



**SAFETY DATA SHEET  
EDM WIRES  
FICHE DE DONNEES DE  
SECURITE FILS EDM**

Révision  
11

	Signature
Auteur	M.LY
Vérificateur	M.LY

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# **1.PRODUCT' S NAME AND MANUFACTURER' S NAME**

## 1.1.PRODUCT' S NAME AND USE

ELECTRIC DISCHARGE MACHINING WIRE ELECTRODE, MADE OF COPPER BASED ALLOYS.

THIS WIRE IS MADE FOR USE ON SPECIFIC EDM MACHINES, BY QUALIFIED OPERATORS.

- 1: EDM WIRE, WOUND ON SPOOLS.
- 2: SAID SPOOLS SURROUNDED BY A PLASTIC SLEEVE OR BAG.
- 3: SAID BAGS MAY CONTAIN A DESICCANT SACHET
- 4: SAID SLEEVES OR BAGS CONTAINED IN SMALL CLOSED CARDBOARD BOXES.
- 5: SAID BOXES GROUPED INTO A SHIPMENT CARDBOARD BOX AND IN SOME CASES IN A WOOD BOX.
- 6: SAID GROUP BEING WRAPED IN A PLASTIC FILM.
- 7: PAPER DOCUMENTS AND LABELS.

## 1.2.MANUFACTURER' S NAME

THERMOCOMPACT  
Z.I. ROUTE DE SARVES  
METZ-TESSY – B.P. 21  
74371 PRINGY CEDEX  
FRANCE

## 1.3.PHONE AND FAX NUMBERS FOR INFORMATION

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e-mail: thermo@thermocompact.com

## 2.DETAILS OF COMPONENTS

### ALL WIRES:

CU : > 50 % (WEIGHT) CAS # 7440-50-8

ZN.: <50 % (WEIGHT) CAS # 7440-66-6

LIGHT TRACES OF WIRE DRAWING PROCESS FLUIDS ARE PRESENT ON THE SURFACE OF THE WIRE (<1%).

*THE METALS USED FOR THE MANUFACTURING OF WIRES ARE NOT ALLOYED WITH LEAD*

### PACKAGING:

#### SPOOL

POLYSTYRENE SPOOL CAS # 9003-53-6

#### DESICCANT SACHET

SODIUM/CALCIUM ALUMINOSILICATE CAS # 97862-66-3

#### BAG OR SLEEVE

POLYAMIDE + POLYETHYLENE BAG CAS # 25038-54-4 POLYAMIDE  
CAS # 9002-88-4 POLYETHYLENE

OR POLYESTER/ALUMINIUM/POLYETHYLENE LAMINATE FOR PRODUCTS CF 103, 105, 107, 108

CAS # 25038-59-9 POLYESTER  
CAS # 7429-90-5 ALUMINIUM  
CAS # 9002-88-4 POLYETHYLENE

MAY CONTAIN TRACES OF:  
CAS # 7439-96-5 MANGANESE  
CAS # 7440-47-3 CHROME  
CAS # 7440-50-8 COPPER  
CAS # 7440-66-6 ZINC  
CAS # 7440-02-0 NICKEL  
CAS # 7440-48-4 COBALT

#### BOX FOR 1 TO 4 SPOOLS

CARDBOARD BOX  
SYNTHETIC STRAPS  
ADHESIVE TAPE

#### SHIPMENT BOX

WOOD BOX (IN SOME CASES)  
CARDBOARD BOX (IN OTHER CASES)  
POLYETHYLENE FILM

#### OTHERS

LABELS AND DOCUMENTS

### 3. PHYSICAL DATA OF THE WIRE

#### APPEARANCE OF WIRES

ALL MENTIONNED EDM WIRES HAVE THE SAME SAFETY DATA;

WIRE TYPE	REFERENCE	APPEARANCE	Approx. Copper	Approx. Zinc
ZINC COATED COPPER SW	CF.114..... CF.115.....	SILVER-GREY	90%	10%
STRATIFIED COPPER X, XCC, AND TEX	CF.124..... CF.125..... CF.126..... CF.128.....	BROWN	X 90% TEX 85% XCC 80%	X 10% TEX 15% XCC 20%
STRATIFIED BRASS D, W, AND SE	CF.106..... CF.109..... CF.110.....	BROWN BROWN YELLOW BROWN	73%	27%
STRATIFIED BRASS SD	CF.104..... CF.111.....	LIGHT YELLOW	61%	39%
ZINC COATED BRASS SA	CF.103	LIGHT YELLOW	61%	39%
ZINC COATED BRASS SWA, AND SWS	CF.105..... CF.107..... CF.108.....	SILVER-GREY	61%	39%
PLAIN BRASS	CF.012..... CF.015..... CF.018..... CF.019.....	YELLOW	63%	37%

#### UNS CORRESPONDANCE

THIS TABLE RELATES THE UNIFIED NUMBER DESIGNATION (UNS) WITH THE AVERAGE GLOBAL COMPOSITION OF THE WIRES

AVERAGE COPPER CONTENT	AVERAGE ZINC CONTENT	UNS
90 %	10 %	C22000
85 %	15 %	C23000
80 %	20 %	C24000
73 %	27 %	260000
63 %	37 %	C27400
61 %	39 %	C28000

PHYSICAL DATA

MATERIAL	VALUE		UNIT
	COPPER	ZINC	
FORM	SOLID	SOLID	
DENSITY	8.9	7.14	g/cm <sup>3</sup>
MELTING POINT	1084	420	°C
BOILING POINT	2595	906	°C
VAPOR PRESSURE AT 25°C	< 10 <sup>-10</sup>	<10 <sup>-10</sup>	Pa
VAPOR PRESSURE AT MELTING POINT	72.10 <sup>-3</sup>	20	Pa
SOLUBILITY (H2O)	<0.1%	<0.1%	

COPPER AND/OR ZINC OXIDES ARE PRESENT AT THE SURFACE OF THE WIRES.

## **4.FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT: N/A

FLAMMABLE LIMITS N/A

### SPECIAL FIRE FIGHTING PROCEDURE:

**WEAR SELF CONTAINED BREATHING APPARATUS AND PROTECTION CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.**

### FIRE EXTINGUISHING MEDIA FOR WIRE:

USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

### FIRE EXTINGUISHING MEDIA FOR THE PACKAGING

WATER SPRAY.  
CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

### TOXIC GASES PRODUCED BY WIRE:

COPPER & COPPER OXIDES FUMES  
ZINC & ZINC OXIDES FUMES

### TOXIC GASES PRODUCED BY THE PACKAGING:

POLYETHYLENE

EMITS TOXIC FUMES UNDER FIRE CONDITIONS.  
THIS MATERIAL, IN POWDER FORM, IS CAPABLE OF CREATING A DUST EXPLOSION.

POLYAMIDE

THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE CARBON OXIDES, NITROGEN OXIDES, AND HYDROGEN CYANIDE.

POLYESTER

DECOMPOSITION PRODUCTS INCLUDE CARBON OXIDES, ALDEHYDES, TEREPHTHALIC ACID

POLYSTYRENE

CARBON DIOXIDE, CARBON MONOXIDE

UNUSUAL FIRE AND EXPLOSION HAZARDS

WIRE

ZINC REACTS VIOLENTLY WITH WATER LIBERATING AND IGNITING HYDROGEN.  
MAY EXPLODE IF IN POWDER FORM.

PACKAGING

MAY EXPLODE IF IN POWDER FORM  
UNDER FIRE CONDITIONS, MATERIAL MAY DECOMPOSE TO FORM FLAMMABLE AND/OR EXPLOSIVE MIXTURES IN AIR.  
STATIC ELECTRICAL CHARGE MAY BUILD UP ON THE PLASTIC PACKAGING, AND START A FIRE IF A SPARK OCCURS IN A FLAMABLE ATMOSPHERE.

## **5. HEALTH HAZARD DATA**

*PRODUCT IS A SOLID MASS, HOWEVER, WARNINGS ARE BASED ON INHALATION DUST, MIST OR FUME EMISSIONS THAT ARE POSSIBLE DURING MANUFACTURING OR CHEMICAL REACTIONS.*

PRIMARY ROUTES OF ENTRY: SKIN CONTACT

### **5.1 EMERGENCY AND FIRST AID PROCEDURES**

INGESTION: IF SWALLOWED AND THE PERSON IS CONSCIOUS, IMMEDIATELY GIVE LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.

INHALATION: IF A PERSON BREATHEES IN LARGE AMOUNTS, MOVE THE EXPOSED PERSON TO FRESH AIR. GET MEDICAL ATTENTION.

EYE CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

SKIN CONTACT: IMMEDIATELY WASH WITH PLENTY OF SOAP AND WATER FOR AT LEAST 15 MINUTES. IMMEDIATELY REMOVE CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING BEFORE RE-USE.

### **5.2 WIRE**

THRESHOLD LIMIT VALUE (TLV/TWA):

COPPER: 1 mg/m<sup>3</sup>  
ZINC 10 mg/m<sup>3</sup>

CARCINOGENICITY:

COPPER:	NTP:NO	IARC:NO	Z LIST: NO	OSHA REG : NO
ZINC:	NTP:NO	IARC:NO	Z LIST: NO	OSHA REG : NO

TARGET ORGANS

NONE IDENTIFIED

## EFFECT OF OVEREXPOSURE

COPPER: DUST MAY CAUSE SNEEZING AND COUGHING.  
DUST MAY IRRITATE SKIN OR EYES.  
PROLONGED EXPOSURE MAY CAUSE DERMATITIS.  
INGESTION MAY CAUSE NAUSEA, VOMITING, HEADACHES, DIZZINESS, GASTROINTESTINAL IRRITATION.

ZINC: CONTACT WITH SKIN OR EYES MAY CAUSE IRRITATION OR BURNS.  
INHALATION OF DUST MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT.  
PROLONGED EXPOSURE MAY CAUSE DERMATITIS

## **5.3 PACKAGING**

DO NOT EAT THE DESICANT SACHET NOR ITS CONTENT !

### ACUTE EFFECTS

MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION.  
MAY CAUSE EYE IRRITATION.  
MAY CAUSE SKIN IRRITATION.  
MATERIAL MAY BE IRRITATING TO MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.

EXPOSURE TO THERMAL DECOMPOSITION PRODUCTS CAN CAUSE "POLYMER FUME FEVER", A TEMPORARY FLU-LIKE CONDITION WHICH USUALLY APPEARS SEVERAL HOURS AFTER EXPOSURE AND PASSES WITHIN 36-48 HOURS.

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

### TARGET ORGANS

POLYETHYLENE: TUMORIGENIC	IARC CANCER REVIEW GROUP 3
POLYAMIDE : TUMORIGENIC	IARC CANCER REVIEW GROUP 3
POLYSTYRENE: TUMORIGENIC	IARC CANCER REVIEW GROUP 3

## **6: REACTIVITY DATA**

### **COPPER**

<u>STABILITY:</u>	STABLE
<u>HAZARDOUS POLYMERIZATION:</u>	WILL NOT OCCUR
<u>CONDITIONS TO AVOID:</u>	MOISTURE
<u>INCOMPATIBLES:</u>	STRONG ACIDS, ACTIVE HALOGEN COMPOUNDS, CHLORINE, FLUORINE, IODINE, BROMINE, AMMONIA
<u>DECOMPOSITION PRODUCTS:</u>	COPPER AND COPPER OXYDES FUMES

### **ZINC**

<u>STABILITY:</u>	UNSTABLE
<u>HAZARDOUS POLYMERIZATION:</u>	WILL NOT OCCUR
<u>CONDITIONS TO AVOID:</u>	MOISTURE
<u>INCOMPATIBLES:</u>	STRONG ACIDS, STRONG BASES, STRONG OXIDIZING AGENTS, ALKALI METALS, HALOGENATED HYDROCARBONS
<u>DECOMPOSITION PRODUCTS:</u>	ZINC OXIDE FUMES

## PACKAGING

### STABILITY

STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE.

### INCOMPATIBLES:

STRONG ACIDS, STRONG BASES,  
STRONG OXIDIZING AGENTS, ALKALI METALS,  
REDUCING AGENTS  
HALOGENATED HYDROCARBONS.  
DISSOLVED BY CRESOL, PHENOL, STRONG ACIDS

### DECOMPOSITION PRODUCTS FOR THE PACKAGING

CARBON MONOXIDE, CARBON DIOXIDE  
OXIDES OF NITROGEN  
ACROLEIN  
FORMALDEHYDE  
TEREPHTHALIC ACID

## **7: SPILL AND DISPOSAL PROCEDURE**

### STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SUITABLE PROTECTIVE CLOTHING. CAREFULLY SWEEP UP AND REMOVE.

### DISPOSAL PROCEDURE

DISPOSE OR RECYCLE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

### NON BIODEGRADABLE MATERIALS

## **8 : PROTECTIVE EQUIPEMENT**

### EYE/SKIN PROTECTION:

SAFETY GLASSES WITH SIDESHIELDS.  
PROTECTIVE GLOVES ARE RECOMMENDED.  
AVOID PROLONGED OR REPEATED EXPOSURE.  
WASH THOROUGHLY AFTER HANDLING.

*PRODUCT IS A SOLID MASS, HOWEVER, WARNINGS ARE BASED ON INHALATION DUST, MIST OR FUME EMISSIONS THAT ARE POSSIBLE DURING MANUFACTURING OR CHEMICAL REACTIONS.*

### VENTILATION:

USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV REQUIREMENTS. DO NOT BREATHE DUST.

### RESPIRATORY PROTECTION:

NONE REQUIRED WHERE ADEQUATE VENTILATION CONDITIONS EXIST. IF AIRBORNE CONCENTRATION EXCEEDS TLV, A DUST/MIST RESPIRATOR IS RECOMMENDED. IF CONCENTRATION EXCEEDS CAPACITY OF RESPIRATOR, A SELF-CONTAINED BREATHING APPARATUS IS ADVISED.

## **9: STORAGE, HANDLING, AND TRANSPORTATION**

### SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE AREA.

KEEP OFF HUMIDITY

DO NOT STORE NEAR CORROSIVE SUBSTANCES.

DO NOT STORE NEAR AMMONIA-CONTAINING PRODUCTS (IE CLEANING AGENTS): WIRES PERFORMANCE WILL BE AFFECTED.

DO NOT STORE NEAR HEAT SPRING

STORE IN A COOL DRY PLACE.

### HANDLING & TRANSPORTATION

WIRE SPOOLS ARE HEAVY (>1KG) . THEY WILL CAUSE SERIOUS INJURIES IF THEY FALL ON OR SHOCK HUMAN BODIES.

AVOID STRESSES AND SHOCKS WHICH WILL DAMAGE SPOOLS OR THEIR ORIGINAL PACKAGING.

AVOID EYE CONTACT AND PROLONGED SKIN CONTACT.  
WORKERS SHOULD WASH HANDS THOROUGHLY WITH SOAP AND WATER PRIOR TO EATING, DRINKING, SMOKING, AND USING LAVATORY.

WIRES MAY PERFORATE SKIN AND PENETRATE INTO BODIES.  
PACKAGINGS MAY SCRATCH OR CUT SKIN.

A MAXIMUM STORAGE PERIOD OF ONE YEAR IS RECOMMENDED BETWEEN PRODUCTION AND USAGE OF THE WIRE FOR ELECTRICAL DISCHARGE MACHINING. PRODUCTION DATE CAN BE READ ON SPOOLS LABELS. THE FIRST 5 DIGITS CORRESPOND TO THE BATCH NUMBER. THE NEXT 2, TO THE WEEK NUMBER (01 TO 52). THE NEXT 2, TO THE YEAR NUMBER (03 FOR 2003). THE NEXT FIGURES ARE THERE FOR FURTHER TRACABILITY PURPOSES.

THUS, 12345040367 MEANS THE SPOOL HAS BEEN PRODUCED IN WEEK 04 OF YEAR 2003. FOR BETTER PERFORMANCE, IT IS RECOMMENDED TO USE THIS SPOOL BEFORE WEEK 04 OF YEAR 2004.

**ISO 1400 CERTIFICATE**



**BUREAU VERITAS**  
Certification



Certification  
Attribuée à

**THERMOCOMPACT**  
Zone Industrielle Les Iles – Route de Sarves – METZ TESSY – BP 21  
74371 PRINGY CEDEX  
10 avenue du Pré Félin – PAE des Glaisins – 74940 ANNECY-LE-VIEUX  
FRANCE

Bureau Veritas Certification certifie que le système de management de l'environnement de l'entreprise susmentionnée a été évalué et jugé conforme aux exigences de la norme :

Standard

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**NF EN ISO 14001 : 2004**

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Domaine d'activité

- REVÊTEMENT DE SURFACE DE HAUTE TECHNICITÉ SUR PIÈCES ET SUR FILS.
- DÉPÔTS MINCES OU ÉPAIS DE MÉTAUX PRÉCIEUX ET COMMUNS PAR PROCÉDÉS CHIMIQUES OU ÉLECTROLYTIQUES.
- FABRICATION DE FILS POUR USINAGE PAR ÉLECTROÉROSION.
- SOPHISTICATED SURFACE COATING OF INDUSTRIAL PARTS AND WIRES.
- THIN AND THICK DEPOSITS OF PRECIOUS AND COMMON METAL BY CHEMICAL OR ELECTROCHEMICAL PROCEEDINGS.
- MANUFACTURING OF WIRES FOR ELECTRICAL DISCHARGE MACHINING (EDM).

Date de certification originale : **03 juillet 2002**

Sous réserve du fonctionnement continu et satisfaisant du système de management de l'environnement de l'entreprise, ce certificat est valable jusqu'au : **03 juillet 2008**

Pour vérifier la validité du certificat appelez au : + 33(0) 4 78 66 82 60

Tout éclaircissement sur cette certification peut être obtenu auprès de l'entreprise certifiée.

Date : 29 novembre 2006  
Numéro d'affaire : 1393048

Jean-Claude BOURGEOIS  
Président



**cofrac**  
CERTIFICATION  
D'ENTREPRISES  
& DE PERSONNELS  
Association 11 400 096  
Pour systèmes qualité  
Pour systèmes environnement  
Tout secteur d'activité  
Tout pays

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