



SAFETY DATA SHEET

1. Product and Company Information

Material Name: Steel Castings Grade E, Adapter Tooth, 4330M
Date Prepared: July 18, 2018
Product Form: Mixture
Intended Use: Steel casting used in the railcar industry
Manufacturer Information: McConway and Torley, LLC
 109 48th Street
 Pittsburgh, PA 15201
 (412) 682-4700
Website: www.mcconway.com

2. Hazard Identification

Overview: Steel castings meet the definition of an article as defined in the OSHA Hazard Communications Standard 1910.1200(c).

GHS Classification: Not a hazardous substance or mixture.

Signal Word: None

Hazard Statements: None

Other Hazards: Under normal use and handling of steel castings there are few health hazards. Cutting, welding, melting, grinding etc. of these materials will produce dust, fume or particulate containing the component elements of these materials. Exposure to the dust, fume or particulate of these materials may present significant health hazards. Exposure to dust or fume may cause irritation of the eyes, skin and respiratory tract. Fine particulates dispersed in air may present an explosion hazard.

3. Composition / Information on Ingredients

INGREDIENT	CAS NUMBER	PERCENT (%)
Aluminum (Al)	7429-90-5	0.015 - 0.09
Graphite	7782-42-5	0.24 - 0.32
Chromium (Cr)	7440-47-3	0.25 - 2.4
Copper (Cu)	7440-50-8	Trace - 0.4
Iron (Fe)	7439-88-6	Balance
Manganese (Mn)	7439-96-5	0.6 - 1.3
Molybdenum (Mo)	7439-98-7	0.1 - 0.55



INGREDIENT	CAS NUMBER	PERCENT (%)
Nickel (Ni)	7440-02-0	0.3 - 1.9
Phosphorus (P)	7723-14-0	0.035 maximum
Silicon (Si)	7440-21-3	0.35 - 1.7
Sulfur (S)	7704-34-9	0.035 maximum
Notes: The above listing is a summary of elements used in carbon steel castings. Various grades will contain different combinations of these elements. Other trace elements may also be present in minute amounts.		

4. First Aid Measures

Eye contact

Dust and fume from processing: Rinse eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin contact

Dust and fume from processing: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Inhalation

Dust and fume from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. Provide cardiopulmonary resuscitation for persons without pulse or respirations. Seek medical attention. This product has not been shown to present an inhalation hazard as shipped (steel casting).

5. Fire Fighting Measures

Flammable Properties

This product has not been shown to present fire or explosion hazards as shipped. Solid, massive form is not combustible.

Fire/Explosion Hazards

Small chips, fine turnings and dust from processing may be ignitable/combustible.

Extinguishing Media

Use fire fighting methods and materials that are appropriate for surrounding fire.

Protective Equipment

Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

6. Accidental Release Measures

Spill or leak procedures

Not applicable. Solid mass of metal.

7. Handling and Storage



Handling

Avoid contact with sharp edges or heated metal. Store material away from incompatible materials.

8. Exposure Controls and Personal Protection

Engineering controls

Castings under normal conditions have not been shown to represent an inhalation, ingestion, or contact health hazard and engineering controls are not required. Dust and fume from processing: Use with adequate general ventilation or local exhaust ventilation to maintain exposures below limits listed in Section 8.

Exposure data

Compounds formed during processing

U.S. OSHA – Specifically Regulated Chemicals

Chromium (VI) compounds (18540-29-9) 2.5 µg/m³ Action Level; 5 µg/m³ time-weighted average (TWA). Cancer hazard – See 29 CFR 1910.1026.

Components

INGREDIENT	CAS NUMBER	OSHA PEL (MG/M ³)	ACGIH TLV (MG/M ³)	NOTES
Aluminum (Al)	7429-90-5	15 (total dust) 5 (respirable)	1 (respirable)	Aluminum metal.
Graphite	7782-42-5	See notes below	2 (respirable)	Natural Graphite
Chromium (Cr) and inorganic compounds	7440-47-3	1	0.5	Metallic chromium as Cr(0)
		0.5	0.003 (inhalable)	Trivalent chromium compounds as Cr(III)
		0.005	00002 (inhalable) A1	Hexavalent chromium as Cr(VI)
Copper (Cu)	7440-50-8	1	1	Cu dust & mist
		0.1	0.2	Cu fume
Iron (Fe)	7439-88-6	See Oxide	See Oxide	PEL as fume.
Iron Oxide (Fe ₂ O ₃)	1309-37-1	10	5 (respirable), A4	
Manganese (Mn)	7439-96-5	5 ceiling limit	0.1 (inhalable)	Mn & inorganic compounds.
		5 ceiling limit	0.02 (respirable)	Fume
Molybdenum (Mo)	7439-98-7	15 (total dust)	10 (inhalable) 3 (respirable)	Mo and insoluble compounds.
Nickel (Ni)	7440-02-0	1	1.5 (inhalable) A5	Elemental nickel.
		1	0.2* (inhalable) A1	Insoluble compounds as Ni. *(inorganic only)
		1	0.1* (inhalable) A4	Soluble compounds as Ni. *(inorganic only)

INGREDIENT	CAS NUMBER	OSHA PEL (MG/M ³)	ACGIH TLV (MG/M ³)	NOTES
Phosphorus (P)	7723-14-0 12185-10-3	0.1	0.1	OEL for 12185-10-3
Silicon (Si)	7440-21-3	15 (total) 5 (respirable)	-----	TLV withdrawn.
Sulfur (S) as SO ₂	7704-34-9	13	0.25, A4	As SO ₂
Notes: <ul style="list-style-type: none"> Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) are 8-hour TWA (time-weighted average) concentrations unless otherwise noted. Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted. A “C” designation denotes a ceiling limit, which should not be exceeded during any part of the working exposure unless otherwise noted. A Short Term Exposure Limit (STEL) is defined as a 15-minute TWA exposure, which should not be exceeded at any time during a workday even if the 8-hour TWA is within the TLV-TWA. Inhalable fraction. The concentration of inhalable particulate for the application of this TLV is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH TLVs and BEIs Appendix C. Respirable fraction. The concentration of respirable dust for the application of this limit is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH TLVs and BEIs Appendix C. Carcinogenicity – ACGIH <ul style="list-style-type: none"> A1: Confirmed Human Carcinogen A2: Suspected Human Carcinogen A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans A4: Not Classifiable as a Human Carcinogen A5: Not Suspected as a Human Carcinogen Graphite (Natural) PEL is measured in millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques. 				

Personal protective equipment

Eye/face protection

Required for melt, grind, cut and weld operations. Wear safety glasses with side shields. Melting, welding, and arc cutting may require special eye protection including face shields with special tinted glass. Grinding operations may also require face shield. NIOSH approved respirator may be required during melt, grind, cut and weld operations if exposure exceeds occupational exposure standards and guidelines listed in Section 8.

Skin protection

Wear appropriate gloves to avoid skin injury. Gloves should be selected for the specific operations.

Additional Precautions

Additional personal protective equipment may be required for supplementary work conducted on steel castings.

Special Precautions

These castings were produced in a silica sand mold. Therefore, there may be some residual sand on the surface of the castings or lying loose on or inside the product. Precautions must be taken if handling or work on the castings would release or cause this silica to become airborne in the workers' breathing zone.



9. **Physical & Chemical Properties**

Appearance	Gray solid
Odor	Odorless
Melting point	~1500 °C (2700 °F)
Boiling point	~3000 °C (5400 °F)
Specific gravity	~7.6 - 7.8
Density	~7.4 g/cm ³ to 8.0 g/cm ³
Auto-ignition temperature	Not applicable
Flammability limits in air	Not applicable
Vapor pressure	Not applicable
Vapor density	Not applicable
Solubility (water)	Insoluble
pH	Not applicable
Evaporation rate	Not applicable

10. **Chemical Stability & Reactivity Information**

Chemical stability	Stable as shipped. Metallic dust or fumes may be produced during welding, burning, grinding and possibly machining
Conditions to avoid	Materials to avoid include acids, bases and oxidizers.

11. **Toxicological Information**

Steel Castings	These castings have not been shown to represent an inhalation, ingestion or contact health hazard. However, repair operation on casting such as welding should be evaluated by a health and safety professional to determine engineering controls are required.
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Health effects associated with compounds formed during processing

The following could be expected if the casting is welded, re-melted, arc cut or otherwise processed at elevated temperatures.

Welding fumes: The potential hazards of welding operations include metal fumes, toxic gases, and ultraviolet and infrared radiation. The adverse health effects of overexposure to welding fumes and gases may include both chronic and acute systemic damage, pneumoconiosis (lung disease due to accumulation of mineral or metallic particles), and irritation of the respiratory tract.

The welding fumes produced at welding operations depend primarily on the composition of the metals being welded and the welding rods. Welding processes may generate many different metal fumes and other toxic components. It is important that the hazards of a welding operation be evaluated properly by engineering, health and safety and industrial hygiene experts within the specific environment. Toxic gases that may arise in welding operations include carbon monoxide, nitrogen dioxides, and ozone.



12. **Ecological Information**
Steel Castings

No significant ecological impact as shipped.

13. **Disposal Considerations**
Steel Castings

Dispose in accordance with federal, state and local laws and regulations. Reuse or recycle material whenever possible.

14. **Transportation Information**

DOT Proper Shipping Name - Not regulated
DOT Hazard Classification - Not regulated
UN/NA Number - Not applicable
DOT Packing Group - Not applicable
Labeling Requirements - Not applicable
Placards - Not applicable
DOT Hazardous Substance - Not applicable
DOT Marine Pollutant - Not applicable

15. **Regulatory Information**

This product is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

California Proposition 65 This product contains chemicals known to the State of California to cause cancer and chemicals known to the State of California to cause birth defects or other reproductive harm.

Regulatory Lists Some components of this product may be specifically listed by individual states; other product-specific health and safety data in other sections of the SDS may also be applicable for state requirements. For details on your regulatory requirements, you should contact the appropriate agency in your state.

Toxic Substances Control Act (TSCA) Components of this product are listed on the TSCA Inventory.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Steel castings are not reportable, however, it contains hazardous substances that may be reportable if released in pieces with diameters less than or equal to 0.004 inches.

Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III Section 311/312 Hazard Categories: Immediate Health Effect, Delayed Health Effect. This product contains the following EPCRA Section 313 chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right – To – Know Act of 1986 (40 CFR 372): Section 313 Reportable Ingredients: aluminum, chromium, manganese, nickel and phosphorus.

16. Other Information

The information in this Safety Data Sheet (SDS) was obtained from sources which we believe are reliable; however, the information is provided without any representation or warranty, expressed or implied, regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of this product.