

**MATERIAL SAFETY DATA SHEET**  
- MSDS (OSHA) -

Date: April 1999  
revised: Jan. 16, 2004

Semi-finished products in Copper-Zinc Alloys, Leaded

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**1. PRODUCT AND COMPANY IDENTIFICATION**

**1.1. PRODUCT NAME:** Sheets, strip, tubes, rods, wires and profiles in Wieland-Z20 and -Z21

1.1.1. Chemical name: **Metal Alloy,  
Metals in compact form**  
(alloys are considered to be preparations)

1.1.2. Synonyms: - **C28000 Muntz Metal, 60 %**  
- **C35000 Medium Leaded Brass, 62 %**

1.1.3. Chemical family: - **C28000 Copper-Zinc Alloys (Yellow Brasses)**  
- **C35000 Copper-Zinc-Lead Alloys (Leaded Brasses)**

1.1.4. Formula: **Not applicable - mixture**

1.1.5. Product use: **Metallurgical products**

1.1.6. Material name:

Wieland	Z20	Z21
DIN	CuZn40	CuZn38Pb1.5
EN	CuZn40	CuZn38Pb2
UNS*	C28000	C35000

\*Unified Numbering System (USA)

**1.2. COMPANY ADDRESS**

1.2.1. Supplier: **Identification Plates Inc.**  
Street/P.O.Box: **1555 High Point Drive**  
City / State: **Mesquite, Texas 75149-9009**  
Telephone: **1.800.395.2570**  
Fax: **1.800.934.8304**

**1.3. EMERGENCY TELEPHONE NUMBER 1.800.395.2570**

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

2.1.	CHEMICAL CHARACTERISATION OF THE PREPARATION	Z20 (%)	Z21 (%)	EU Classification	
				Symbol	R-Phrase
2.1.1.	<b>Copper</b> CAS.-No.: 7440-50-8 EINECS-No.: 231-159-6	59.0 - 61.5	60.0 - 61.0	none	none
2.1.2.	<b>Lead</b> CAS-No.: 7439-92-1 EINECS-No.: 231-100-4	max. 0.3	1.6 - 2.5	none	none
2.1.3.	<b>Zinc</b> CAS-No.: 7440-66-6 EINECS-No.: 231-175-3	balance	balance	F (as dust or or powder)	R15-17
2.1.4.	<b>Other declarable substances according to VDA 232-101 (no alloying constituents):</b>	Ni max. 0.3	Ni max. 0.3	≥ 1 % Xn	R40-43
2.1.5.	<b>Material No.:</b>	<b>CW509L</b>	<b>CW608N</b>	-	-

**2.2. OSHA REGULATORY STATUS**  
**In solid form, not hazardous.**

2.2.1. Copper Dusts & Mists and Copper Fume  
Health Effects: Irritation Eye, Nose, Throat, Skin Mild (HE16),  
Skin Moderate (HE15), Respiratory Effects, Acute lung damage/edema (HE11)  
Organ: Respiratory system, skin, eyes, liver, increased risk of Wilson's disease, kidneys

2.2.2. Lead inorganic  
Health Effects: Cumulative blood effects (HE12), Cumulative neurologic effects (HE7),  
Reproductive Hazards (HE5)  
Organ: GI tract, CNS, kidneys, blood, gingival tissue

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- 2.2.3. Zinc and Zinc Oxide Fume  
Health Effects: Irritation Eye, Nose, Throat, Skin, Marked Respiratory Effects, Acute lung damage/edema  
Chronic (Cumulative) Toxicity Suspect Carcinogen or mutagen,  
Acute systemic toxicity (Metal fume fever) (HE4), Mutagen (HE2)  
Organ: Respiratory System
- 2.2.4. Nickel, Metal and Insoluble compounds  
Health Effects: Cumulative lung damage (HE10), Dermatitis (HE3)  
Organ: Lungs, paranasal sinus, CNS

**In solid form, this material is not hazardous. Dust and fumes are hazardous materials.**

**3. HAZARDS IDENTIFICATION**

**WARNING!**  
**EXPOSURE TO DUST OR FUMES CAN CAUSE EYE AND RESPIRATORY**  
**TRACT IRRITATION.**  
**USE ONLY WITH ADEQUATE VENTILATION.**  
**AVOID CONTACT WITH EYES, SKIN AND CLOTHING.**  
**WASH THOROUGHLY AFTER HANDLING.**

- 3.1. HAZARD RATINGS (for dust or fume)  
Degree of hazard (0 = low, 4 = extreme)
- 3.1.1. Hazardous Materials Identification System (HMIS)  
Health: 2  
Flammability: 0  
Physical Hazard: none
- 3.1.2. National Fire Protection Association (NFPA)  
Mixture. Not rated.
- 3.2. HUMAN THRESHOLD RESPONSE DATA
- 3.2.1. Odor Threshold  
Unknown.
- 3.2.2. Irritation Threshold  
Unknown.
- 3.3.3. Immediately Dangerous to Life or Health (IDLH) Value(s):  
The IDLH for this product is not known. The IDLH for copper and lead is 100 mg/m<sup>3</sup>.
- 3.3. POTENTIAL HEALTH EFFECTS
- 3.3.1. Acute Effects
- Eye: Dust or fume cause irritation consisting of redness, swelling, and pain. May cause conjunctivitis with repeated exposures.
- Skin: Material not expected to be absorbed through the skin. Contact with dust may cause mild irritation consisting of redness and/or swelling.
- Inhalation: Inhalation of high concentrations of powder, dust, or fume may cause severe respiratory and nasal irritation, coughing, and difficulty breathing. Inhalation of high concentrations of metallic copper dusts or fumes may cause nasal irritation and/or nausea, vomiting and stomach pain. The metal fume may also produce influenza-like symptoms, known as metal fume fever. Symptoms of this reaction may include metallic taste, runny nose, nausea, fever and chills. These effects usually disappear within 24 hours, but may be delayed in onset.
- Ingestion: Ingestion of large amounts of dust may cause nausea, diarrhea and or stomach pain.

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3.3.2. **Chronic effects:** Prolonged or repeated skin contact with dust may cause more severe irritation or dermatitis. Prolonged or repeated inhalation of dust or fume may cause more severe irritation and possibly lung damage. Chronic exposure to lead can cause kidney damage, anemia, reproductive effects, developmental effects and permanent nervous system damage in humans including changes in cognitive function.

3.4. **MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**  
**Exposure to dust or fume may aggravate an existing dermatitis, asthma, emphysema, or other respiratory disease.**

3.5. **POTENTIAL ENVIRONMENTAL EFFECTS**  
**None known. Product has not been tasted for environmental properties.**

**4. FIRST AID MEASURES**

**Eye contact:** Immediately flush out fume and dust particles with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation develops, call a physician at once.

**Skin contact:** If exposed to dust or fumes, wash skin with plenty of water. Remove contaminated clothing and shoes and launder before reuse. If skin irritation or rash develops and persists or recurs, get medical attention.

**Inhalation:** If symptoms of lung irritation occur (coughing, wheezing or breathing difficulty), remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep affected person warm and at rest. Get medical attention.

**Ingestion:** Not a likely route of exposure for finished metal alloy. If dust is ingested, immediately drink water to dilute. Consult a physician if symptoms develop.

**Note to physicians:** There is no specific antidote to the active ingredients in this product; use symptomatic treatment.

**5. FIRE FIGHTING MEASURES**

5.1. PROPERTY	VALUE
Explosive:	No
Combustible:	No
Flash point (°C):	Not applicable
Lower explosive limit:	Not applicable
Upper explosive limit:	Not applicable
Flammable:	No
Pyrophoric:	No
Burning rate of material:	Not applicable
Autoignition Temp.:	Not applicable
Flammability Classification (defined by 29 CFR 1910.1200):	Not applicable

5.2. **UNUSAL FIRE AND EXPLOSION HAZARDS**  
Dust may cause an ignitable and/or an explosive atmosphere.

5.3. **EXTINGUISHING MEDIA**  
For localized powder fires, smother with dry sand, dry dolomite, sodium chloride or soda ash. Use fire-extinguishing media appropriate to fight surrounding fire.

5.4. **SPECIAL FIREFIGHTING PROCEDURES**  
None required.

**6. ACCIDENTAL RELEASE MEASURES**

For all transportation accidents, call chemtrec at 800-424-9300.  
In dust form, this product may be an explosion hazard. Remove all sources of ignition. Dust or fume may be suppressed by the use of a local exhaust system. Dispose of per guidelines under Section 13, WASTE DISPOSAL.

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**7. HANDLING AND STORAGE**

**7.1. HANDLING**

Avoid dispersion of dust in air.

**7.2. STORAGE**

No special requirements.

**7.2.1. Shelf life limitations**

None known.

**7.2.2. Incompatible Materials for Packaging**

None known.

**7.2.3. Incompatible Materials for Storage or Transport**

None known.

**7.3. OTHER PRECAUTIONS**

Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or HEPA vacuuming.

**8. EXPOSURE CONTROL/PERSONAL PROTECTION**

Chemical name	CAS.-No.:	ACGIH TLV	OSHA PEL	International OELS
Copper	7440-50-8	0.2 mg/m <sup>3</sup> TWA (fume), 1 mg/m <sup>3</sup> TWA (dusts and mists)	0.1 mg/m <sup>3</sup> TWA (fume), 1 mg/m <sup>3</sup> TWA (dusts and mists)	Austria, Belgium, Canada: 0.2 mg/m <sup>3</sup> (fumes), 1 mg/m <sup>3</sup> (dusts)
				Denmark: 1.0 mg/m <sup>3</sup> (dust and powder)
				Germany (MAK): 0.1 mg/m <sup>3</sup> (fume), 1 mg/m <sup>3</sup> (dusts and mists)
Zinc*	7440-66-6	None established	None established	None established
Lead	7439-92-1	0.05 mg/m <sup>3</sup> TWA	0.05 mg/m <sup>3</sup> TWA	Austria, Denmark, Germany, 0.1 mg/m <sup>3</sup>
				Norway, Poland: 0.05 mg/m <sup>3</sup>

\* If this product is heated and fumes are generated, zinc oxide fumes could be formed. The ACGIH TLV and OSHA PEL for zinc oxide fume is 5 mg/m<sup>3</sup> TWA; 10 mg/m<sup>3</sup> STEL.

**8.1. ENGINEERING CONTROLS**

Local exhaust ventilation is recommended if significant dusting occurs or fumes are generated. Otherwise, use general exhaust ventilation.

**8.2. EYE/FACE PROTECTION**

Use safety glasses.

**8.3. SKIN PROTECTION**

Wear impervious (cut-resistant) gloves and other protective clothing (aprons, coveralls) as

appropriate to prevent skin contact when using this product. If generating a dust, wash thoroughly after handling, especially before eating, drinking or smoking.

**8.4. RESPIRATORY PROTECTION**

Respiratory protection not normally needed. If dusting occurs or fumes are generated above the

PEL/TLV, use a NIOSH-approved half-face or full-face respirator equipped with High Efficiency Particulate (HEPA) filter cartridges.

**8.5. GENERAL HYGIENE CONSIDERATIONS**

Do not eat, drink, or smoke while using this product in dust form.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

9.1.	APPEARANCE	Wieland-Z20	Wieland-Z21
9.1.1.	Form	solid	solid
9.1.2.	Color	copper-yellow	copper-yellow
9.1.3.	Odor	odourless	odourless

  

9.2.	SAFETY-RELEVANT DATA	Wieland-Z20	Wieland-Z21
9.2.1.	Melting point/range:	895 - 900 °C	895 - 900 °C
9.2.2.	Density at 20 °C:	8.41 g/cm <sup>3</sup>	8.44 g/cm <sup>3</sup>

Other safety-relevant data are not applicable in the commercial form and depend upon the further processing of the semis.

**9.3. FURTHER DETAILS**

Solubility in water: negligible at 20 °C

**10. STABILITY AND REACTIVITY**

**10.1. STABILITY**

Stable under normal temperatures and pressure.

**10.2. CONDITIONS TO AVOID**

Not affected by mechanical impact or shock or by electrical discharge.

**10.3. MATERIALS TO AVOID**

Sulfuric acid, nitric acid, acetylene.

**10.4. HAZARDOUS DECOMPOSITION PRODUCTS**

When heated to decomposition, may produce metal oxides and fumes.

Inhalation of high concentrations of metal fumes may cause a condition known as "metal fume fever" which is characterized by flu-like symptoms.

**10.5. HAZARDOUS POLYMERIZATION**

Will not occur.

**11. TOXICOLOGICAL INFORMATION**

**11.1. POTENTIAL EXPOSURE ROUTES**

For dust: ingestion, inhalation, and eye contact

For fume: inhalation and eye contact

The finished alloy metal is not hazardous.

**11.2. ACUTE ANIMAL TOXICITY DATA**

For Product (dust or fume)		For components		
		Copper	Lead	Zinc
Oral LD <sub>50</sub>	Believed to be 1 - 3 g/kg, moderately toxic	3.5 mg/kg (mouse, intraperitoneal)	No data	No data
Dermal LD <sub>50</sub>	Believed to be > 2 g/kg	375 mg/kg (rabbit, subcutaneous)	No data	No data
Inhalation LC <sub>50</sub>	Believed to be moderately toxic	No data	No data	No data

**11.3. SUBCHRONIC/CHRONIC TOXICITY**

No information for product. Lead has caused blood, kidney and nervous system damage in laboratory animals.

**11.4. CARCINOGENICITY**

The International Agency for Research on Cancer (IARC) lists lead as possibly carcinogenic to humans, group 2B.

**11.5. MUTAGENICITY**

This product is not known or reported to be mutagenic. Lead has been shown to be mutagenic in several in vitro assays.

**11.6. REPRODUCTIVE, TERATOGENICITY, OR DEVELOPMENTAL EFFECTS**

This product is not known or reported to cause reproductive or developmental effects. Lead has been shown to affect fetal development including birth defects and reduce male reproductive function in laboratory animals.

**11.7. NEUROLOGICAL EFFECTS**

This product is not known or reported to cause neurological effects. Lead has caused peripheral and central nervous system damage and behavioral effects in laboratory animals.

**11.8. INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY**

None known or reported.

**12. ECOLOGICAL INFORMATION**

**12.1. ECOTOXICITY**

No data is available on this product. Individual constituents are as follows:

Copper:

The toxicity of copper to aquatic organisms varies significantly not only with the species, but also with the physical and chemical characteristics of the water, such as its temperature, hardness, turbidity and carbon dioxide content. Copper concentrations varying from 0.1 to 1.0 mg/l have been found by various investigators to be not toxic for most fish. However, concentrations of 0.015 to 3.0 mg/l have been reported as toxic, particularly in soft water to many kinds of fish, crustaceans, mollusks, insects and plankton.

Lead:

LC<sub>50</sub> (48 hrs.) to bluegill (*Lepomis macrochirus*) is reported to be 2-5 mg/l. Lead is toxic to waterfowl.

**12.2. MOBILITY**

No data.

**12.3. PERSISTENCE/DEGRADABILITY**

No data.

**12.4. BIOACCUMULATION**

No data.

**13. DISPOSAL CONSIDERATIONS**

If this product becomes a waste, IT IS NOT considered hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D. Care must be taken to prevent environmental contamination from the use of this material. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and non-hazardous wastes. This product may be a candidate for metal reclamation.

**14. TRANSPORT INFORMATION**

	U.S. DOT	RID/ADR	IMDG	IATA	IMO	Canada TDG
Proper shipping name	Not regulated					
Hazard class						
UN-No.						
Packing group						
Label						
Reportable quantity						

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**15. REGULATORY INFORMATION**

**15.1. US FEDERAL**

TSCA	The components of this product are listed on the Toxic Substance Control Act inventory.				
CERCLA	Zinc, R.Q. = 1000 lbs.; Copper, R.Q. = 5000 lbs.; Lead, R.Q. = 10 lbs. No reporting is required if diameter of the pieces of metal is equal to or exceeds 100 micrometers (0.004 inches).				
SARA 313	Copper, Zinc (fume or dust), Lead				
SARA 313 Hazard class	Health: For dust or fume only	Acute - Yes, Chronic - No	Fire: None	Reactivity: None	Release of Pressure: None
SRA 302 EHS List	None of the components of this product are listed.				

\* RQ = Reportable Quantity

**15.2. STATE RIGHT-TO-KNOW STATUS**

Component	*CA Prop. 65	New Jersey	Pennsylvania	Massachusetts	Michigan
Copper	Not listed	X	X	X	X
Zinc	Not listed	X	Not listed	X	X
Lead	X	X	X	X	X

\* **WARNING:** This product contains detectable amounts of a chemical(s) known to the State of California to cause cancer and/or birth defects or other reproductive harm.

**15.3. CANADIAN REGULATIONS**

**DSL LIST:** The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.

**IDL:** Copper, Lead

**WHMIS:** This product is considered to be a manufactured article and therefore not subject to WHMIS requirements.

**16. OTHER INFORMATION**

This Data Sheet defines our current knowledge concerning the environmental relevance and labour safety of our product in the state that it is delivered. It defines the safety requirements during handling of our unchanged product.

All data beyond it are for information only; because the methods and conditions for storage, use and disposal after delivery of our product are outside our competence. Therefore, we do not assume any responsibility for damage and/or costs which are somehow linked with the storage and the use of our product, as well as the disposal of swarf resulting from production.

This data sheet represents a complete revision of the data sheet of April 1999.