



DAIWA LANCE INTERNATIONAL CO., LTD.



Thermic Lance Manual

Daiwa Lance International Co., Ltd.





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GENERAL

What is Thermic lance?

Thermic Lance is steel tube that to be used for fusing the metals and so on. The principle is that harness the oxidation heat of high temperature by provided the pressurized oxygen to inside ignited steel tube. Generally inside of metal tube contains steel wire that promotes the combustion.

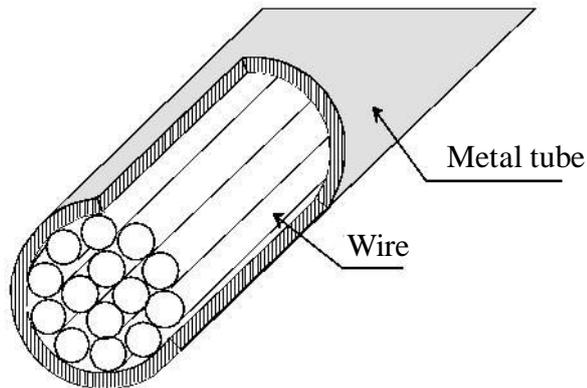


Fig. Example of Thermic Lance

Daiwa Thermic Lance

Daiwa Thermic Lance is a product used for cutting and boring large iron castings, stainless steels, brass, nonferrous metal, concrete, ceramic, natural stone, etc. at the temperature of more than 3000 degree without noise and vibration. The tubing filled with steel wires generates powerful flame when burning, and helps materials cut and drilled quickly, and as a result, you can increase productivity and efficiency.





APPLICATIONS

- Blast furnace and electric furnace iron notch opening.(Fig. A)
- Removing metal and slag stuck to mixer car.
- Cleaning ladle sliding nozzle and tundish nozzle in continuous casting equipment.(Fig. B)
- Fusing blast furnace shaft iron closure. (Fig. C, Fig. D)
- Fusing and drilling furnace bottom salamander.
- Cutting blast furnace tuyere and cooling box.
- Cutting and removing pig iron and steel containing slag.
- Cutting and drilling firebrick.
- Removing cracked portion from ingot case and slag plan.
- Cutting and removing deposit metal from converter or electric furnace.
- Others.

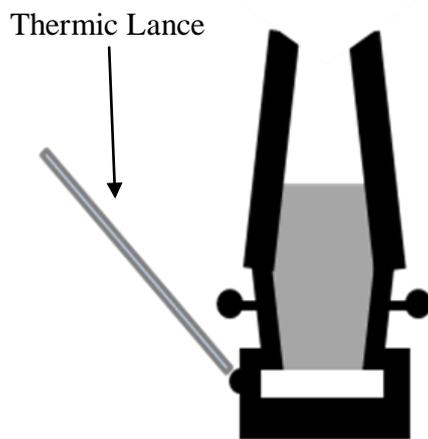


Fig. A

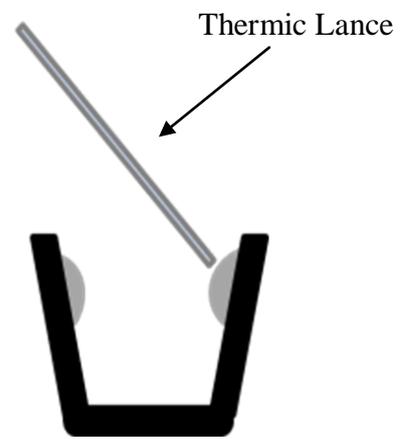


Fig. B

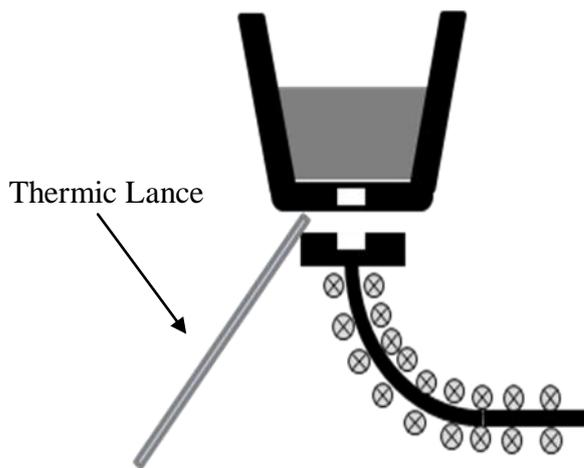


Fig. C

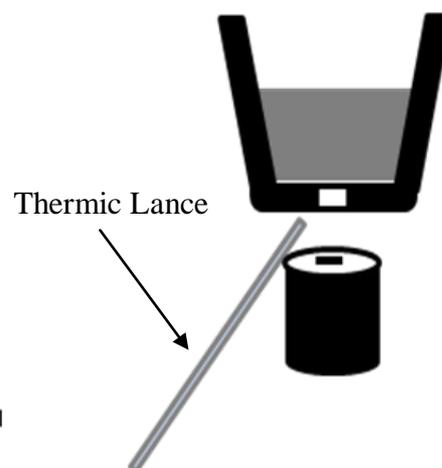


Fig. D



SPECIFICATION

Means of Nominal Size; **XXA-YY-ZZ**

XX; Nominal diameter of outer tube

YY; Nominal outside diameter of inner tube;

ZZ ; Number of wires

	Nominal Size	Section View	Outside Diamater		Length		Weight no socket	
			Inch	(mm)	ft	(mm)	kg/pc	
TYPE-W	8A-0-6		1/4"	(12.7mm)	9'00"	(2,750mm)	1.95	
					9'10"	(3,000mm)	2.13	
			1/4"	(12.9mm)	9'00"	(2,750mm)	1.97	
					9'10"	(3,000mm)	2.15	
			1/4"	(13.8mm)	9'00"	(2,750mm)	2.46	
					9'10"	(3,000mm)	2.74	
	10A-0-19		9'00"	(2,750mm)	4.16			
			9'10"	(3,000mm)	4.54			
	15A-0-30		9'00"	(2,750mm)	6.52			
			9'10"	(3,000mm)	7.11			
	20A-0-36		9'00"	(2,750mm)	10.30			
			9'10"	(3,000mm)	11.24			

	Nominal Size	Section View	Outside Diamater		Length		Weight no socket	
			Inch	(mm)	ft	(meter)	kg/pc	
TYPE-T	8A-9.5-6		1/4"	(12.7mm)	9'00"	(2,750mm)	2.10	
					9'10"	(3,000mm)	2.29	
			1/4"	(13.8mm)	9'00"	(2,750mm)	2.45	
					9'10"	(3,000mm)	2.67	
	10A-7-12		9'00"	(2,750mm)	3.80			
			9'10"	(3,000mm)	4.15			
	15A-9.5-13		9'00"	(2,750mm)	6.07			
			9'10"	(3,000mm)	6.62			
	20A-9-30		9'00"	(2,750mm)	9.80			
			9'10"	(3,000mm)	10.69			

*Each weight is no thread, no socket, and no coupling.

*TYPE-T 8A has two outer tube sizes.

*Other type and sizes are available at customer's request.

*Each size is bundles in 50pcs.



USAGE

1, Prepare

Prepare the tools that shown in following Fig. and Picture.

- Thermic Lance; you can prolong by coupling.
- Lance Holder
- Air Valve
- Oxygen Source; for example, oxygen cylinder.
- Oxygen Regulator; this can adjust the pressure of around 10 bar (1.0 MPa).
- Oxygen Hose; this can withstand the pressure of around 10 bar.
- Flame Source; Oxy/acetylene torch
- Safety Tool

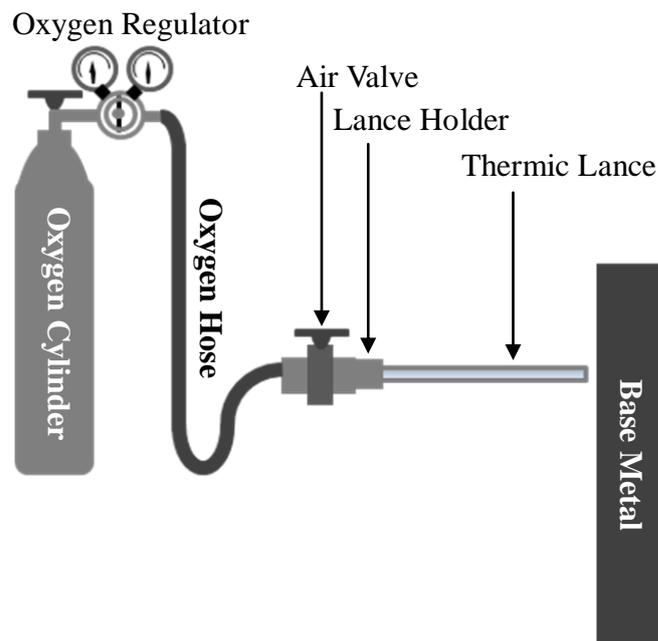
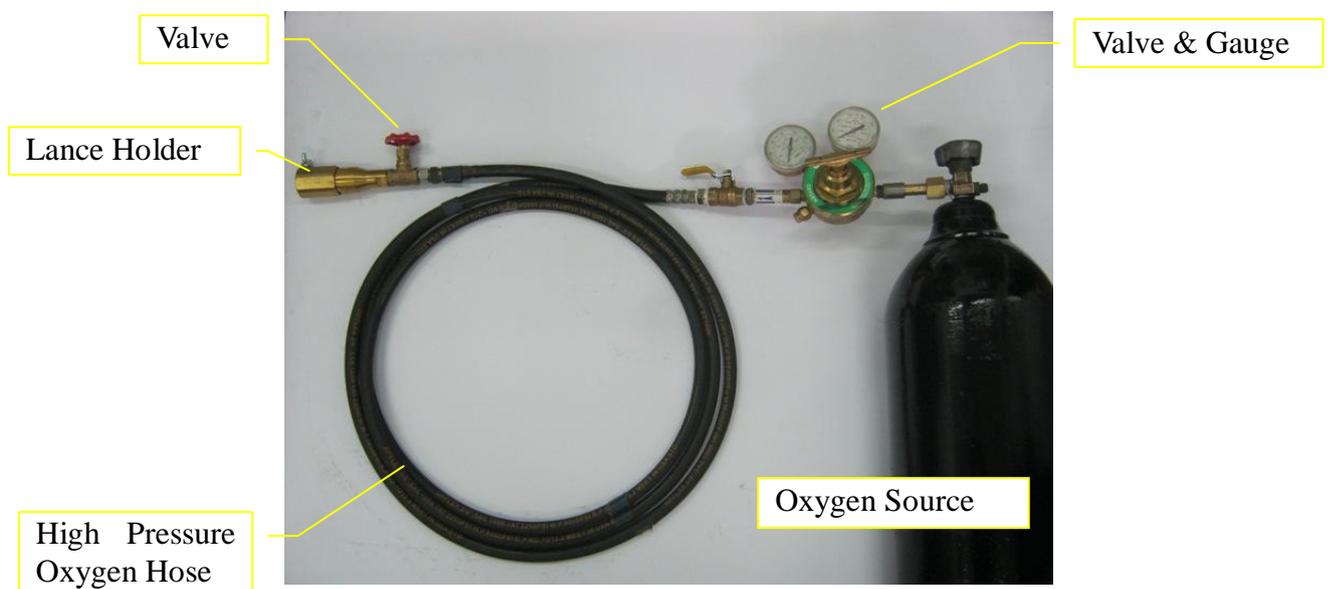


Fig. Equipments connecting





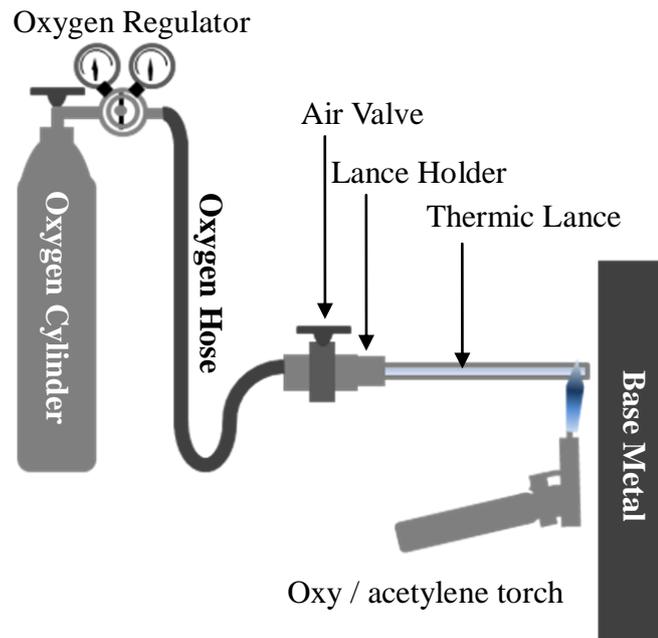
2, Setting

- Wear the protective equipment of provision correctly. (reference P.9)
- Above Fig. was shown the connection example of equipments.
- The pressure of oxygen should be 8-12bar by oxygen regulator.
- Make sure that there are no leaks from hose, coupling and joint.

3, Ignition

- When top of thermic lance is heated to red-hot by the torch, release the torch and ignited by opening the air valve.

In this case, it should be careful in burns of frame source.





4, Cutting

- I. Ignition by oxy / acetylene torch according to item 3.
- II. Open the air valve. If operator don't get the flame, at first operator open the little air and ignition.
- III. Proceed Thermic Lance toward to the cutting direction and keep to touch Thermic lance with base material.
- IV. However, the discharge direction of the flame proceeds to opposite to the direction of cutting like a following Fig..
- V. End of cutting, turn off the air valve.

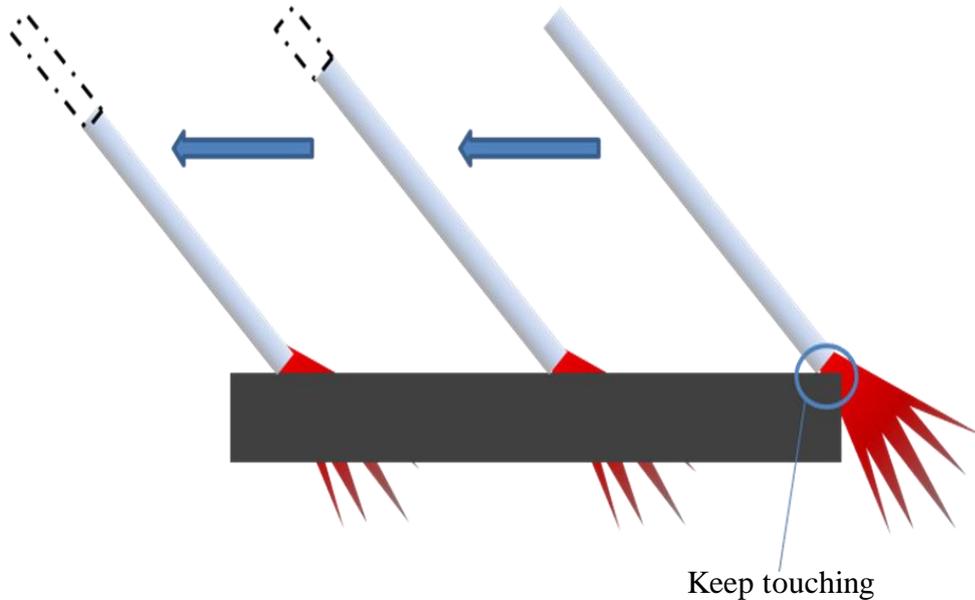


Fig. Note when cutting





Ex. Connecting

I. When connecting with Quick Coupling; It is simple and easy. No tool is required.

Quick Coupling

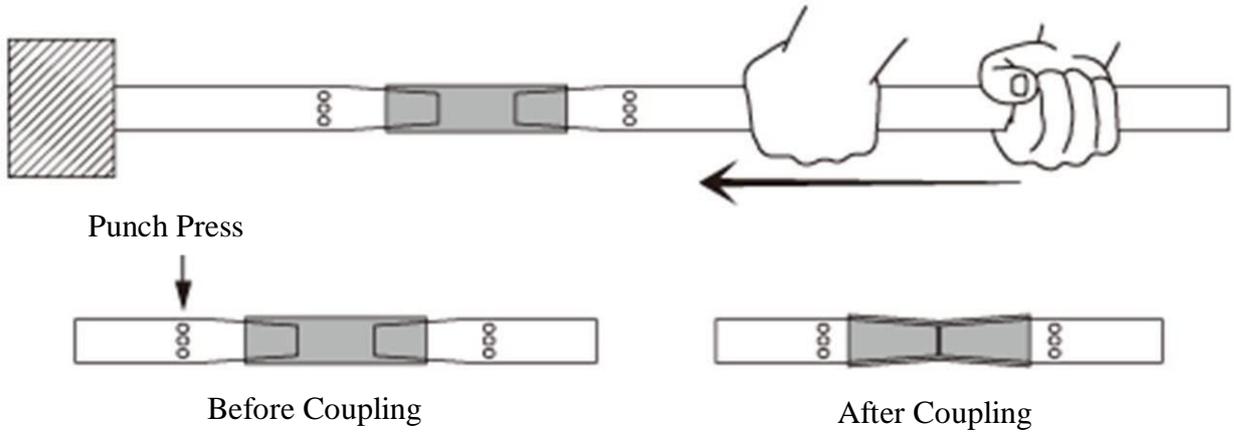


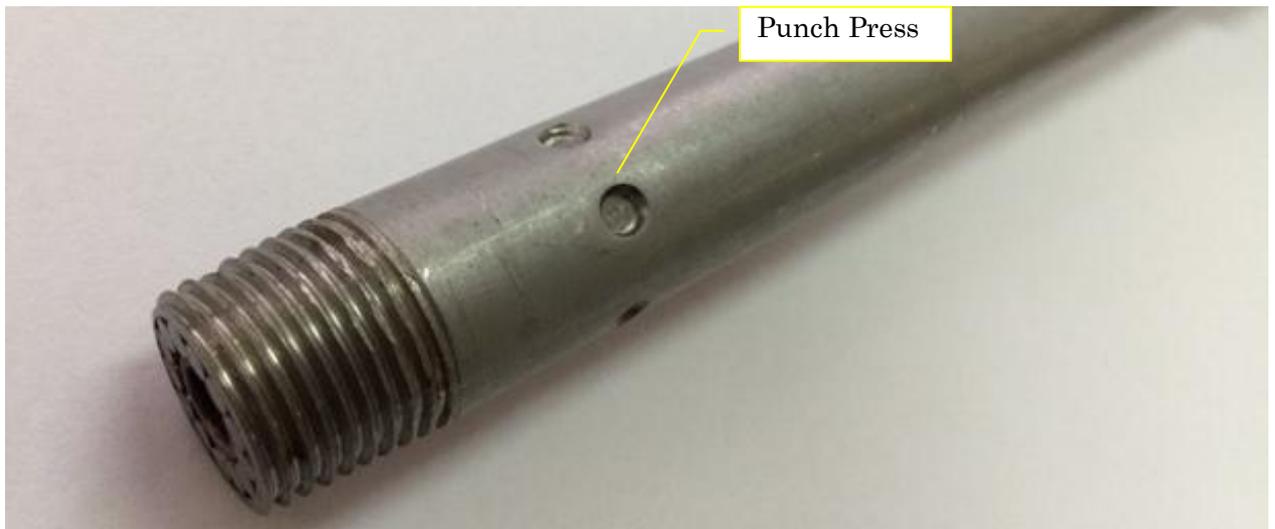
Fig. Quick Coupling

II. When connecting with Threaded Socket; Use threaded steel socket.

Socket Connection



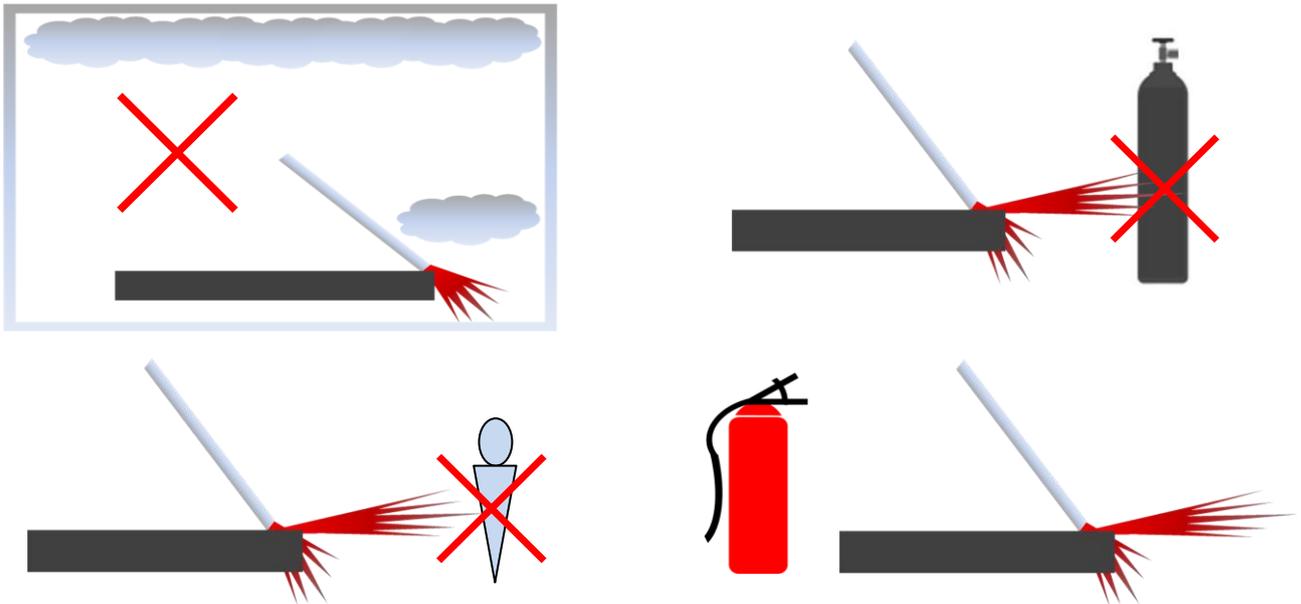
Fig. Socket Connection



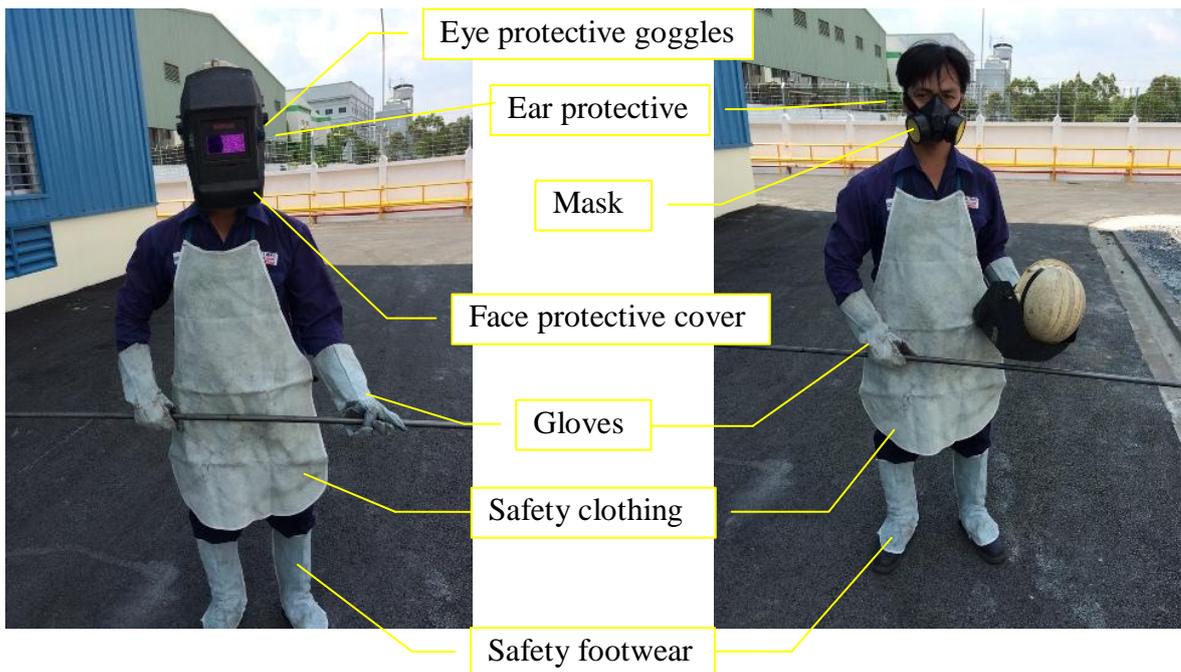


SAFETY REQUIREMENT

- Thermic Lance operation should be carried out in the open air, although good ventilation could allow work inside.
- Don't operate near the ignitable substance; for example gas cylinder, fuel and so on.
- Don't approach to discharge direction of fusing flame.
- The operator should prepare the extinguisher near the operation.
- While these methods are our recommended, work environment and work methods needs to follow the laws and regulations. Monitoring and management of work are assumed that each customer is done responsibly.



- The operator should wear heat protective safety clothing, eye protective goggles, face protective cover, ear protection, mask, gloves, and safety footwear.



SECTION 4 FIRST AID MEASURES

- Contusion, laceration:** Make the appropriate homeostasis. If due to beatings, there is bleeding and consult a doctor promptly if necessary.
- Welding fume** : If you do happen to inhale a large amount of welding fumes, move to fresh air immediately and seek immediate medical attention.
- Cutting fume, dust** : If fume, dust gets in eyes, immediately wash well with plenty of water. And receive medical attention as soon as possible.
- Gas** : If you sucked, there is a danger that cause addiction or difficulty breathing (Some ventilation, need to work with a sufficient place of ventilation). If breathing is difficult, move to fresh air and breathe is deeply, provide adequate auxiliary measures. And consult a physician if necessary.
- Light ray** : If you were blown working with protective glasses with low light-shielding property, there is a risk of causing a failure and inflammation in the eye.
And consult a physician if necessary.
- Slag** : There is a possibility that cause inflammation and burns on contact with the human body to be scattered.

SECTION 5 FIRE FIGHTING MEASURES

The operation of the thermic lances should not be performance in the presence of flammable materials, vapors, tanks, pipes and other containers with flammable substances, unless these have been checked certified as safe.

SECTION 6 ACCIDENTAL RELEASE MEASURES

No spills or leak is solid in an environment typical.

SECTION 7 HANDLING AND STORAGE

Prevention of laceration and bruised:

Because the weight of the (steel products), in the case of transport by hand, to ensure the safe transport route as there is no such as a fall, is carried out by wearing the proper safety protective equipment.

Blowing operating attention:

- To work and wearing the proper safety protective equipment.
- Installed the fire extinguishing equipment in the workplace.
- Attention debris to avoid exposure to flammable substances and flammable materials.
- Blown pipe, fusing material away to a safe distance from flammable materials and flammable materials.

Storage:

- It is desirable to store indoors airy.
- Avoid contact with a substance that contains them water leakage, acid, or alkali, and hot and humid environment.

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SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

- Operators and assistants should be instructed to prevent inhalation smoke burn.
- To perform well under the management based on the "rules on prevention of hazards due to dust", protection of the human body, the measures of equipment.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

- Shape:** Solid tubular filled steel wire.
Color: Black or silver.
Odor: Odorless (none).

SECTION 10 STABILITY AND REACTIVITY

- In the product during storage, there is no hazardous explosive, flammable, combustible, pyrophoric, such as acute toxicity.
- There is a possibility of harmful gases caused by contact with an acid.

SECTION 11 TOXICOLOGICAL INFORMATION

- Knowledge of hazards due to contact cannot be found.
- If you inhale for a long period of time welding fumes, there are "pneumoconiosis" Chronic disorders.
- Cutting fumes, gas is significantly different by fusing material. If you inhale them, was working with incomplete location through wind and ventilation, there is a risk of causing symptoms of poisoning and acute disorders, such as oxygen deficiency.

SECTION 12 ECOLOGICAL INFORMATION

In the general environment, no useful knowledge status quo, on the environmental impact

SECTION 13 DISPOSAL CONSIDERATIONS

Scrap must be disposed of as general waste or recycled. No special precautions for this product are required.

SECTION 14 TRANSPORT INFORMATION

To be transported by applying measures to prevent load shifting. To prevent the penetration of rainwater, and a cover sheet such as.

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SECTION 15 REGULATORY INFORMATION

- Dust prevention regulations
- Reporting, etc. of releases to the environment of specific chemical Substances and act on the promotion of improvement of management

SECTION 16 OTHER INFORMATION

Reference:

- Japan Welding Standard Association
- Steel Handbook (Japan Steel Association)
- Dictionary of Physics and Chemistry (Iwanami Bookstore)
- Science Handbook (Japan Chemical Association)
- Dust prevention regulations

Point to notice

All of the above information is prepared based on the materials, the information, and the data currently available in our company, and it is provided as a reference for our customers. Please note that our customers should take the appropriate measures under their own responsibilities based on the above information.

All the above information is prepared based on the normal use situation. In case of other situations not applicable to the normal use, please note that our customers should take appropriate safety measurements according to purpose and usage.

Finally, all the above information is provided simply as information, and it doesn't mean to guarantee the safety

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