINEERING

COMPANY PROFILE

KANDI ENGINEERING PVT. LTD. was incorporated in 1982 and started initial trading activities at Manor (Maharashtra), an Industrial Area just 85 kms from Mumbai. INDIA. Cost saving and good quality being the motto of the Management, the production started in 1995 for manufacture of industrial products related to Steel & Metallurgical Industry for products namely:

- Calorised & Ceramic Coated Oxygen Lancing Pipes
- Burning / Thermal Lances for scrap, scull, non-ferrous cutting and cleaning of tap holes, launders etc.
- Refractory / Monolithic Injection Lance
- Manually Operated Slide-Gate System for pouring of liquid steel (upto 30 MT ton capacity)
- Powder Coated Pipes for Oil and Gas applications
- M. S. ERW Steel Pipes from sizes 6NB to 100NB for general usage
- Coated Graphite Electrode for EAF & LF/VOD

Why we

- ISO 9001:2015 Certification
- Over 2 decades of manufacturing
- Well conversant with Steel & Non-ferrous Mills
- Electrical connected load of 106HP
- Standby DG set with 62.5HP
- 15,000 sq.ft. of manufacturing shed
- Clean & Specious space availability
- Eco friendly
- Cost effective products
- Competitive & Effective organization


DBS CERT

CERTIFICATE

This is to Certify that

Quality Management System

of

KANDI ENGINEERING PVT LTD.

Plant: Manor Dam Road, Village-Manor, Dist. Palghar, Maharashtra-401403, India

has been independently assessed by DBS and is compliant with the requirement of:

ISO 9001:2015

For the following scope of activities:

MANUFACTURE AND SUPPLY OF CALORISED & CERAMIC COATED OXYGEN LANCING PIPES, THERMAL/BURNING LANCE (R.C.C CUTTING TORCH), POWDER COATED GASLINE/ WATERLINE PIPES, COATED GRAPHITE ELECTRODES

Certificate Number: Draft

Date of Certification:	26th July 2022
1st Surveillance Audit Due:	25th July 2023
2nd Surveillance Audit Due:	25th July 2024
Certificate Expiry:	25th July 2025

This Certificate is property of DBS Certifications and remains valid subject to satisfactory surveillance audits

Head of Certification

IAS ACCREDITED MSCB-157

IAF

The certificate remains the property of DBS Certifications Private Limited, to whom it must be returned upon request.

DBS CERTIFICATIONS PVT. LTD.

142, IInd Floor, Aviar Enclave, Paschim Vihar, Delhi-110063, (NOIA)info@dbscertification.com,www.dbscertification.com

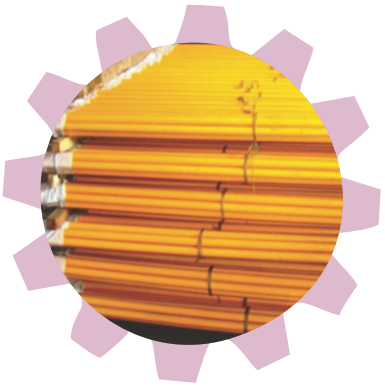
ACCREDITED BY :

International Accreditation Service (IAS) 3060, Saturn Street Suite 100, Brea, Ca 92821-1732, United States of America

Global Presence

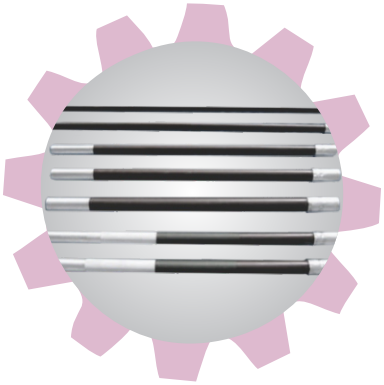
- U.S.A.
- GERMANY
- TAIWAN
- U.A.E.
- TUNISIA
- BAHRAIN
- MYANMAR

POLYESTER POWDER
COATED GAS-LINE PIPES



REFRACTORY/MONOLITHIC
INJECTION LANCE

CALORISED & CERAMIC
COATED PIPES (CCCP)

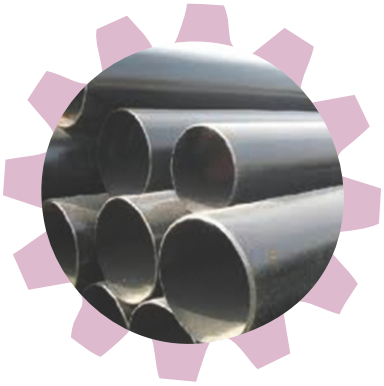


NEW

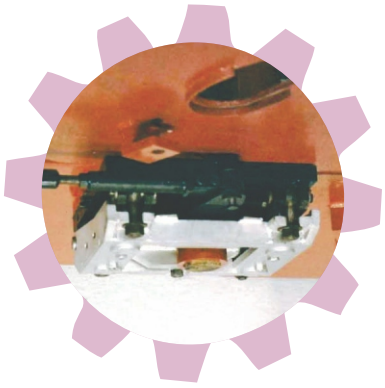
COATED GRAPHITE ELECTODES

BURNING/THERMAL
LANCE

MS ERW
STEEL PIPES



MANUALLY OPERATED
SLIDE-GATE SYSTEM



KANDI ENGINEERING PVT LTD.

An ISO 9001:2015 CERTIFIED COMPANY

F 301, Remi Biz Court, Shah Industrial Estate,
Off Veera Desai Road,
Andheri West, Mumbai - 400 053, Maharashtra, INDIA.
Call: +91 22 26731083 | +91 22 40211346
info@kandi.co.in | www.kandi.co.in
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