

# METALLI

## SAFETY DATA SHEET – SEL-1190-XXX

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### SECTION 1: Identification of the substance/mixture and of the company/undertaking

**Product Identifier**  
**Trade name of designation**  
**of the mixture** **SEL-1190-XXX**

**Description and application of the substance/preparation:**

This MSDS is applicable to all pastes with product codes conforming to the following system:

First segment (binder) – Second segment (alloy) – third segment (%metal code) See *example* below:

**ABC-9999-XXX**

(1) –(2) – (3)



- (1) The first segment (the binder code) consists of three letters or a number and two letters.
- (2) The middle segment (the alloy code) may appear in basic form (no suffix letter), or with of several suffix.
- (3) The last segment (3 characters: first 2 digits % metal of the paste, with last character being A,B,C,D,E,F,G,H,K,S, of T).

**Product category:** Product type: A braze paste consisting of powdered filler metal and flux suspended in a binder and used for joining metals by heating the part to be joined and this product to or above the melting temperature of the filler metal.  
This MSDS applies to products containing 60% metal or greater.

**Details of the supplier of the safety data sheet**

**Company name** Metalli A/S  
Nyholms Allé 46  
2610 Rødovre  
Denmark  
**E-mail** [info@metalli.dk](mailto:info@metalli.dk)  
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### SECTION 2: Compositional information

**2.1 Substances** Not applicable

**2.2 Mixtures**

Name	CAS-nr.	Einecs No.	CLP - classificarion	DPD-Classificering	% concentration
Potassium difluorodihydroxyborate(1-)	85392-66-1	286-925-2	  Acute tox. (O), Cat. 4 Rep. Tox., Cat. 2, H302, H361	 Xn, R22, R63	<40
Silver	7440-22-4	231-131-3	 GHS09 H400, H410 Cat. 1	 Xn, R20/22, R36/38	10.65 - 16.86
Copper	7440-50-8	231-159-6	 GHS07 H302, H332 Cat. 4	 Xn, R20/22, R36/38	45 - 71.25
			 GHS 08, H371SE2		
** Phosphorus	7723-14-0	231-768-7	 GHS03, H228, Flam. Sol, cat. 1	 F, R11, R16, R52/53	4.35-6.89
			 GHS09, H412, Aquatic chronic cat.3		

#### Filler metal composition (nominal)

Element	Weight%
Silver	17.75
Copper	75
Phosphorus	7.25

See section 16 for R and S- phrases.

The specific chemical identity of the flux/binder formulation ingredients are being withheld as a trade secret. Disclosure will be provided to medical personnel in the event of an emergency. See section 8 for exposure limits of hazardous ingredients (where applicable).

\*\*Phosphorus is expected to be in the form of tricopper phosphide. There is no specific data on health dangers or toxicity of this substance.

For full text of H-statements and R-phrases: see section 16.

### SECTION 3: Hazards Identification

**3.1 Classification of the substance or mixture. Classification according to Directive 1999/45/EC**

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### Hazards identification

**Danger symbols** :Xn

**R-phrases** : R22, R63

#### Classification according to Regulation (EC) No 1272/2008 (CLP)

**Health** : Acute Toxicity (Oral), Category 4  
Reproductive Toxicity, Category 2

### 3.2 Label

#### Classification according to Directive 1999/45/EC

**Hazard pictograms** : Xn



**Harmful**

#### R & S statements

**R22** Harmful by inhalation and if swallowed

**R63** Possible risk of harm to the unborn child.

**S26** In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**S36/37** Wear suitable protective clothing and gloves.

**S51** Use only in well-ventilated areas.

**S53** Avoid exposure – obtain special instructions before use.

**S60** This material and its container must be disposed of as hazardous waste.

#### Classification according to regulation (EC) No 1272/2008 (CLP)



Exclamation mark



Health hazard

**Hazard pictograms**

:

**Signal Word**

: **Warning**

**Hazard statements**

: H302 Harmful if swallowed

: H361 Suspected of damaging fertility or the unborn child.

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<b>Precautionary statements</b>	: P201	Obtain special instructions before use.
	: P202	Do not handle until all safety precautions have been read and understood.
	: P264	Wash exposed skin thoroughly after handling.
	: P270	Do not eat, drink or smoke when using this product.
	: P280	Wear protective gloves, clothing, eye protection and face protection.
<b>Response</b>	: P301 + P312	IF SWALLOWED: call a POISON CENTER or doctor/physician if you feel unwell.
	: P330	Rinse mouth.
	: P308 + P313	If exposed or concerned: Get medical advice.
<b>Storage</b>	: P405	Store locked up.
<b>Disposal</b>	: P501	Dispose of container in accordance with local, regional and national regulations.

### 3.3 Other hazards

**Health risks** Do not swallowed

**Environment** Not classified

#### Immediate concerns

Warning! Product contains fluorides: In use above 500°C (930°F) in the presence of water vapor, hydrogen fluoride gas is evolved. Hydrogen fluoride gas can cause irritation to the respiratory tract, and delayed burns to the eyes and skin. It can also cause fluid in the lungs (Pulmonary edema), and death. Avoid contact with skin, eyes, and inhalation of vapors. Fumes from the soldering/brazing process are irritating to the eyes and respiratory system. Hot metal can cause eye and skin burns. Avoid breathing fumes from the soldering/brazing process. Use only with adequate ventilation.

#### Special risks

**Eyes:** Can cause severe irritation and abrasion.

**Skin:** Flux ingredients: Skin contact may cause: severe irritation, burns. Prolonged contact may lead to symptoms similar to ingestion.

**Ingestion:** Flux ingredient(s): Fluorides: Can severely irritate and burn the mouth, throat and stomach. Harmful if swallowed. Symptoms include: Salivation, nausea, vomiting, diarrhea, abdominal pain, and coma. Ingestion may cause systemic poisoning.

**Inhalation:** Flux ingredient(s): Fluoride fume can cause respiratory irritation and pulmonary edema.

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**Health hazards:** Fluorides can cause eye, skin and respiratory tract irritation. Overexposure to fluoride dust over prolonged periods can result in fluoride deposition in bones and cartilage as evidenced by x-ray changes (fluorosis) which may be accompanied by stiffness of joints.

### SECTION 4: First aid measures

- 4.1 Inhalation** Remove victim to fresh air. If not breathing, trained personal may give artificial respiration, if breathing is difficult, give oxygen by trained personnel. Seek medical attention.
- Skin contact** Immediately remove contaminated clothing, watch and jewelry. Do not attempt to remove any material bonded to the skin. Flush area of skin contact immediately with large amounts of water for at least 15 minutes. If irritation persists after flushing, get medical attention promptly. Launder contaminated clothing before reuse.
- Eye contact** immediately flush eyes with plenty of low-pressure water or eye wash for at least 15 minutes. Liquid should be lukewarm, because cold water can damage the eye. Remove any contact lenses. Keeping the eyes wide open during flushing so that no trapped under them. Get medical attention if irritation persists.
- Ingestion** If swallowed: Do not induce vomiting unless instructed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- 4.2 The important symptoms and effects, both acute and delayed**
- Eyes:** Eye contact may cause: Irritation and/or burning sensation.
- Skin:** May cause irritation and burns to exposed tissue. Hot molten metal may cause burns to the skin.
- Ingestion:** If swallowed, this product may cause gastrointestinal discomfort, nausea, vomiting.
- Inhalation:** Inhalation of powder, dust or fumes may be irritating to the respiratory system. Inhalation of some metals may cause metal fume fever: see section 11.
- 4.3 Indication of any immediate medical attention and special treatment needed.**
- Notes to physician:** Treat symptomatically. Potassium can reduce blood pressure and cause coma. Fluorides can reduce serum calcium levels resulting in potentially fatal hypocalcaemia. Focus medical efforts on combating shock and reducing systemic toxicity of fluoride ion.

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### SECTION 5: Fire fighting measures

- 5.1 Flammable class:** Non-flammable solid, Product will burn under fire conditions.
- Extinguishing media:** For fires involving this product, use dry chemical, carbon dioxide, foam, water spray. Do not use water if metal is molten.
- Explosion hazards:** Emits toxic and corrosive fumes under fire condition.
- 5.2 Special hazards arising from the substance or mixture:**  
During the soldering/brazing process, hazardous decomposition products may be released: See section 10
- 5.3 Fire fighting procedures:** Move containers from the fire area if it can be done without risk. Avoid inhalation of vapours or mists.
- Fire fighting equipment:** Exposure to decomposition products may be a hazard to health. Do not breathe smoke, gases or vapors generated. Wear goggles if eye protection is not provided. Wash away any material that comes into contact with the body, clothing or equipment. When fighting fires involving this product, wear full protective gear. For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

### SECTION 6: Accidental release measures

- 6.1 General procedures:** Waste disposal method: Scoop up excess material and wash affected areas with soap and water. Avoid contact with skin and eyes. Collect material into sealed and labeled containers for disposal. Clean contaminated surface thoroughly. Dispose in accordance with federal, state and local regulations.
- Special protective equipment:** Avoid inhaling vapor and/or mists. Do not get spilled material on skin, clothing, or in eyes. Wear full protective clothing. Remove all contaminated clothing.
- 6.2 Environment:**
- Water spill** : Not available
- Land spill** : Not available
- Air spill** : Not available
- 6.3 Methods and material for containment and cleaning up**
- Large spill** Recover spilled material. Reclaim this material whenever possible. Collect material into sealed and labeled containers for reclamation or disposal.
- 6.4 Note** See section 8 for protective equipment.  
See section 13 for more information.

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### SECTION 7: Handling and storage

#### 7.1 Precautions for safe handling

##### Handling

Keep away from sources of ignition. Wash hands before breaks and after Work.

#### 7.2 Storage

Keep lid tightly closed except when removing product and store at ambient Temperatures of 5-25° Celsius (41-77° Fahrenheit)

##### Shelf life

See specification sheet or container label.

#### 7.3 Specific end uses

Solder or braze paste for joining metals.

### SECTION: 8 Exposure controls/personal protection

#### 8.1 Control parameters

\*\*Phosphorus is expected to be in the form of tricopper phosphide. There is no specific data on health dangers or toxicity of this substance.

CAS	Chemical name		UK WEL
85392-66-1	Potassium difluorodihydroxyborate (-1)	LTEL (TWA)	2.5 mg/m <sup>3</sup> (Inorganic fluorides, as F)
7440-22-4	Silver	LTEL (TWA)	0.1 mg/m <sup>3</sup>
7440-50-8	Copper	LTEL (TWA)	0.2 mg/m <sup>3</sup> (fume as cu) Respirable Dust - 1 mg/m <sup>3</sup> (dusts & mists, as Cu)
		STEL	2 mg/m <sup>3</sup> (dust & mists, as Cu)
7723-14-0	**Phosphorus	LTEL (TWA)	0,1 mg/m <sup>3</sup> [for yellow-form phosphorus (Brazing fume by-product diphosphorus pentoxide has LTEL of 1 mg/m <sup>3</sup> )]
		STEL	0,3 mg/m <sup>3</sup> [for yellow- form phosphorus (Brazing fume by-product diphosphorus pentoxide has STEL of 2 mg/m <sup>3</sup> )]

#### 8.2 Engineering controls:

The use of local ventilation is required to maintain the concentration of fumes evolved from the soldering/ brazing process to well below the occupational exposure limits, within the operator's breathing zone and the general vicinity. Use of process enclosures, exhaust systems, and other engineering/administrative controls should be designed in accordance with

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local conditions. Please refer to ACGIH document, industrial ventilation, A manual of recommended practices (most recent edition), for details.

### 8.3 Personal protective equipment

**Eyes and face:**

Wear safety glasses with side shields as a minimum protection. Must conform to EN 166.

**Skin:**

Wear chemical resistant gloves. When material is heated, wear thermal-insulated gloves to protect against burns. Change gloves often. Must conform to EN 374.

**Respiratory:**

when exposure limits (listed above) are exceeded or ventilation is inadequate, wear a NIOSH or European standard approved respirator, in accordance with OSHA respirator regulations (29 CFR 1910.134) or European standards (EN 149). Filter B E P3 EN 14387.

**Protective clothing:**

Avoid skin contact. Wear chemical resistant clothing (long-sleeved shirt buttoned at the wrist) as necessary to prevent contact. For soldering/brazing operations where hot metal parts are handled and molten metal may be present, wear heat-resistant gloves and clothing to protect from burns.

**Work hygienic practices:**

Minimize exposure in accordance with good hygiene practice. Good general hygienic practices include: eating, drinking and smoking should not be permitted in work areas. Wash thoroughly after handling, and before eating, drinking, using tobacco, applying cosmetics, or using the toilet. Keep area clean. Remove contaminated clothing promptly. Launder contaminated clothing before reuse. Avoid contact with eyes, skin, and clothing. Avoid breathing dust, vapor or mist.

**Other use precautions:**

Educate and train employees in the safe use and handling of this product.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

<b>Flashpoint and method:</b>	Not applicable
<b>Appearance</b>	Viscous paste.
<b>Odour</b>	Characteristic odour
<b>Color</b>	Gray
<b>Vapour pressure</b>	0.03 kPa (0.17 mmHg) at 68° F/20°C (for C901)
<b>Vapour density</b>	>1 at 101 kPa (air=1) (for C901)
<b>PH:</b>	Not applicable
<b>Boiling point:</b>	>356° F (>180°C) (for C901)
<b>Melting Point</b>	1190 filler metal: 643°C (1190°F)
<b>Solubility in water</b>	Negligible
<b>Evaporation rate:</b>	<0.1 (n-butyl acetate=1)(for C901)
<b>Flammable limits:</b>	LEL/UEL: Not Determined
<b>Specific gravity:</b>	>2 (water=1)



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**Auto-ignition temperature:** Not determined

### 9.2 Other information

**Additional information:** Not available

## SECTION 10: Stability and reactivity

**10.1 Reactivity stable** Yes

**10.2 Stability:** Stable under normal conditions of use.

**10.3 Polymerization:** Will not occur

**10.4 Conditions to avoid:** Avoid contact with incompatible materials. Avoid extreme heat. Avoid prolonged exposure to air and moisture.

**10.5 Incompatible materials:** Materials to avoid: Oxidizing agents, strong reducing agents such as metal hydrides or alkali metals (Reaction with these material may generate hydrogen gas, which could create an explosive hazard), acids, alkalies, Sulfur, halogens, acetylene, nitric acid, sulfuric acid, bromates, strong bases, ammonia, magnesium, chlorates, iodates, strong oxidizers, hydrogen peroxide, bromine azide, chlorine trifluoride, ethyleneimine, oxalic acid, tartaric acid.

**10.6 Hazardous decomposition products** Decomposition products may include, but are not limited to: smoke, fumes, carbon oxides (CO, CO<sup>2</sup>), highly corrosive and toxic hydrofluoric acid fumes. Metallic decomposition products may include: White phosphorous, phosphorus oxides, phosphine, phosphoric acid (if water is present), copper fume, metal oxide fumes.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute

Chemical name	ORAL LD <sub>50</sub> (rat)	Demal LD <sub>50</sub>	Inhalation LC <sub>50</sub>
Copper	152 mg/kg (rat)	Not established	Not established

#### Notes:

If excessive quantities of copper fume are inhaled, it can result in the condition called metal fume fever. The symptoms of metal fume fever will occur within 3 to 10 hours, and include immediate dryness and irritation of the throat, tightness of the chest, and coughing which may later be followed by flu-like symptoms of fever, malaise, perspiration, frontal headache, muscle cramps, low back pain, occasionally blurred vision, nausea, and vomiting. There are no recognized complications, after effects, or chronic effect that result from this condition.

#### Eye effects:

Eye contact may cause: burns, severe eye damage and can cause irritation and abrasion.

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<b>Skin effects:</b>	<p>Skin contact may cause severe irritation, burns, dermatitis. Contact with silver powder may produce localized and/or argyria (Permanent blue-gray discoloration of the skin).</p> <p>Material may be absorbed through the skin. Material is harmful if skin absorption occurs.</p> <p><b>Hot molten metal may cause burns to the skin. Wear protective equipment when working with molten metal.</b></p>
<b>Ingestion:</b>	<p>Harmful if swallowed. Ingestion may cause: severe irritation, burns, gastrointestinal discomfort, nausea, vomiting and diarrhea.</p> <p>Prolonged ingestion of silver compounds may cause a permanent bluish discoloration of the skin, eyes and mucous membranes.</p> <p>Red phosphorus is not readily absorbed and, in pure form, is considered non-poisonous. However, possible contamination with the yellow form must be considered, and symptoms such as nausea, vomiting, abdominal pain, or garlic odor on breath will indicate poisoning by the latter.</p> <p>The estimated lethal human dose for white phosphorus is 50-100 mg</p>
<b>Inhalation:</b>	<p>If inhaled, may cause burns, severe irritation, sneezing, nausea, weakness, fever, coughing, headache, dizziness, drowsiness, unconsciousness, central nervous system depression, irritation of the respiratory tract. Fumes from heating may cause metal fume fever. Diphosphorus pentoxide (P<sub>2</sub>O<sub>5</sub>) fume is corrosive and irritating to the mucous membranes, respiratory system, eyes and skin. If inhaled, may cause coughing, bronchitis, possible kidney damage or liver damage if contaminated with yellow phosphorus.</p>
<b>Carcinogenicity:</b>	<p>The product was not formulated with any ingredients that are classified as carcinogenic by IARC, NTP, ACGIH, OSHA or the UK HSC.</p>
<b>Mutagenicity:</b>	<p>This material was not made with components identified as being mutagenic.</p>
<b>Reproductive effects:</b>	<p>Contains borates: Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction.</p>
<b>Target organs:</b>	<p>Affected target organs: eyes, skin, central nervous system, respiratory system, bones (fluorosis), calcification of ligaments and vertebrae, teeth, liver, kidneys, gl. Tract, lungs, conjunctiva, mucous membranes.</p>
<b>Sensitisation:</b>	<p>This material was not made with any components known to be skin or respiratory sensitizers.</p>

## SECTION 12: Ecological information

**12.1 Toxicity:** Ecological information on this product and its ingredients is not known.

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### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods

##### Product disposal

Disposal of waste material from the use of this product may be subject to federal, state and local regulations. Waste characterizations and compliance with applicable laws are the sole responsibility of the waste generator. Reclaimed scrap metal has monetary value. Contact a commercial reclaimer for information on recycling scrap metals. All recovered material should be packaged, labeled, transported and disposed or reclaimed in conformance with applicable laws and regulations and in conformance with good engineering practices.

#### 13.2 Disposal method:

Dispose of in according with EC, national and local regulations, or sell to refiner.

#### 13.3 Empty container:

Do not reuse empty containers. Dispose of empty container in accordance with EC, national and local regulations.

### SECTION 14: Transport information

#### Land transport ADR/RID (cross-border)

ADR/RID Class	Not restricted for transport
UN number	Not restricted for transport
UN proper shipping name	-
Transport hazard class(es)	-
Packing group	-
Environmental hazards	Not applicable
Tunnel restriction code	-
Labels required	-
Special precautions for user	-

#### Maritime transport IMDG

IMDG Class	Not restricted for transport
UN number	Not restricted for transport
UN proper shipping name	-
Transport hazard class(es)	-
Packing group	-
Environmental hazards	Not applicable
Marine pollutant	No
Labels required	-
Tunnel restriction code	-

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### Air transport ICAO-TI and IATA-DGR

ICAO/IATA Class	Not restricted for transport
UN/ID number	Not restricted for transport
Label	-
Packing group	-
Proper shipping name	-

**Additional information:** This product is classified for transport per US DOT, ADR/RID, ICAO/IATA, and IMO/IMDG.

## SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.**
- RoHS** This product was not made with any components regulated under the RoHS directive 2011/65/EU.
- 15.2 Chemical Safety:** Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

**Relevant R-Phrases and/or H-statements:**  
(Number and full text)

### Risk Phrases

<b>NONE:</b>	Not classified
<b>R11:</b>	Highly flammable
<b>R16:</b>	Explosive when mixed with oxidizing substances
<b>R22:</b>	Harmful if swallowed
<b>R52/53:</b>	Harmful to aquatic organisms may cause long-term adverse effects in the aquatic environment.
<b>R63:</b>	Possible risk of harm to the unborn child. Rep. Tox., cat.2: Reproductive toxicity, category 2
<b>H-NONE:</b>	Not classified
<b>H228:</b>	Flammable solid
<b>H302:</b>	Harmful if swallowed
<b>H361:</b>	Suspected of damaging fertility or the unborn child
<b>H412:</b>	Harmful to aquatic life with long lasting effects.

**Education: A prerequisite is to have a thorough knowledge of this safety.**