



Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

*** Section 1 - PRODUCT AND COMPANY IDENTIFICATION***

Material Name: COATED TUNGSTEN CARBIDE GRADES

Manufacturer Information

STELLRAM

Phone: (615) 641-4200

1 Teledyne Place

Lavergne, TN 37086

Emergency # 1-800-424-9300 (CHEMTREC)

Synonyms

MP15; MP23; MP26; MP37; MP48; MP51; MP91M; NL20; NL25; NL26; NL30; NL92; NL40; PFZ; TP21; HN+; SP1032; SP3036; SP4036; SP3064; SP4064; SP6564; SFZ; DFZ; CFZ; X500

*** Section 2 - HAZARDS IDENTIFICATION***

EMERGENCY OVERVIEW

Color: dark, gray

Physical Form: solid

Odor: odorless

Health Hazards: respiratory tract irritation, skin irritation, eye irritation, allergic reactions, suspect cancer hazard (in animals)

Physical Hazards: Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: irritation, allergic reactions, fever, difficulty breathing, headache, dizziness, lung congestion, lung damage

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

Long Term: irritation, allergic reactions, lack of sense of smell, changes in blood pressure, diarrhea, loss of appetite, weight loss, chest pain, difficulty breathing, asthma, irregular heartbeat, headache, sleep disturbances, emotional disturbances, pain in extremities, hearing loss, lung damage, blood disorders, heart disorders, kidney damage, liver damage, paralysis, reproductive effects, cancer

Skin

Short Term: irritation, allergic reactions, skin disorders

Long Term: irritation, allergic reactions, skin disorders

Eye

Short Term: irritation

Long Term: irritation

Ingestion

Short Term: irritation, nausea, vomiting, diarrhea, headache, dizziness

Long Term: irritation, rash, changes in blood pressure, ringing in the ears, nausea, vomiting, diarrhea, stomach pain, difficulty breathing, irregular heartbeat, disorientation, hearing loss, bluish skin color, blood disorders, heart disorders, kidney damage, liver damage, nerve damage

*** Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS***

CAS	Component	Percent
12070-12-1	TUNGSTEN CARBIDE	67 - 97
7440-48-4	COBALT	3 - 30
12070-06-3	TANTALUM CARBIDE	0 - 30
12070-08-5	TITANIUM CARBIDE	0 - 30
7440-33-7	TUNGSTEN	<10
7440-02-0	NICKEL	0 - 20
12069-94-2	NIOBIUM CARBIDE	0 - 15
7440-15-5	RHENIUM	<3
12012-35-0	CHROMIUM CARBIDE	0 - 5.1
12011-97-1	MOLYBDENUM CARBIDE	<2

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

12055-23-1	HAFNIUM OXIDE	<1
12627-33-7	TITANIUM CARBO-NITRIDE	<1
1344-28-1	ALUMINUM OXIDE	<1
25583-20-4	TITANIUM NITRIDE	<1
25658-42-8	ZIRCONIUM NITRIDE	<1
12070-10-9	VANADIUM CARBIDE	<1

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Tungsten compounds, n.o.s., Cobalt compounds, Cobalt, inorganic compounds, Titanium compounds, Nickel compounds, Chromium compounds, Chromium, inorganic compounds, Molybdenum compounds, n.o.s., Zirconium compounds, n.o.s., Vanadium compounds, Hafnium compounds, Aluminium compounds, Aluminum insoluble compounds, Aluminium oxides, Aluminum Oxide (135152-65-7).

*** Section 4 - FIRST AID MEASURES***

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

If a large amount is swallowed, get medical attention.

Note to Physicians

For inhalation, consider oxygen.

*** Section 5 - FIRE FIGHTING MEASURES***

See Section 9 for Flammability Properties

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

NFPA Ratings: Health: 2 Fire: 3 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Flammable Properties

Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

Extinguishing Media

dolomite, dry powder for metal fires, dry sand, graphite, soda ash, sodium chloride

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products.

*** Section 6 - ACCIDENTAL RELEASE MEASURES***

Water Release

Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

Occupational spill/release

Collect spilled material in appropriate container for disposal. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

*** Section 7 - HANDLING AND STORAGE***

Handling Procedures

Wash thoroughly after handling. Avoid breathing dust. Minimize dust generation and accumulation.

Storage Procedures

Store and handle in accordance with all current regulations and standards. See original container for storage recommendations. Keep separated from incompatible substances.

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

*** Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION***

Component Analysis

COBALT (7440-48-4)

ACGIH: 0.02 mg/m3 TWA

OSHA (final): 0.1 mg/m3 TWA (dust and fume)

OSHA (vacated): 0.05 mg/m3 TWA (dust and fume)

NIOSH: 0.05 mg/m3 TWA (dust and fume)

TUNGSTEN (7440-33-7)

ACGIH: 5 mg/m3 TWA

10 mg/m3 STEL

OSHA (vacated): 10 mg/m3 STEL

5 mg/m3 TWA

NIOSH: 10 mg/m3 STEL

5 mg/m3 TWA

NICKEL (7440-02-0)

ACGIH: 1.5 mg/m3 TWA (inhalable fraction)

OSHA (final): 1 mg/m3 TWA

OSHA (vacated): 1 mg/m3 TWA

NIOSH: 0.015 mg/m3 TWA

ZIRCONIUM NITRIDE (25658-42-8)

ACGIH: 5 mg/m3 TWA (as Zr, related to Zirconium compounds, n.o.s.)

10 mg/m3 STEL (as Zr, related to Zirconium compounds, n.o.s.)

OSHA (final): 5 mg/m3 TWA (as Zr, related to Zirconium compounds, n.o.s.)

OSHA (vacated): 10 mg/m3 STEL (as Zr, related to Zirconium compounds, n.o.s.)

5 mg/m3 TWA (as Zr, related to Zirconium compounds, n.o.s.)

NIOSH: 10 mg/m3 STEL (except Zirconium tetrachloride, as Zr, related to Zirconium compounds, n.o.s.)

5 mg/m3 TWA (except Zirconium tetrachloride, as Zr, related to Zirconium compounds,

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

n.o.s.)

VANADIUM CARBIDE (12070-10-9)

NIOSH: 3 mg/m3 STEL

1 mg/m3 TWA

0.05 mg/m3 Ceiling (except Vanadium metal and Vanadium carbide, as V, dust and fume, 15 min, related to Vanadium compounds)

HAFNIUM OXIDE (12055-23-1)

ACGIH: 0.5 mg/m3 TWA (as Hf, related to Hafnium compounds)

NIOSH: 0.5 mg/m3 TWA (as Hf, related to Hafnium compounds)

ALUMINUM OXIDE (1344-28-1)

ACGIH: 1 mg/m3 TWA (respirable fraction, related to Aluminum insoluble compounds)

OSHA (final): 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

OSHA (vacated): 10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

Ventilation

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

Protective clothing is not required under normal conditions.

Glove Recommendations

Protective gloves are not required under normal conditions.

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

At minimum an air-purifying respirator with a high-efficiency particulate filter is recommended.

Consult with a health and safety professional for specific respirators appropriate for your use.

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

*** Section 9 - PHYSICAL AND CHEMICAL PROPERTIES***

Physical State:	Solid	Appearance:	Not available
Color:	dark, gray	Physical Form:	solid
Odor:	odorless	Odor Threshold:	Not available
Melting Point:	Not available	Boiling Point:	Not applicable
Vapor Pressure:	Not applicable	Vapor Density (air = 1):	Not applicable
Density:	5.4 - 15.5 g/cc	Specific Gravity (water = 1):	Not available
Water Solubility:	insoluble	Coeff. Water/Oil Dist:	Not available

*** Section 10 - STABILITY AND REACTIVITY***

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

None reported.

Materials to Avoid

oxidizing materials, strong acids

Decomposition Products

miscellaneous decomposition products

Possibility of Hazardous Reactions

Will not polymerize.

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

*** Section 11 - TOXICOLOGICAL INFORMATION***

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

COBALT (7440-48-4)

Inhalation LC50 Rat >10 mg/L 1 h; Oral LD50 Rat 6170 mg/kg

NICKEL (7440-02-0)

Oral LD50 Rat >9000 mg/kg

ALUMINUM OXIDE (1344-28-1)

Oral LD50 Rat >5000 mg/kg

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

COBALT (7440-48-4)

Oral: 6171 mg/kg Oral Rat LD50

Acute Toxicity Level

COBALT (7440-48-4)

Slightly Toxic: ingestion

Component Carcinogenicity

COBALT (7440-48-4)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC: Monograph 86 [2006] (without tungsten carbide); Monograph 52 [1991] (Group 2B (possibly carcinogenic to humans))

DFG: Category 2 (considered to be carcinogenic for man)

NICKEL (7440-02-0)

ACGIH: A5 - Not Suspected as a Human Carcinogen

IARC: Monograph 100C [in preparation]; Monograph 49 [1990] (evaluated as a group) (Group 1 (carcinogenic to humans), related to Nickel compounds)

DFG: Category 1 (causes cancer in man)

ZIRCONIUM NITRIDE (25658-42-8)

ACGIH: A4 - Not Classifiable as a Human Carcinogen (related to Zirconium compounds, n.o.s.)

VANADIUM CARBIDE (12070-10-9)

DFG: Category 2 (considered to be carcinogenic for man, related to Vanadium compounds)

ALUMINUM OXIDE (1344-28-1)

ACGIH: A4 - Not Classifiable as a Human Carcinogen (related to Aluminum insoluble compounds)

DFG: Category 2 (considered to be carcinogenic for man, fibre dust)

RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

TUNGSTEN (7440-33-7)

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

500 mg/24 hour Eyes Rabbit mild; 500 mg/24 hour Skin Rabbit mild

Local Effects

COBALT (7440-48-4)

Irritant: inhalation, skin, eye

NICKEL (7440-02-0)

Irritant: inhalation, skin

VANADIUM CARBIDE (12070-10-9)

Irritant: inhalation, skin, eye

HAFNIUM OXIDE (12055-23-1)

Irritant: inhalation, skin, eye

Target Organs

COBALT (7440-48-4)

immune system (sensitizer)

NICKEL (7440-02-0)

immune system (sensitizer)

Medical Conditions Aggravated by Exposure

respiratory disorders, immune system disorders or allergies, respiratory disorders, respiratory disorders, skin disorders and allergies, respiratory disorders, skin disorders and allergies

RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

COBALT (7440-48-4)

75 mg/kg Implant Rabbit TDLo; 126 mg/kg Intramuscular Rat TD; 126 mg/kg Intramuscular Rat TDLo

NICKEL (7440-02-0)

15 mg/m³ Inhalation Guinea pig TCLo (91 week); 200 mg/kg Intramuscular Hamster TDLo (21 week); 800 mg/kg Intramuscular Mouse TD (13 week); 200 mg/kg Intramuscular Mouse TDLo; 165 mg/kg Implant Rabbit TDLo (2 year(s)); 23 mg/kg Implant Rat TD; 250 mg/kg Implant Rat TDLo; 58 mg/kg Intramuscular Rat TD; 889 µg/kg Intramuscular Rat TD; 200 mg/kg Intramuscular Rat TD (21 week); 125 mg/kg Intramuscular Rat TD (13 week); 90 mg/kg Intramuscular Rat TD (18 week); 1 gm/kg Intramuscular Rat TD (17 week); 56 mg/kg Intramuscular Rat TDLo; 1250 mg/kg Intrapleural Rat TD (17 week); 125 mg/kg Intrapleural Rat TD (21 week); 100 mg/kg

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

Intraperitoneal Rat TDLo (21 week); 40 mg/kg Parenteral Rat TDLo (52 week); 3000 mg/kg Subcutaneous Rat TDLo (6 week)

ALUMINUM OXIDE (1344-28-1)

200 mg/kg Implant Rat TD; 200 mg/kg Implant Rat TDLo; 90 mg/kg Intraperitoneal Rat TDLo

RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

TUNGSTEN CARBIDE (12070-12-1)

6 mg/L/24 hour human; 10 mg/L human; 50 mg/L human

COBALT (7440-48-4)

600 ug/L human; 6 mg/L/24 hour human; 0.6 mg/L/15 minute(s) human; 25 umol/L/1 hour human; 3 mg/L human

NICKEL (7440-02-0)

5 umol/L hamster; 400 mg/L hamster

RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes the following endpoints:

TUNGSTEN (7440-33-7)

1210 ug/kg Oral Rat TDLo (prior to copulation 35 week); 1160 ug/kg Oral Rat TDLo (prior to copulation 30 week, pregnant 1-20 day(s))

NICKEL (7440-02-0)

158 mg/kg Oral Rat TDLo (Multigeneration)

Additional Data

May cross the placenta. Alcohol may enhance the toxic effects. May cross the placenta. May be excreted in breast milk.

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

*** Section 12 - ECOLOGICAL INFORMATION***

Component Analysis - Aquatic Toxicity

COBALT (7440-48-4)

Fish: 96 Hr LC50 Brachydanio rerio: >100 mg/L [static]

NICKEL (7440-02-0)

Fish: 96 Hr LC50 Brachydanio rerio: >100 mg/L; 96 Hr LC50 Cyprinus carpio: 1.3 mg/L [semi-static]; 96 Hr LC50 Cyprinus carpio: 10.4 mg/L [static]

Algae: 72 Hr EC50 Pseudokirchneriella subcapitata: 0.18 mg/L; 96 Hr EC50 Pseudokirchneriella subcapitata: 0.174 - 0.311 mg/L [static]

Invertebrate: 48 Hr EC50 Daphnia magna: >100 mg/L; 48 Hr EC50 Daphnia magna: 1 mg/L [Static]

*** Section 13 - DISPOSAL CONSIDERATIONS***

Disposal Methods

Dispose in accordance with all applicable regulations.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

*** Section 14 - TRANSPORT INFORMATION***

US DOT Information

Shipping Name: Metal powders, flammable, n.o.s.

UN/NA #: UN3089 **Hazard Class:** 4.1 **Packing Group:** II

Required Label(s): 4.1

TDG Information

Shipping Name: Metal powder, flammable, n.o.s.

UN #: UN3089 **Hazard Class:** 4.1 **Packing Group:** II

Required Label(s): 4.1

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

*** Section 15 - REGULATORY INFORMATION***

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

COBALT (7440-48-4)

SARA 313: 0.1 % de minimis concentration

NICKEL (7440-02-0)

SARA 313: 0.1 % de minimis concentration

CERCLA: 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)

VANADIUM CARBIDE (12070-10-9)

SARA 313: 1.0 % de minimis concentration (Chemical Category N770, related to Vanadium compounds)

ALUMINUM OXIDE (1344-28-1)

SARA 313: 1.0 % de minimis concentration (fibrous forms)

SARA 311/312

Acute Health: Yes **Chronic Health:** Yes **Fire:** Yes **Pressure:** No **Reactive:** No

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
TUNGSTEN CARBIDE (¹ related to: Tungsten compounds, n.o.s.)	12070-12-1	Yes ¹	No	Yes ¹	Yes	No	No
COBALT	7440-48-4	Yes	Yes	Yes	Yes	Yes	Yes
TUNGSTEN	7440-33-7	Yes	Yes	Yes	Yes	Yes	Yes
NICKEL	7440-02-0	Yes	Yes	Yes	Yes	Yes	Yes
CHROMIUM CARBIDE (¹ related to: Chromium compounds)	12012-35-0	Yes ¹	No	No	Yes ¹	Yes ¹	No
MOLYBDENUM CARBIDE (¹ related to: Molybdenum compounds, n.o.s.)	12011-97-1	Yes ¹	No	No	No	No	No
ZIRCONIUM NITRIDE (¹ related to: Zirconium compounds, n.o.s.)	25658-42-8	Yes ¹	No	Yes ¹	No	No	Yes ¹
VANADIUM CARBIDE (¹ related to: Vanadium compounds)	12070-10-9	No	No	No	Yes ¹	No	No
ALUMINUM OXIDE	1344-28-1	Yes	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

TUNGSTEN CARBIDE (12070-12-1)

1 % (related to Tungsten compounds, n.o.s.)

COBALT (7440-48-4)

0.1 %

TUNGSTEN (7440-33-7)

1 %

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

NICKEL (7440-02-0)

0.1 %

MOLYBDENUM CARBIDE (12011-97-1)

1 % (related to Molybdenum compounds, n.o.s.)

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
TUNGSTEN CARBIDE	12070-12-1	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes
COBALT	7440-48-4	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
TANTALUM CARBIDE	12070-06-3	Yes	DSL	EIN	No	No	Yes	Yes	No	No
TITANIUM CARBIDE	12070-08-5	Yes	DSL	EIN	No	No	Yes	Yes	Yes	Yes
TUNGSTEN	7440-33-7	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
NICKEL	7440-02-0	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
NIOBIUM CARBIDE	12069-94-2	Yes	DSL	EIN	No	No	Yes	Yes	No	No
RHENIUM	7440-15-5	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
CHROMIUM CARBIDE	12012-35-0	Yes	DSL	EIN	Yes	No	Yes	Yes	Yes	No
MOLYBDENUM CARBIDE	12011-97-1	Yes	DSL	EIN	No	No	Yes	Yes	No	No
TITANIUM NITRIDE	25583-20-4	Yes	DSL	EIN	No	Yes	Yes	Yes	Yes	Yes
ZIRCONIUM NITRIDE	25658-42-8	Yes	NSL	EIN	No	No	Yes	Yes	No	No
VANADIUM CARBIDE	12070-10-9	Yes	NSL	EIN	No	No	Yes	Yes	No	No
HAFNIUM OXIDE	12055-23-1	Yes	DSL	EIN	No	No	Yes	Yes	Yes	Yes
TITANIUM CARBO-NITRIDE	12627-33-7	No	No	No	No	No	No	No	No	No
ALUMINUM OXIDE	1344-28-1	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

Safety Data Sheet

Material Name: COATED TUNGSTEN CARBIDE GRADES

SDS ID: 00230040

*** Section 16 - OTHER INFORMATION***

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information

NOTICE: The above information while believed to be correct does not purport to be complete or all inclusive and shall be used only as a guide. Neither ATI Stellram nor any of its parent corporations or affiliates shall be held liable for any damage resulting from any omission or from handling or from contact with the above product. Any technical comments or questions should be directed to the Director of Safety and Environment at (615) 641-4200.

“RTECS®” is a United States trademark owned and licensed under authority of the U.S. Government, by and through Accelrys, Inc. Portions ©Copyright 2011, U.S. Government. All rights reserved.

End of Sheet 00230040