



Material Safety Data Sheet

The Toro Company
8111 Lyndale Ave S
Bloomington, MN 55420

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Product Identification

Product Name:	Bedknives, Reels, Rotary Blades	Parts Number:
Product type:	Carbon Steel, Alloy Steel, Tool Steel, Silver Brazing Alloy	All Toro reels, bedknives and rotary blades
MSDS #	119-8001	
Emergency Contact:	Chemtrec : 1-800-424-9300	
Contact Number:	1-952-888-8801	

Chemical Components

Chemical	CAS #	%	OSHA PEL
Dust emissions (steel)			
Iron (base metal)	7439-89-6	Balance	10 mg/m ³ – Iron oxide fume
Carbon	7440-44-0	< 0.80 %	15 mg/m ³ – Total dust (PNOR) 5 mg/m ³ – Respirable fraction (PNOR)
Manganese	7439-96-5	< 1.35 %	5 mg/m ³ – Fume & Mn compounds
Silicon	7440-21-3	< 2.00 %	15 mg/m ³ – Total dust 5 mg/m ³ – Respirable fraction
Sulfur	7704-34-9	< 0.05 %	15 mg/m ³ – Total dust (PNOR) 5 mg/m ³ – Respirable fraction (PNOR)
Chromium	7440-47-3	< 13.0 %	1 mg/m ³ – as Metal & Cr III 0.005 mg/m ³ as Cr VI 0.0025 mg/m ³ as Action limit
Nickel	7440-02-0	< 0.30 %	1 mg/m ³ – as Metal or insoluble compounds
Molybdenum	7439-98-7	< 5.50 %	15 mg/m ³ – Total dust
Tungsten	7440-33-7	< 6.75 %	15 mg/m ³ – Total dust (PNOR)
Vanadium	7440-62-2	< 2.20 %	0.5 mg/m ³ – Respirable dust
Aluminum	7429-90-5	< 0.09 %	15 mg/m ³ – Total dust 0.5 mg/m ³ – Respirable dust

Chemical Components (cont.)

Phosphorus	8049-19-2	< 0.05 %	15 mg/m ³ – Total dust (PNOR) 5 mg/m ³ – Respirable fraction (PNOR)
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Chemical	CAS #	%	OSHA PEL
(Brazing Alloy constituents below)	(Brazing Alloy constituents below)	(Brazing Alloy constituents below)	(Brazing Alloy constituents below)
Silver	7440-22-4	~ 65 %	0.01 mg/m ³ – as Metal or soluble compounds
Copper	7440-50-8	~ 22 %	0.1 mg/m ³ – Metal fume 1 mg/m ³ – Total dust
Zinc	1314-13-2	~ 17 %	10 mg/m ³ – Total dust 5 mg/m ³ - Respirable
Tin	7440-31-5	~ 5 %	2 mg/m ³ – Inorganic compounds

Notations:

OSHA PEL = Federal OSHA Permissible Exposure Limit (Note in some state programs the level may be lower) This is typically based on individual elements, not dust of metal alloys.

Physical and Chemical Properties

Characteristics Physical Properties			Hazards Description	Physical Dangers
Physical State solid	Vapor pressure	(mm Hg, @ 68 0 F): Negligible	Toro bedknives, reels and rotary blades are formed from various metal alloys into solid, stable and inert forms. They are sometimes coated with a rust preventative such as paint or oil which is not believed to present a health hazard. Some parts have tool steel inserts brazed onto a carbon steel base. Under normal use these components do not emit or release any more than very minute quantities of wear particles which are not of a level to cause physical or health hazards from hazardous chemicals. This MSDS was prepared to address the potential for exposure to metal dust and fumes generated by grinding during sharpening operations on these components. The actual	<p>Stability: Stable under normal conditions.</p> <p>Incompatible: Acids, bases or strong oxidizing agents.</p> <p>Hazardous Decomposition Products: Extreme heat from fire may produce toxic or irritating airborne particulate, including metal and metallic oxide fumes. Reaction of some metals with water, steam, acids, etc. can evolve hydrogen, which is a highly dangerous fire and explosion hazard.</p>
Color Brown/ gray				
Odor odorless	pH	N/A		
HMIS Rating Health: 1	Freezing Point:	N/A		
	Flammability: 0	Melting point/range:		
Physical Hazard: 0	Specific gravity	(H ₂ O =1): 7.7		
	Vapor density	N/A		
	Evaporation rate	N/A		
	Solubility in water	Insoluble		
	VOC content:	N/A		
	Flash Point	N/A		

Physical and Chemical Properties (cont.)

			chemical composition of the dust should be similar to the composition of the base part. This varies from part number to part number, but hazard exposure should be minimized in the same manner regardless of the exact chemical composition. The chemicals in the table can be found to varying degrees in the metal alloys – the exact amount depending on the particular alloy used.	Conditions to Avoid: Contact with incompatible materials. Avoid creating finely divided, concentrated airborne particulates in the presence of ignition sources.
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Health Hazards

Major Routes of Exposure:	Ingredients Considered Hazardous to Health	Potential Health Effects:
Inhalation	Metallic dust and fumes Possible trace (much less than 0.1% by weight) elements known by the state to cause cancer – arsenic (inorganic), hexavalent chromium, nickel, cadmium, lead.	Carcinogenicity: The carcinogenicity of this product as a whole has not been tested. Individual components and some compounds of these elemental metals may have been associated with carcinogenicity by NTP and IARC.
Inhalation	Metallic dust and fumes	Effects of Overexposure: Sharpening operations such as grinding may result in the following effects if dust exposure exceeds the exposure limits. Acute: Exposures to high concentrations of metallic dusts may result in irritation of the respiratory tract and/or sensitization of the lungs and other mucous membranes. Signs and symptoms of overexposure include redness, swelling, itching, and/or irritation of skin and eyes, respiratory difficulties such as coughing, wheezing, shortness of breath, central nervous system effects, flu-like symptoms, and anorexia or weight loss.

Health Hazards (cont.)

		<p>Chronic: Excessive and repeated exposures to dust may cause: Allergic sensitization – dermatitis and asthma Lung inflammation and damage – pneumonitis, pneumonia, bronchitis, siderosis, diffuse pulmonary fibrosis Nasal perforation and nasal cavity damage Eye inflammation Central nervous system damage, possibly permanent Kidney damage Liver damage Gout – inflammation of the joints</p>
Skin	Metallic dusts	<p>Acute: Exposure to dust may cause eye and skin irritation or sensitization.</p> <p>Chronic: Excessive or repeated exposure to dust may cause allergic sensitization - dermatitis</p>
Ingestion	<p>Metallic dusts of: Silver</p> <p>Lead</p>	<p>Chronic: Ingestion of dust may result in argyrosis (blue-gray eye coloration), argyria (blue-gray skin coloration)</p> <p>Chronic: Ingestion of dust may result in elevated levels of lead in the blood and can result in lead poisoning.</p>

First Aid Measures	Personal Protection
<p>Inhalation: Remove from area to fresh air. Seek medical attention if breathing becomes difficult.</p> <p>Eye Contact: Immediately flush eyes with copious amounts of water for at least 15 minutes. Assure adequate flushing of the eyes by separating the eyelids with fingers. Seek emergency medical care if irritation persists.</p> <p>Skin Contact: Wash with soap and rinse with copious amounts of water. Remove and wash contaminated clothing. If persistent rash or irritation develops seek medical attention.</p> <p>Ingestion: Get medical attention immediately if high concentrations of metal dust are ingested.</p>	<p>Not applicable to product in manufactured form. For waste due to grinding/sharpening operations: Exposure to this material can be controlled in many ways. The measure appropriate for a particular worksite depends on how this material is used and on the extent of exposure. This general information can be used to help develop specific control measures. Ensure that the control systems are properly designed and maintained. Comply with occupational, environmental, fire, and other applicable regulations.</p> <p>Required Ventilation: Local and/or general exhaust ventilation should be used to keep worker exposures below applicable exposure limits when grinding parts.</p>

	Personal Protection (cont.)
	<p>Respiratory Protection: Use a NIOSH/MSHA approved dust/fume respirator if ventilation system cannot provide freedom of overexposure to fume or particulates due to grinding operations.</p> <p>Protective Gloves: Suitable for protection against physical injury and skin contact during grinding operations.</p> <p>Eye Protection: Safety glasses or goggles when there are flying particles or high levels of airborne dust or fume.</p> <p>Protective Clothing: Coveralls, boots, and/or other protective clothing is recommended to prevent skin contact.</p>

Fire and Explosion Hazards

Extinguishing Media	Special Fire Fighting Procedures	Unusual Fire and Explosion Hazard
Not flammable metals, all oxidized.	As with all fires, fire fighter should wear full protective gear including supplied air respirators.	Flash Point (Method used): Not Applicable LEL: Not applicable UEL: Not applicable

Handling and Storage

<p>Accidental Release /Spill Measures to Take Not applicable to product in manufactured form. For waste due to grinding/sharpening operations: Do not touch or walk through dust generated by grinding operations. Compressed air should not be used to clean up spilled dusts. During cleanup, skin and eye contact and inhalation of dust should be avoided as much as possible. Provide local exhaust or dilution ventilation as required. Appropriate PPE should be worn if exposure limits are exceeded. Collect material in compatible and appropriately labeled containers. For small dry spills, place material into clean dry container with a clean shovel, and cover loosely.</p>	<p>Precautions Keep away from incompatible materials.</p>	<p>Handling Avoid breathing of and contact with dusts.</p>
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Disposal/Transportation

<p>Disposal Method Product dusts should be evaluated to determine if they qualify as hazardous waste. Follow safe solid waste disposal guidelines in accordance with federal, state and local regulations. For proper disposal, an assessment must be completed to determine the proper and permissible waste management options permissible under applicable rules, regulations, and/or laws governing your location.</p>	<p>Transportation DOT Proper shipping name: Not applicable DOT Hazard class: NA UN/NA Number: NA</p>
<p>Follow safe waste disposal guidelines in accordance with federal, state and local regulations.</p>	

Regulations

<p>SARA Title III Section 302 Extremely hazardous substances: No components are listed as extremely hazardous substances. SARA Title III Section 313 Reportable Substances: Manganese, lead, zinc, and chromium are subject to reporting requirements. All other components are below the de minimis levels. CERCLA Hazardous Substances: Nickel (threshold quantity 100 lbs.), chromium (threshold 5000 lbs.), copper (threshold 5000 lbs.). CERCLA reporting only if diameter of particles released is less than 100 micrometers. Pennsylvania R-T-K List: Listed components (greater than 0.1% by weight) – Aluminum (E), Manganese (E), Silicon, Chromium (E,S). E-environmental hazard, S-special hazardous substance. New Jersey R-T-K Environmental Hazardous substance list: Listed components – aluminum (as dust and fume), chromium, copper, lead, manganese, and nickel. California Proposition 65: Listed possible trace (less than 0.1% by weight) elements known by the State to cause cancer or be developmental risks. This trace metals may be present in the furnace dust which includes: antimony, arsenic, beryllium, cadmium, lead, nickel, carbon as carbon black, hexavalent chromium.</p>

Toxicology Information

<p>Data not available for the mixture. Iron: Excessive exposure of eyes to airborne iron dust can cause conjunctivitis, choroiditis, and retinitis. Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in development of a benign pneumoconiosis, called siderosis, which is observable via x-ray. Inhalation of excessive concentrations of iron oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. LD50 (oral, rat) – 30 gm/kg. Zinc: High airborne concentrations of dust may cause temporary irritation of the nose and throat. Metal fume fever can be caused by inhalation of zinc oxide fume formed in air from welding or heating zinc metal. Zinc compounds have relatively low toxicity by ingestion. Silicon: Elemental silicon is an inert material which appears to lack the property of</p>
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Toxicology Information (cont.)

causing fibrosis in lung tissue. Silicon dust has little adverse affect on lungs and does not appear to produce significant organic disease or toxic effects when exposures are below the permissible exposure limit. Silicon may cause chronic respiratory effects. **Manganese:** Chronic manganese poisoning may result from prolonged inhalation of manganese dust and fumes. The central nervous system is the chief site of damage from the disease, which may result permanent disability. Symptoms include languor, sleepiness, weakness, emotional disturbances, spastic gait, recurring leg cramps, and paralysis. LD50 (oral, rat) – 30 mg/mkg. **Copper:** Industrial exposure to copper fumes, dusts, or mists may result in metal fume fever with atrophic changes in nasal mucous membranes. Chronic copper poisoning results in Wilson's Disease, characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease, and copper deposition in the cornea. **Chromium:** The health hazards associated with exposure to chromium are dependent upon its oxidation state. The metal form (chromium as it exists in this product) is of low toxicity; however, Hexavalent Chromium (Cr VI) can be found in welding or high temperature decomposition by-products. Cr VI is listed as Confirmed Human Carcinogen by ACGIH, IARC Group 1 and OSHA **Silver:** Health hazards associated with exposure to silver are possible damage to nasal septum. **Aluminum:** Inhalation of finely divided aluminum and aluminum oxide powder has been reported as a cause of pulmonary fibrosis and lung damage.

Ecological Information

Not applicable for product in manufactured form. Dusts or particulates generated during sharpening operations on alloy steel are insoluble and not very mobile. Based on this information, alloy steel is not considered to be a significant threat to the environment is accidentally released on land or into water