SAFETY DATA SHEET

For Welding Consumables and Related Products
This safety data sheet was prepared in accordance with GB/T 16483-2008: Safety Data Sheet for Chemical Products - Content and Order of Sections.

SECTION I: IDENTIFICATION

Supplier Name	:	The Shanghai Lincoln Electric Co., Ltd
Address	:	No 195, Lane 5008, Hu Tai Rd Shanghai China 201907
Product Type	:	Carbon Steel Flux Cored Wire
Trade Name	:	LINCOLN® 71C
Classification	:	AWS A5.20 E71T-1C/9C AWS A5.20 E71T-1M

SECTION II: COMPOSITION AND INGREDIENTS

IMPORTANT: This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered by Section V; see it for industrial hygiene information. CAS Number shown is representative for the ingredients listed. All ingredients listed may not be present in all sizes.

(1) The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard. All materials are listed on the TSCA inventory.

No.	Ingredient	CAS No.	Product		Welding Fumes	
			Range (Wt %)	Typical (Wt %)	ACGIH TLV (mg/m^3)	OSHA PEL (mg/m^3)
1	Carbon (C)	7440-44-0	0.12% Max	0.030%	9000[a]	9000[a]
2	Manganese (Mn)	7439-96-5	1.75% Max	1.290%	0.2[b]	1.0[b]
3	Silicon (Si)	7440-21-3	0.90% Max	0.300%	10[c]	15.0[c]
4	Sulphur (S)	7704-34-9	0.03% Max	0.009%	0.65[d]	13.0[d]
5	Phosphorus (P)	7803-51-2	0.03% Max	0.015%	N.E.[e]	N.E[e]
6	Nickel (Ni)	7440-02-0	0.50% Max	0.015%	1.5	1.0
7	Chromium (Cr)	7440-47-3	0.20% Max	0.020%	0.5	1.0
8	Molybdenum (Mo)	7439-98-7	0.30% Max	0.002%	5.0	10.0
9	Copper (Cu)	7440-32-6	0.35% Max	0.010%	0.2[f]	1.0[f]

Remarks
a) Refer as Carbon Dioxide
b) Refer as Manganese Fume
c) Refer as Silicon Dioxide Dust
d) Refer as Sulphur Dioxide
e) Refer as Phosphorous Oxide
f) Refer as Copper Fume

SECTION III: HAZARD IDENTIFICATION

The fumes and gases produced during welding with the normal use of this product are covered by Section 11; see it for industrial hygiene information.

Emergency overview:
Product is not reactive, no special hazardous, handling or spill procedures are required.
This products consists of solid wire, which are odourless and may be copper coated. There are no immediate health hazards associated with the wire form of this product. If involved in a fire, these products may generate irritating iron fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

Warning:
Protect yourself and others. Read and understand this information. When this product is used for its intended purpose fumes and gases produced as a by-product can be hazardous to your health. Aggravation of pre-existing respiratory or allergic conditions may occur in some workers. Arc rays can injure eyes and burn skin. Electric shock can kill.

Short-term Exposure:
Metallic taste; nausea; tightness of chest; fever; irritation of eyes, nose, throat and skin; loss of consciousness/death due to welding gases or lack of oxygen.

Long-term Exposure:
Adverse effects may result from long-term exposure to welding fume, gases, or dusts. These effects may include skin sensitization, neurological damage, and respiratory disease such as bronchial asthma, lung fibrosis or pneumoconiosis. Chromium and nickel, and their compounds, are on the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) lists as posing a carcinogenic risk to humans.This section covers the materials from which this product is manufactured.

Physical stage:
Solid, product is packed in wire form. Stable, not self-vaporizing nor self-dissolving.

Colour:
Steel grey.

Potential acute health effects:
No known to have any acute health effect.

Flammable:
Not flammable at all.

SECTION IV: FIRST AIDS MEASURES

Contact:

Eyes	**:** Non-hazardous, avoid contact to prevent injury.
Skin	**:** Non-hazardous, avoid regular contact to prevent possible allergic reaction for certain people.
Inhalation	**:** No possible for inhalation.
Ingestion	**:** No possible for digestion.

IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician.

SECTION V: FIRE FIGHTING MEASURES

Flash point:
This product is not flammable.
Suitable extinguishing media:
Use extinguishing measures that are appropriate to the surrounding environment.
Potential hazard when contact with acids:
Avoid contact with any kind of acids as the reaction of acids with iron content will release hydrogen gas. Accumulation of hydrogen in an enclosed environment may post a fire or explosion hazards.
Potential hazard during welding:
Welding arc and sparks can ignite combustibles and flammable products. Welding ray will cause skin burn for prolonged exposure.

SECTION VI: ACCIDENTAL RELEASE AND WASTE DISPOSAL

Accidental release : No major hazard.
Waste disposal : No special requirement and best solution is for sending it to scrap metal collector or manufacturer for recycling purpose.

SECTION VII: HANDLING AND STORAGE

Handling : Avoid exposure to rain water as this will make product rusty and unusable
Storage : Store product indoor and avoid rain water. Keep it away from contacting with acids, which could release hydrogen gas (flammable) due to its chemical reaction with acids

SECTION VIII: EXPOSURE CONTROLS AND PERSONAL HANDLING

Overexposure to welding fume:
Fumes and Gases can be dangerous to your health. Common entry is by inhalation.
Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).
Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function.
Arc Rays can injure eyes and burn skin. Skin cancer has been reported.
Electric Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Use ventilation for removal of welding fume:
Use air ventilation at point of usage (welding) to remove welding fumes. Suction or vacuum system is a preferred option. Points of suction should be close to the welding point.

Personal Protective clothes and equipment:
Wear head, hand, and body protection which help to prevent injury from radiation, sparks and electrical shock. At a minimum, this includes welder's gloves and a protective face shield and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Avoid welding rays to contact with eyes and skin. Wear long sleeve and dark glass when performing welding.
Use appropriate welding vest and appropriate hands glove to avoid contact with hot welding parts.

SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

Welding wire is a solid metal, shaped as wire of various diameters.

The following information is for the product:

Appearance and colour: These products consist of solid wire, which are odourless and may be copper coated. How to detect this substance (warning properties): The appearance is a distinctive characteristic of these products.

The following information is for elemental iron:

Odour Threshold	: Not applicable.
Ph	: Not applicable.
Melting Point	: 1535°C (2795°F).
Boiling Point	: 3000°C (5432°F).
Evaporation Rate (nBuAc = 1)	: Not applicable.
Vapor Pressure, mmHg @ 20°C	: Not applicable.
Relative Vapor Density(Air = 1)	: Not applicable.
Specific Gravity (Water = 1)	: 7.86
Solubility in Water	: Insoluble.
Coefficient of Oil/Water Distribution (Partition Coefficient)	: Not applicable.

SECTION X: STABILITY AND REACTIVITY

Stability Condition to Avoid: None

Materials to Avoid: Avoid contact with mineral acids and oxidizing agents which may generate hydrogen gas

Hazardous Polymerization: Will Not Occur

Hazardous Decomposition Products: Welders are exposed to a range of fumes and gases. Fume particles contain a wide variety of oxides and salts of metals and other compounds, which are produced mainly from electrodes, filler wire and flux materials. Fumes from the welding of stainless steel and other alloys contain nickel compounds and chromium [VI] and [III]. Ozone is formed during most electric arc welding, and exposures can be high in comparison to the exposure limit, particularly during metal inert gas welding of aluminium. Oxides of nitrogen are found during manual metal arc welding and particularly during gas welding. Welders who weld painted mild steel can also be exposed to a range of organic compounds produced by pyrolysis.

Welding Fume and Gases By-product Exposure Limits						
Ingredients:	CAS No.	TLV[1]	PEL[2]	REL[3]	STEL[4]	IDLH[5]
Carbon Monoxide (CO)	630-08-0	28.6	55	40		1200
Chromium (Cr II and Cr III)	7440-47-3	0.5	0.5	0.5		25
Cobalt Fume (Co)	7440-48-4		0.1	0.05		20
Copper Fume (as CuO & Cu)	1317-38-0	0.2	0.1	0.1		100
Fluorides (F)		2.5	2.5			
Hexavalent Chromium1 (Cr VI)	1333-82-0	0.5	0.005	0.5		25
Iron Oxide Fume (as Fe2O3)	1309-37-1	5.0	10.0	5		2500
Manganese Fume (Mn)	7439-96-5	0.2	(C)5.0[6]	1	3.0	500
Molybdenum (Soluble) (Mo)	7439-98-7	10.0	5.0			1000
Nickel Metal (Ni)	7440-02-0	1.5	1.0	0.015		10
Nitrogen Dioxides (as NO2)	10102-44-0	5.6	(C)9.0[6]	1.8		37.6
Ozone (O3)	10028-15-6	0.4	0.2	(C)0.2[6]		9.8
Phosgene3 (COCl2)	75-44-5	0.4	0.4	0.4	0.8	8.1

Notes: All values are in mg/m^3

SECTION XI: TOXICOLOGICAL INFORMATION

There is limited evidence in humans for the carcinogenicity of welding fumes and gases. IARC identifies Welding Fumes as a possible carcinogenic to humans (Group 2B). Nickel (Ni) and Cobalt (Co) are listed as Group 2B possible human carcinogen. Hexavalent Chromium (Cr VI) is a listed as a Class 1 human carcinogen by IARC.

Canadian WHMIS Class D, Division 2B (Toxic).

SECTION XII: ECOLOGICAL INFORMATION

No specific adverse effect known so far.

SECTION XIII: DISPOSAL CONSIDERATION

Dispose of in accordance with local regulation.
Alternative is to sell wire to scrap metal dealer or send back to manufacturer for recycling.
Waste Disposal Methods: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container, or liner in an environmentally acceptable manor, in full compliance with federal state and local regulations.

SECTION XIV: TRANSPORT INFORMATION

Follow local Department of Transport regulation.
Product is usually heavy and they must be securely fastened during transportation and covered from rain water.

SECTION XV: REGULATORY INFORMATION (NON-MANDATORY)

SARA Title III: Not Applicable. However, large users may need to calculate and add their welding fume emissions to their inventory of the toxic emissions, using the material percentages listed in Section 1.

TSCA: All material contained within this product are on the TCSA Inventory List.

California Proposition 65 Warning: This product, when used for welding or cutting, produces fumes

or gases which contain chemicals known to the state of California to cause cancer (California Health & Safety Code § 25249.6).

LABELING (Precautionary Statements):

WARNING:

- PROTECT yourself and others.
- Read and understand this information.
- FUMES AND GASES can be hazardous to your health.
- ARC RAYS can injure eyes and burn skin.
- ELECTRIC SHOCK can KILL.

- Before use, read and understand the manufacturer's instructions, Material Safety Data Sheets (MSDS), and your employer's safety practices.
- Keep your head out of the fumes.
- Use enough ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area.
- Wear correct eye, ear, and body protection.
- Do not touch live electrical parts

SECTION XVI: OTHER INFORMATION

SDS NOTES:

(1) Threshold Limit Value (TLV)：8-hour TWA as defined by American Conference of Governmental Industrial Hygienists (ACGIH).

(2) Permissible Exposure Limit (PEL)：8-hour TWA exposure as defined by OSHA (29CFR1910)

(3) Recommended Exposure Limit (REL)： 8-hour TWA as defined by National Institute of Occupational Safety & Health (NIOSH)

(4) Short Term Exposure Limit (STEL)： 15 minute TWA exposure as defined by OSHA (29CFR1910.1200) or certain state regulations

(5) Immediately Dangerous to Life & Health (IDLH)：As defined by OSHA and NIOSH.

(6) Ceiling Value (C)：Exposure which shall not be exceeded at any time during the working day.

Training:

Workers should be informed and trained in the proper use and handling of this product as required under the respective local regulations.

Liability:

The information furnished here was gathered with the greatest care, and the knowledge available on the date of issue. It does not include any warranties or responsibility regarding the suitability of the information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

The information contained in this Safety Data Sheet relates only to specific materials designated and may not be valid for such material used in combination with any other material or in any process.

The product is supplied on the condition that the user accepts the responsibility to satisfy himself/herself as to the suitability and completeness of such information for he or she own particular use.

The customer should provide this Safety Data Sheet to any person involved in the usage of this materials.

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