Tri-State Cast Technologies Co., Inc.

Meets the Requirements of OSHA Standard 29 CFR 1910.1200 Hazard Communication and EPA Supplier Notification Requirements under Section 313 of the Emergency Planning and Community Right-to-Know Act.

SAFETY DATA SHEET (SDS)

ALUMINUM CASTINGS–300 SERIES (Without Beryllium)

SDS SC-000-052 Rev. 12

DATE ISSUED

10/13

SECTION 1—PRODUCT IDENTIFICATION & COMPANY INFORMATION

PRODUCT NAME

ALUMINUM CASTINGS–300 SERIES (Without Beryllium)

OTHER DESIGNATIONS: ASTM (American Society for Testing & Materials) Specification No's., (ACI (Alloy Casting Institute) Alloy Designations—Grades)

Includes all Series 300 except; A357.2, C357.2, 358.2, 364.2, 393.0, 398.1, 393.20

PRODUCT IDENTIFICATION (Label Identifier) **See Above**

MANUFACTURER'S NAME Tri-State Cast Technologies, Inc.	**STREET ADDRESS** 926 North Lake Street
EMERGENCY TELEPHONE NO. 231-582-0452	**MAILING ADDRESS** 926 North Lake Street
TELEPHONE NO. 231-582-0452	**CITY, STATE, ZIP CODE, COUNTRY** Boyne City, MI 49712 , USA
FAX NO. 231-582-0454	**E-MAIL ADDRESS/WEBSITE** tristatecast.com

RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Solid casting; no restrictions

SECTION 2—HAZARD IDENTIFICATION

CLASSIFICATION

Castings are metallic articles that do not present health hazards in their unaltered state.

OTHER HAZARDS

1. Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.
2. Fumes from hot processes may contain other compounds of these elements with different exposure limits than those listed above. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Consult Section 8 for further information.

SECTION 3—COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME/COMMON NAME/SYNONYM	Wt %	CAS NUMBER
Aluminum (Al)	62–95	7429-90-5
Chromium (Cr)	0.0–0.50	7440-47-3
Copper Cr)	0.03–5.0	7440-50-8
Iron (Fe)	0.06–1.5	1309-37-1
Magnesium (Mg)	0.05–1.5	1309-48-4
Manganese (Mn)	0.03—0.80	7449-96-5
Nickel (Ni)	0.0–3.0	7440-02-0
Silicon (Si)	4.5–23.0	7440-21-3

Tin (Sn)	0.0–0.25	7440-31-5
Titanium (Ti)	0.04–0.25	7440-32-5
Vanadium (V)	0.08–0.15	7440-62-2
Zinc (Zn)	0.0–3.0	1314-13-2

SECTION 4—FIRST AID MEASURES

EYE CONTACT: Not applicable

SKIN CONTACT: No special requirements

INGESTION: Not applicable

INHALATION: Not applicable

SECTION 5—FIREFIGHTING MEASURES

FLAMMABLE PROPERTIES

Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.

EXTINGUISHING MEDIA

Not applicable to metal castings. Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings. DO NOT USE halogenated extinguishing agents on small chips/fines.

PROTECTION OF FIREFIGHTERS: Not applicable

SECTION 6—ACCIDENTAL RELEASE MEASURES

Not applicable

SECTION 7—HANDLING & STORAGE

RECOMMENDED STORAGE

No special requirements

PROCEDURES FOR HANDLING

Proper hand and foot protection is recommended.

SECTION 8—EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

None Required. There are no health hazards from castings in solid form.

SUBSTANCE	ACGIH TLV mg/m^3	OSHA PEL mg/m^3
Aluminum (as Al)		
Total Dust	N/E	15
Respirable Dust	1 (R)	5
Chromium (as Cr)	0.5	1
Copper (as Cu)		
Fume	0.2	0.1
Dust and Mist	1	1
Iron	N/E	N/E
Magnesium (as Mg)	N/E	N/E
Manganese and inorganic compounds (as Mn)	0.02 (R) 0.1 (I)	5 (C)
Nickel (Ni)	1.5 (I)	1
Silicon (Metal) (as Si)		
Total Dust	N/E	15
Respirable Dust	N/E	5
Titanium (Ti)	N/E	N/E
Tin (Sn)	2	2
Vanadium (V)	N/E	N/E
Zinc (as Zn)	N/E	N/E

SUPPLEMENTAL INFORMATION

Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.

Fumes from hot processes may contain other compounds of these elements with different exposure limits than those listed above. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Exposure limits for the most common contaminants are offered as reference. Please consult a competent person for guidance on exposure assessment and controls**.**

In particular, Hexavalent Chromium is an OSHA Expanded Health Standard; refer to OSHA 29 CFR 1910.1026-Chromium (VI) for complete requirements.

SUBSTANCE	ACGIH TLV mg/m^3	OSHA PEL mg/m^3
Aluminum oxide		
Total Dust	N/E	15
Respirable Dust	N/E	5
Chromium Compounds (as Cr)		
Chromium (II) inorganic compounds	N/E	0.5
Chromium (III) inorganic compounds	0.5	0.5
Chromium (VI) inorganic compounds, certain water insoluble	0.01	0.005
Chromium (VI) inorganic compounds, water soluble	0.05	0.005
Chromium (VI) all forms and compounds	N/E	0.005
Iron Oxide (Fe_2O_3)	5 (R)	10
Magnesium oxide	10 (I)	15
Manganese fume (as Mn)	0.2	5 (C)
Nickel compounds (as Ni)		
Nickel, Insoluble compounds	0.2 (I)	1
Nickel, Soluble compounds	0.1 (I)	1
Nickel oxide	0.2 (I)	1
Titanium dioxide (as TiO_2)	10.0	N/E
Total dust	N/E	15
Vanadium pentoxide (as V)	0.05 (I)	
Respirable dust (as V_2O_5)		0.5 (C)
Fume (as V_2O_5)		0.1 (C)
Zinc and compounds	N/E	N/E
Zinc oxide total dust	N/E	15
Zinc oxide respirable dust	2	5
Zinc oxide fume	N/E	5

TERMS

All exposure limits referenced above are 8 hour time weighted averages (TWA) unless otherwise noted.

N/E = None Established
C = Ceiling
I = Inhalable fraction
R = Respirable fraction
TLV = Threshold Limit Value/ACGIH (American Conference of Industrial Hygienists)
PEL = Permissible Exposure Limit/OSHA (Occupational Safety & Health Administration)
STEL = Short Term Exposure Limit
mg/m^3 = milligrams per cubic meter

PERSONAL PROTECTION

Proper hand and foot protection is recommended.

SECTION 9—PHYSICAL & CHEMICAL PROPERTIES

APPEARANCE/PHYSICAL STATE
Solid, silver color

ODOR/ODOR THRESHOLD None	**VAPOR DENSITY** Not applicable
MELTING POINT/FREEZING POINT Approximately 488-646°C (910-1195°F)	**SPECIFIC GRAVITY (relative density)** 2.56–2.64 g/cm^3 for aluminum
BOILING POINT 2326°C (4220°F) for aluminum	**VAPOR PRESSURE** Not applicable
FLASH POINT Not applicable for solid castings	**EVAPORATION RATE** Not applicable
FLAMMABILITY Not flammable	**SOLUBILITY IN WATER** Insoluble
UPPER AND LOWER FLAMMABILITY LIMITS Not applicable for solid castings	**pH** Not applicable
AUTO IGNITION TEMPERATURE Not applicable	**VISCOSITY** Not applicable
DECOMPOSITION TEMPERATURE Not applicable	**PARTITION COEFFICIENT** Not applicable

SECTION 10—STABILITY & REACTIVITY

CHEMICAL STABILITY
Stable as shipped

CONDITIONS TO AVOID
Not applicable to castings. Fine metal dust or powder produced by grinding or polishing aluminum metal can burn or explode and must be protected from ignition sources such as grinding sparks, etc.

REACTIVITY Castings are not reactive. Under some conditions metal chips, fines and dust may be incompatible with water, halogenated solvents, strong oxidizers, acids and alkalis, and iron oxide and may ignite or explode.	**INCOMPATIBLE MATERIALS** Not applicable to castings.
HAZARDOUS DECOMPOSITION PRODUCTS None	**POSSIBILITY OF HAZARDOUS REACTIONS** Not applicable to castings

SECTION 11—TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

EYE CONTACT: None

SKIN: None

INGESTION: None

INHALATION: None

Carcinogen Classification of Ingredients

INGREDIENT	OSHA	NTP	IARC	TARGET ORGAN
Chromium (metal)	NL	NL	3	Lung, Nasal
Chromium VI, (hexavalent)	Y	K	1	
Nickel, Insoluble compounds as Ni	NL	K	NL	Lung, Nasal
Nickel, Soluble compounds as Ni	NL	K	NL	
Nickel, Elemental	NL	R	2B	

TERMS

OSHA—Occupational Safety & Health Administration

Y = Listed as a Human Carcinogen

NTP—National Toxicology Program

K = Known to be a Human Carcinogen

R = Reasonably Anticipated to be a Human Carcinogen (RAHC)

IARC—International Agency for Research on Cancer

1 = Carcinogen to Humans

2A = Probably Carcinogenic to Humans

2B = Possibly Carcinogenic to Humans

3 = Unclassifiable as to Carcinogenicity in Humans

4 = Probably not Carcinogenic to Humans

Other

NL = Not Listed

SECTION 12—ECOLOGICAL INFORMATION

ECOTOXICITY Not applicable	**PERSISTENCE AND DEGRADABILITY** Not applicable
BIOACCUMULATION POTENTIAL Not applicable	**MOBILITY IN SOIL** Not applicable

OTHER ADVERSE EFFECTS

Not applicable

SECTION 13—DISPOSAL CONSIDERATIONS

Recover or recycle if possible. Dispose of according to federal, state and local regulations. Dust collected from machining, welding, etc. may be classified as a hazardous waste. Consult federal, state and local regulations.

SECTION 14—TRANSPORT INFORMATION

US DEPARTMENT OF TRANSPORTATION (DOT)-HMR Not Regulated	**CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG)** Not regulated
UN SHIPPING NAME Not regulated	**UN NUMBER** Not regulated
TRANSPORT HAZARD CLASS Not regulated	**PACKING GROUP** Not regulated
ENVIRONMENTAL HAZARDS None	**LABEL(S) REQUIRED?** No
TRANSPORT IN BULK Not applicable	**SPECIAL SHIPPING INFORMATION** Not applicable

SECTION 15 — REGULATORY INFORMATION

USA-OSHA (Hazard Communication Standard)

Reference 29 CFR 1910.1200 and 1910.1000. A finished casting is an article as defined in the OSHA Hazard Communication Standard 29CFR 1910.1200 (c). Dust or fumes generated by cleaning, machining, grinding, or welding of the casting may produce airborne contaminants, such as aluminum dust, aluminum oxide, chromium, copper, iron, magnesium oxide, manganese, nickel, silicon, tin, titanium dioxide, vanadium pentoxide, zinc oxide and silica. For chromium references see 29 CFR 1910.1026.

USA-EPA (Toxic Substances Control Act–TSCA)

All components of these products are on the TSCA inventory list or are excluded from listing.

USA-EPA (SARA Title III)

Releases to the environment of Chromium, Copper, Manganese, Nickel, Vanadium (dust or fume only) and Aluminum (dust or fume only), may be subject to reporting under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 72.

CANADA-WHMIS (Workplace Hazardous Materials Information System)

This SDS has been prepared according to the hazard criteria of the Controlled Product Regulations (CPR) and the SDS contains the information required by the CPR.

CANADIAN DSL (Domestic Substance List) Inventory Status

All components of these products are on the DSL Inventory.

CEPA (Canadian Environmental Protection Act)

Chromium and nickel are on the CEPA Priorities Substances Lists.

EINECS No. (European Inventory of Existing Commercial Chemical Substances)

All components of these products are on the EINECS list.

RoHS (Restriction of Certain Hazardous Substances) Compliance

Castings comply with RoHS

CALIFORNIA PROPOSITION 65 Compliance

⚠ WARNING: This product can expose you to chemicals including nickel which is known to the State of California to cause cancer, and chromium, which is known to the State of California to cause birth defects or other reproductive harm. Please see Section 3 of this document for the chemical composition of this product. For more information go to www.P65Warnings.ca.gov.

U.S. STATE REGULATORY INFORMATION

Some of the components listed in Section 3 may be covered under specific state regulations.

SECTION 16 — OTHER INFORMATION

SDS SHEET PREPARED BY	**DATE**
American Foundry Society, Inc. Occupational Safety & Health Committee (10-Q)	**10/13**

NOTE

This data and label information is offered in good faith as typical values and not as a product specification. No warranty either expressed or implied is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review the recommendations in specific context of the intended use and determine if they are appropriate.

Addendum: Label Information

PRODUCT IDENTIFIER

SC-000-052 Rev. 12
ALUMINUM CASTINGS–300 SERIES (Without Beryllium)

SUPPLIER IDENTIFICATION

Company Name Tri-State Cast Technologies, Inc.

Street Address 926 North Lake Street

Mailing Address 926 North Lake Street

City Boyne City State MI

Zip/Postal Code 49712 Country USA

Emergency Phone Number 231-582-0452

Other Info

HAZARD PICTOGRAMS

None*

SIGNAL WORD

None*

PRECAUTIONARY STATEMENTS

None*

HAZARD STATEMENTS

None*

*Castings do not present hazards in their original form.

OTHER INFORMATION

1. Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.
2. Fumes from hot processes may contain other compounds with different exposure limits. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Consult Sections 3 & 8 of the SDS for further information.