

# Material Safety Data Sheet

Page 1 of 5

Material Name: DuraForm™ CoCr ASTM75

## I. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product/Trade Name: DuraForm™ CoCr ASTM75 **Cobalt Chrome Powder**

Chemical Family: Metal Powder

Product Use: For use with the Sinterstation™ DM100 and DM250 Systems

### Hazardous Materials Identification System (HMIS):

(Degree of hazard: 0 = low, 4 = extreme):

Health 0\*

Flammability 0

Physical Hazards 0

### Personal Protection:

Skin, eye protection

Manufacturer:



Manufacturer Contact	3D Systems, Inc. 333 Three D Systems Circle Rock Hill, SC 29730 U.S.A.
For Information	Phone: 803.326.3900
Emergency	800.424.9300 - Chemtrec

## II. COMPOSITION INFORMATION

CAS #	Component	Percent
7440-48-4	Cobalt	60 – 65
7440-47-3	Chromium	25 – 35
7439-98-7	Molybdenum	3 – 7

OSHA Classification: Irritant, Sensitizer (29 CFR 1910.1200 Appendix A)

## III. HAZARDS IDENTIFICATION

### Emergency Overview

Can cause sensitization by inhalation and skin contact. May cause long-term adverse effects in the aquatic environment. Use with adequate ventilation. Wash thoroughly after handling.

### Potential Health Effects:

Eyes: Can cause irritation consisting of redness, swelling and pain.

Skin: Can cause irritation or other allergic reactions, including redness and/or swelling.

Inhalation: Can cause respiratory irritation.

Ingestion: Not an expected route of entry.

Chronic: Can cause an allergic skin reaction with repeated or prolonged exposure consisting of redness, swelling and/or rash (urticaria).

### Medical Conditions Aggravated by Exposure

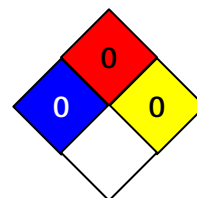
Could irritate an existing dermatitis or respiratory condition.

## IV. FIRST AID MEASURES



**Material Name:** DuraForm™ CoCr ASTM75

Flash Point: NA	Method Used: NA
Upper Flammable Limit (UFL): NA	Lower Flammable Limit (LFL): NA
Auto Ignition: Not self-igniting	Rate of Burning: NA



NFPA Ratings  
0 = Minimal  
1 = Slight  
2 = Moderate  
3 = Serious  
4 = Severe

General Fire Hazards:	.
Hazardous Combustion Products:	Thermal decomposition products can include CO, CO <sub>2</sub> , organometallic compounds, and smoke.
Extinguishing Media:	Use water mist, dry chemical, carbon dioxide, or chemical foam. Avoid the use of a stream of water to control fire since dusting can occur.
Fire Fighting Equipment/Instructions:	Wear full protective clothing, including helmet, self-contained positive-pressure or pressure-demand breathing apparatus, protective clothing and facemask. Move container from area if it can be done without risk. Do not use high-volume water jet or high-pressure inert gas since pressure may cause dusting. Avoid inhalation of material or combustion by-products.

Containment Procedures:	Ensure adequate ventilation. Avoid formation of dust. Do not release material or contaminated water into drains, soil or surface waters.
Clean-Up Procedures:	Wear appropriate protective equipment and clothing. Avoid the generation of dusts during clean up. Clean mechanically with non-sparking tools. Place material in an appropriate container for disposal.
Evacuation Procedures:	Keep unnecessary personnel away.
Special Procedures:	A slipping hazard exists when small particles are spilled.

Handling Procedures: Avoid spilling powders to prevent slip hazards. Avoid dust accumulation of this material.

Storage Procedures: Keep this material in a cool, dry place. Eliminate all sources of ignition.

## Exposure Guidelines

General Product Information:

CAS #	Chemical Name	ACGIH TLV	OSHA PEL	NIOSH REL
7440-48-4	Cobalt	0.02 mg/m <sup>3</sup> as Co BEI	0.1 mg/m <sup>3</sup> as Co (for metal dust and fume)	0.05 mg/m <sup>3</sup> as Co (for metal dust and fume)
7440-47-3	Chromium	0.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
7439-98-7	Molybdenum	10 I (3 R) mg/m <sup>3</sup> as Mo (insoluble compounds) 0.5 R mg/m <sup>3</sup> as Mo (soluble compounds)	5 mg/m <sup>3</sup> as Mo (soluble compounds)	--

## Engineering Controls

Ventilation must effectively control dusts.

## PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face:	Wear tightly sealed goggles.
Skin:	Use impervious gloves, an apron, and closed shoes.
Respiratory:	If ventilation cannot effectively keep dust concentrations below established limits, appropriate certified respiratory



# Material Safety Data Sheet

Page 3 of 5

**Material Name:** DuraForm™ CoCr ASTM75

protection must be provided.

**General:** An eye wash fountain and safety shower are recommended.

## IX. PHYSICAL AND CHEMICAL PROPERTIES

Appearance .....	Dark grey	Odor .....	Oderless
Physical State.....	Powder	PH .....	NA
Vapour Pressure .....	NA	Flash Point .....	NA
Melting Point.....	Undetermined	Viscosity .....	NA
Solubility (H <sub>2</sub> O) .....	Not miscible or difficult to mix	Density .....	8.39457 g/cm <sup>3</sup>
Percent Volatile .....	NA	Molecular Weight.....	NA

## X. CHEMICAL STABILITY AND REACTIVITY

**Chemical Stability:** Stable under normal conditions of handling, use and transportation.

**Incompatibility:** None known.

**Hazardous Decomposition:** Thermal decomposition products can include CO, CO<sub>2</sub>, organometalic compounds, and smoke.

**Hazardous Polymerization:** Will not occur.

## XI. TOXICOLOGICAL INFORMATION

### Acute and Chronic Toxicity

A: General Product Information: No data available.

B: Component Analysis:

Component	LD <sub>50</sub> Oral	Irritant Effects
Cobalt	6170 mg/Kg (rats)	Irritant to skin and mucous membranes. Sensitization possible through inhalation. Sensitization possible through skin contact.

### Carcinogenicity

A: General Product Information: None.

B: Component Carcinogenicity:

Component	EPA	IARC	NTP	ACGIH TLV	NIOSH	OSHA
Cobalt		2B		A3		
Chromium		3		A4		
Manganese	D					
Nickle		2B	R	A5	Ca	
Carbon Black		2B			Ca	

## XII. ECOLOGICAL INFORMATION

### Ecotoxicity

A: General Product Information: The aquatic toxicity of the product is unknown; however based on components, it is predicted that this material may be harmful to aquatic organisms or cause long-term adverse effects in the aquatic environment. Prevent contamination of soil drains and surface waters.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity:

Environmental Fate: No information available for product.

## XIII. DISPOSAL CONSIDERATIONS

### Waste Disposal Instructions

Do not contaminate drains, soil or surface waters with the material or its container. Avoid disposal. Attempt to utilize product completely. Dispose of in compliance with all local, state, and federal regulations. Prior to disposal of unused material, 3D Systems Inc., recommends consulting and using an approved waste disposal operative to ensure regulatory compliance.



# Material Safety Data Sheet

Page 4 of 5

Material Name: DuraForm™ CoCr ASTM75

## XIV. TRANSPORT INFORMATION

	US DOT	RID/ADR	IMDG	IATA	IMO	Canada TDG
Shipping Name	Not Regulated					

## XV. REGULATORY INFORMATION

### US FEDERAL

TSCA:.....All materials are listed on the TSCA Inventory or are not subject to TSCA requirements

SARA 302 EHS List (40 CFR 355 Appendix A):.....None listed

SARA 313 (40 CFR 372.65):..... 7440-48-4 Cobalt (60 – 65%), 7440-47-3 Chromium (25 – 35%), 7439-96-5 Manganese (trace) 7440-02-0 Nickle (trace)

CERCLA (40 CFR 302.4):.....Chromium (Stat Code 2) no reporting required if the particles released are greater than 100 micrometers in diameter.

### STATE RIGHT-TO-KNOW STATUS

Component	CA Prop. 65	MI	NJ	PA	MA
Cobalt	X				
Nickle	X				

### Component Analysis - Inventory

Component/CAS	EC #	EEC	CAN	TSCA	NLP
Cobalt (CAS#7440-48-4)	231-158-0	EINECS	DSL	Yes	No
Chromium (CAS#7440-47-3)	231-157-5	EINECS	DSL	Yes	No
Molybdenum (CAS#7439-98-7)	231-107-2	EINECS	DSL	Yes	No

## XVI. ADDITIONAL INFORMATION

MSDS Creation Date:..... July 2, 2008

MSDS Revision #: ..... A

MSDS Revision Date:.....

Reason for Revision: ..... Updated

For more information: ..... [www.3dsystems.com](http://www.3dsystems.com)

800.793.3669 (Toll-free in the US GMT-07:00; N. America, Mon – Fri, 6:00 a.m. to 6 p.m.)

803.326.3900 (Outside the U.S. GMT-07:00; N. America, Mon – Fri, 6:00 a.m. to 6 p.m.)

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# Material Safety Data Sheet

Page 5 of 5

**Material Name:** DuraForm™ CoCr ASTM75

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## Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists

CAS = Chemical Abstracts Service

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

CFR = Code of Federal Regulations

CPR = Controlled Products Regulations

DOT = Department of Transportation

DSL = Domestic Substances List

EINECS = European Inventory of Existing Commercial Chemical Substances

EPA = Environmental Protection Agency

IARC = International Agency for Research on Cancer

IATA = International Air Transport Association

IDL = Ingredients Disclosure List

mg/Kg = milligrams per Kilogram

mg/L = milligrams per Liter

mg/m<sup>3</sup> = milligrams per Cubic Meter

MSHA = Mine Safety and Health Administration

NA = Not Applicable or Not Available

NIOSH = National Institute for Occupational Safety and Health

NJTSR = New Jersey Trade Secret Registry

NTP = National Toxicology Program

OSHA = Occupational Safety and Health Administration

SARA = Superfund Amendments and Reauthorization Act

STEL = Short Term Exposure Limit

TDG = Transport Dangerous Goods

TSCA = Toxic Substances Control Act

WHMIS = Workplace Hazardous Materials Information System.

