SAFETY DATA SHEETS

This SDS packet was issued with item:

077674252

N/A

MATERIAL SAFETY DATA SHEET March 1, 2013
YATES & BIRD/MOTLOID COMPANY IN EMERGENCY CONTACT:
300 North Oakley Blvd. INFOTRAC: 800-535-5053
Chicago, IL 60612 Outside USA: 352-353-3500
312-226-2412 or 312-226-2454

SECTION I PRODUCT IDENTIFICATION

PRODUCT NAME: **5 STAR SOLDER**
GENERIC NAME: DENTAL SOLDER
CHEMICAL FAMILY: BRAZING FILLER METAL, SILVER SOLDER
CHEMICAL FORMULA: ALLOYS OF SILVER, COPPER, TIN AND ZINC

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

ACGIH (1994-1995)
COMPONENT OSHA PEL mg./M_3 (TWA) TLV mg./M_3 (TWA) %
COPPER Fume: 0.1 Fume: 0.2 22-40
CAS# 7440-50-8 Dusts /mists: 1 Dusts /mists: 1
SILVER 0.01 0.1 25-56
CAS# 7440-22-4
TIN Inorganic cpds. and Metal: 2 Oxide and 2-5
CAS# 7440-31-5 oxide,as Sn: 2 inorganic cpds, as Sn: 2
ZINC ZnO fume: 5 ZnO fume: 5 17-33
CAS# 7440-66-6 10 (STEL) 10 (STEL)
Filler metals are hazardous only in powder form as metal or metal oxide dust.

SECTION III PHYSICAL DATA

VAPOR DENSITY, AIR=1: NA BOILING POINT: UNKNOWN
VAPOR PRESSURE, mm Hg: NA MELTING POINT: 1145-1270F
SOLUBILITY IN WATER: Insoluble EVAPORATION RATE: Solid - NA
SPECIFIC GRAVITY, H_2O=1: 8.77-9.41 APPEARANCE/ODOR: Metallic strips, white to light yellow, odorless

SECTION IV FIRE, EXPLOSION AND REACTIVITY INFORMATION

FLASH POINT (AND TEST METHOD): NA
FLAMMABLE LIMITS V/V% NA
EXTINGUISHING MEDIA: Dry powder
SPECIAL FIREFIGHTING PROCEDURES: Use SCBA with full facepiece operated in pressure demand or other positive pressure mode.
UNUSUAL FIRE AND EXPLOSION HAZARDS: In finely divided form, this material may ignite when exposed to flame or by reaction with incompatible materials. Fires or explosions involving this material may release potentially toxic emissions of metal or metal oxide fumes.
STABILITY: Stable at room temperature
INCOMPATIBILITY: Strong oxidizers; Se; Te; Mg; acetylene; NH_3; HNO_3; azides; ethanol; ethylene imine; C_1F_3; inorganic and organic peroxides; peroxyformic acid; chlorine and fluorine; permonosulfuric acid; chlorates; CrO_3; Mn and Ca chlorides; CS_2; hydrazine mononitrate; nitrobenzene; $Fe(CO)_5$; seleninyl bromide.
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Heating at brazing temperatures may liberate oxides of metals as fume.
HAZARDOUS POLYMERIZATION: Will not occur.
NFPA HAZARD RATING: H=1 F=0 R=1

SECTION V HEALTH HAZARD INFORMATION

None of the ingredients have been determined to be carcinogenic or mutagenic by NTP, IARC, OSHA, ACGIH or NIOSH.

EFFECTS OF OVEREXPOSURE (INHALATION): Inhalation of the components of this material may produce the following: Silver: Chronic exposure may produce argyria, a permanent blue-gray discoloration of the skin, eyes, mucous membranes and respiratory tract. Copper: Acute exposure may cause respiratory tract irritation, fever, muscle ache, chills, cough, weakness, and a metallic taste. Chronic exposure may cause damage to the liver, kidney, spleen, pancreas and brain. Zinc: Acute exposure of zinc oxide fume may cause respiratory tract irritation and "metal fume fever" which is characterized by one or more of the following: metallic taste, dry throat, cough, chills, fever, tightness of chest, dyspnea, headache, nausea, vomiting and fatigue. Chronic exposure to zinc metal has not been determined to produce significant toxic effects in man. Tin: Exposure to tin dust and fume can cause stannosis, a benign pneumoconeosis, as well as possible dyspnea and upper respiratory tract infection.
FIRST AID (INHALATION): Remove victim from contaminated area. Administer oxygen. Seek medical attention. Keep subject warm and at rest. Give artificial respiration if breathing has stopped.
EFFECTS OF OVEREXPOSURE (SKIN): Not known to be hazardous. In powdered form, may produce localized irritation, localized argyria (from silver) and/or skin discoloration and contact dermatitis (from copper.) FIRST AID (SKIN): Following repeated or prolonged contact, remove contaminated clothing. Wash with large quantities of water for at least five minutes. Seek medical attention if necessary.
EFFECTS OF OVEREXPOSURE (EYES): In powdered form, may produce localized argyria, irritation, conjunctivitis, and ulceration of the cornea. FIRST AID (EYES): Flush with water for at least 15 minutes. Seek medical assistance if necessary.
EFFECTS OF OVEREXPOSURE (INGESTION): In finely divided form, may produce gastric irritation, vomiting, abdominal pain, hemorrhage, diarrhea, tremors, hyperemia, and vascular changes. Long term chronic ingestion may produce damage to the liver, kidney, spleen, pancreas, musculoskeletal system, blood forming organs, and brain.
FIRST AID (INGESTION): If subject is conscious, induce vomiting. If unconscious or convulsive, seek immediate medical assistance.
HEALTH CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing pulmonary diseases, by inhalation to material, particularly as fume.

SECTION VII ENVIRONMENTAL PROTECTION INFORMATION

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Clean up spilled material so as to minimuze dispersion of dust. Wet sweeping or vacuuming using HEPA filtration are recommended methods.
WASTE DISPOSAL METHOD: NA
SARA TITLE III NOTIFICATION AND INFORMATION
HAZARD CLASSES: Acute Health Hazard, Chronic Health Hazard
SECTION 313 SUPPLIER NOTIFICATION: This product containes the following toxic chemicals subject to the reporting requirements of section 313 of the EPCRA of 1986 and of 40 CFR 372: Copper (reportable quantity = 5000 pounds), Silver (reportable quantity = 1000 pounds), Zinc (reportable quantity = 1000 pounds)

SECTION VII CONTROL MEASURES

PROTECTIVE GLOVES: Protective welding gloves
EYE PROTECTION: Safety glasses or dust proof goggles. Plastic frame safety spectacles with side shields and filter lenses are recommended.
OTHER PROTECTIVE EQUIPMENT: Normal clothing for brazing. Avoid flammable fabrics.
VENTILATION: Local exhaust
RESPIRATORY PROTECTION: NIOSH/MSHA approved respirator if exposure levels exceed OSHA PELs.
OTHER PROTECTION: If flux is used in conjunction with solder, consult flux MSDS.
WORK/HYGIENIC PRACTICES: Wash hands and face before eating, drinking or smoking.

SECTION VIII SPECIAL PRECAUTIONS

HANDLING & STORAGE: Avoid heating above the recommended brazing temperature range. Do not store at highly-elevated temperatures or in proximity to incompatible materials.

SAFETY DATA SHEET

Issued Date: September 24, 2015 Revision Date: September 24, 2015

SECTION I PRODUCT AND COMPANY IDENTIFICATION

Product Identifiers

Product Name: Yates Motloid 5-Star Solder
Product Code: 42870
Synonyms: Solver-Copper-Tin-Zinc Alloys

Details of the Supplier of the Safety Data Sheet

Supplier Name:
Yates Motloid

Supplier Address

300 N. Oakley Blvd.
Chicago, IL 60612
Website: www.yates-motloid.com
E-mail: sales@yates-motloid.com

Emergency Telephone Numbers

Company Phone Number: (312) 226-2473 (During Business Hours, 8:00am - 4:00pm CST)
Emergency Telephone: INFOTRAC: 1-800-535-5053 (Outside U.S. 1-352-323-3500)

SECTION II HAZARDS IDENTIFICATION

Signal Word:
WARNING

Pictograms:

Classification:
Specific Target Organ Toxicity, Category 3

Hazard Statement(s):
May cause respiratory irritation.

Hazards not otherwise classified:
None

Precautionary statement(s):
Avoid breathing dust of fume.
Use only outdoors or in a well-ventilated area. Store locked up.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a Poison Control Center or doctor if you feel unwell.
Dispose of contents and container in accordance with applicable regulations.
19-76% of the products consist of ingredient(s) of unknown acute toxicity.

SECTION III COMPOSITION ON INGREDIENTS

Chemical Name	Cas No.	%	Impurities
Copper	7440-50-8	4-41	None known
Silver	7440-22-4	24-81	None known
Tin	7440-31-5	1-26	None known
Zinc	7440-66-6	1-35	None known

SECTION IV FIRST AID MEASURES

Inhalation:
If signs and symptoms or toxicity are observed, remove subject from area, administer oxygen, and seek medical attention. Keep the subject warm and at rest. Perform artificial respiration if breathing has stopped.

Eye Contact:
Flush affected areas with water for at least fifteen minutes. Seek medical assistance if necessary.

Skin Contact:
Remove contaminated clothing. Wash affected area with large quantities of water for at least five minutes. Seek medical attention if necessary. Launder or dry-clean clothing before reuse.

Ingestion:
If subject is conscious, induce vomiting. If unconscious or convulsive, seek immediate medical assistance. Do not give anything by mouth to an unconscious or convulsive person.

Note to Physician:
None if the components are acutely toxic by ingestion, nor are they absorbed through the skin. Long-term chronic exposure may cause argyria.

SECTION V FIRE-FIGHTING MEASURE

Fire and Explosion Hazards:
These products are non-flammable and non-explosive. If present in a fire or explosion, they may emit fumes or the constituent metals or their oxides.

Extinguishing Media:
Use dry chemical. Do not use water.

Fire Fighting Instructions:
If fighting a fire in which these products are present, wear a self-contained breathing apparatus with a full face piece operated in pressure-demand or other positive pressure mode.

SECTION VI ACCIDENTAL RELEASE MEASURES

Personal precautions:
Avoid contact with skin, eyes, and mucous membranes.

Methods and materials for containment and cleaning up:
If a fine-divided form or product is spilled, clean up spillage so as to minimize dispersion of dust. Either wet sweeping or vacuuming using HEPA filtration is recommended.

Environmental precautions:
Prevent spills from entering sewers or contaminating soil.

SECTION VII HANDLING AND STORAGE

Handling Precautions: No special handling precautions are required.

Storage Requirements: Do not store in proximity to incompatible materials.

Work and Hygiene Practices: To prevent ingestion following use of the product, wash hands and face before eating, drinking, applying cosmetics, or using tobacco. Remove contaminated clothing or protective equipment before entering eating/drinking areas.

SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

Ingredient	ACGIH TLV	OSHA PEL	Other Limits
Copper	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)	0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)	No ACGIH BIE(s) or other biological limits
Silver	1 mg/m3 TWA (metal)	0.01 mg/m3 TWA	No ACGIH BIE(s) or other biological limits
Tin	2 mg/m3 TWA	2 mg/m3 TWA	No ACGIH BIE(s) or other biological limits
Zinc	2 mg/m3 TWA; 10 mg/m3 STEL (respirable fractions)	5 mg/m3 TWA (as respirable fraction of ZnO dust or fume)	No ACGIH BIE(s) or other biological limits

Appropriate engineering controls:
Use dilution of local exhaust ventilation adequate to maintain concentrations of all components and their byproducts to within their applicable standards.

Respiratory Protection:
If an exposure level to a component(s) exceeds an applicable standard, use a NIOSH-approved respirator having a configuration (face piece, filter media, assigned protection factor, etc.) effective for the concentration of the component(s) generated. For guidance on selection and use of respirators, consult American Nation Standard Z88.2 (ANSI, New York, NY 10036, USA)

Eye/Face Protection:
Wear eye protection adequate to prevent eye contact with the product and injury if the products are used with a flame. Plastic-frame spectacles with side shields and filter lenses (shade #3/#4) are recommended.

Skin Protection:
Wear protective gloves and clothing to prevent skin injuries if the products are used with a flame. Avoid flammable fabrics.

SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White to light-yellow metals, various forms	**Oil-Water Partition coefficient:**	Not applicable
Odor Threshold:	Not applicable	**Odor:**	None
Viscosity:	Not applicable	**Solubility**	Insoluble
Boiling Point:	Not determined	**Melting/Freezing Pt:**	1145°-1270°F(620-690°C0; freezing point not applicable
Flammability Class:	Not applicable	**Flash Point:**	Not applicable
Vapor Pressure:	Not applicable	**Relative Density (H2O):**	8.7-9.4
pH:	Not applicable	**Auto-ignition Point:**	Not applicable
Vapor Density:	Not applicable	**Up/Lower Explosion Limits:**	Not applicable
		Decomposition temp:	Not available
		Evaporation Rate:	Not applicable

SECTION X STABILITY AND REACTIVITY

Reactivity:	None reasonable foreseen
Stability:	Stable
Hazardous Polymerization:	Will not occur
Conditions to avoid:	Silver and copper can form unstable acetylides in contact with acetylene gas.
Incompatible materials:	Acetylene; ammonia; azides; nitric acid; halogens; ethylene imine; ethylene oxide; chlorine trifluoride; sulfuric acid; peroxides; peroxyformic acid; oxalic acid; tartaric acid; 1-bromo-2-propyne; permonosulfuric acid; hydrazine mononitrate; hydrazoic acid; hydrogen sulfide; bromates; chlorates and iodates of alkali and alkali earth metals; hydroxylamine; selenium; tellurium; carbon; disulfide; cupric nitrade.
Hazardous Decomposition Products:	Heating to elevated temperatures may liberate metal/metal oxide fumes.
Risk of Dangerous Reactions:	See conditions to avoid

SECTION XI TOXICOLOGICAL INFORMATION

This product has not been subject to toxicological testing by the supplier/manufacturer.

Ingredients- Toxicological Data

Copper:

LD50: No data available LC50: No data available

Silver:

LD50: >2,000 mg/kg (oral/rat) LC50: No data available

Tin:

LD50: No data available LC50: No data available

Zinc:

LD50: No data available LC50: No data available

Primary Routes of Entry:

Ingestion; inhalation

Eye Hazards:

Eye contact with these products in finely divided form may cause irritation, conjunctivitis, ulceration of the cornea, and/or argyria, a permanent gray discoloration or the eyes, skin, mucous membranes, and respiratory tract.

Skin Hazards:

Skin contact with these products, particularly in finely-divided forms, may cause irritation, argyria, discoloration, and/or contact dermatitis.

Ingestion Hazards:

Ingestion of these products in finely-divided forms may cause nausea, vomiting, and gastrointestinal irritation.

Inhalation Hazards:

Inhalation of toxicologically-significant quantities of the components is unlikely when the product is used in accordance with instructions and specified protective measures (see Section #8).

Symptoms Related to Overexposure:

Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation overexposure, particularly as fume.

Delayed Effects from Long Term Overexposure:

Chronic overexposure by inhalation and/or ingestion may aggravate pre-existing diseases of the liver, kidneys, and gastrointestinal system.

Carcinogenicity:

The product contains no chemicals classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

Germ Cell Mutagenicity:

The product contains no chemicals determined to be germ cell mutagens.

Reproductive Effects:

The product contains no chemicals determined to be damaging to fertility of the unborn child.

Acute Toxicity Estimates:

LD50 (oral): >2,000 mg/kg

LD50 (dermal): no data available

LD50: No data available

Interactive Effects of Components:

No data available.

SECTION XII ECOLOGICAL INFORMATION

No ecological data is available for the product. Available ecological data for the components is as follows;

Copper:
No data available for Aquatic Toxicity to Fish and invertebrates, Aquatic Toxicity to plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and degradability, Bioaccumulation potential, Mobility in Soil.

Silver
No data available for Aquatic Toxicity to Fish and invertebrates, Aquatic Toxicity to plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and degradability, Bioaccumulation potential, Mobility in Soil.

Tin
No data available for Aquatic Toxicity to Fish and invertebrates, Aquatic Toxicity to plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and degradability, Bioaccumulation potential, Mobility in Soil.

Zinc
No data available for Aquatic Toxicity to Fish and invertebrates, Aquatic Toxicity to plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and degradability, Bioaccumulation potential, Mobility in Soil.

SECTION XIII DISPOSAL CONSIDERATIONS

Do not discharge waste product into sanitary or storm sewers or allow it to contaminate soil. Consult applicable Federal, State/Provincial, and local regulations.

SECTION XIV TRANSPORT INFORMATION

Transport is not regulated by USDOT, TDG (Canada) IATA, or IMO.

SECTION XV REGULATORY INFORMATION

United States Regulatory Information
All components of this product are listed on the EPA's TSCA inventory.

SARA Hazard Class: Chronic Health Hazard

SARA Section 313 Notification:
These products contains these components subject to the requirements of Section 313 of the Emergency Preparedness and Community Right-To-Know Act (EPCRA) or 1986 ad 40CFR, Part 372.

1. Copper (CASRN 7440-50-8)
2. Silver (CASRN 7440-22-4)

Canadian Regulatory Information
All components of these products are listed on either the Domestic Substances List (DSL) or the Nondomestic Substance List (NDSL)

WHMIS Class(es) and Division(s): D2B

Components on Ingredients Disclosure list:

1. Copper, elemental (CASRN 7440-50-8)
2. Silver, elemental (CASRN 7440-22-4)
3. Tin, elemental (CASRN 7440-31-5)

This product has been classified according to the hazard criteria of the CPR and this SDS contains all of the information required by the CPR.

SECTION XVI OTHER INFORMATION

HMIS Ratings
Health: Under 2 (moderate chronic hazard)
Flammability: Under 1 (slight hazard)
Physical Hazard: Under 1 (slight hazard)
PPE: see Note

Note: Lucas-Milhaupt, Inc. and Lucas-Milhaupt Toronto recommend use of protective eyewear and gloves (Personal Protection Index "B") as standard PPE. HMIS recommends that its ratings be used only in conjunction with a fully implemented HMIS program, and that specific PPE codes be created by the user, who is familiar with the actual conditions under which he product is used. We cannot anticipate every condition of the product's use, and it is the user's responsibility to evaluate the hazards pertinent to its specific operations, and to determine the specific PPE required.

NFPA Ratings
Health: 2
Flammability: 1
Reactivity: Under 1