



HEALTH	0	
FLAMMABILITY	0	
REACTIVITY	0	
PROTECTIVE EQUIPMENT		

MATERIAL SAFETY DATA SHEET

NEPA RATING

HMIS RATING

SECTION I. PRODUCT IDENTIFICATION

Product Name: Bare & Insulated Wire All bare & insulated wire products supplied by IWG HPC.		
Manufacturer/Vendor Information:	IWG High Performance Conductors 1570 Campton Road Inman, South Carolina 29349	24-Hour Emergency Phone: (864) 472-0555 Other Information Phone: (864)472-0481 FAX: (864)472-3381

SECTION II. COMPOSITION / INFORMATION ON INGREDIENTS

<u>CAS No.</u>	<u>Chemical Name</u>	<u>Exposure Limits</u>	<u>% by wt.</u>
	Conductor (see attached Appendix A-1 and A-2)		
	Insulation (see attached Appendix B-2 and C)		

SECTION III. HAZARDS IDENTIFICATION

Emergency Overview: See Appendices A-1, A-2, B-2, and C for exposure limits to specific hazardous ingredients. Under normal use there is no hazard, but thermal decomposition can create toxic vapors, gases, or fumes.

Effects of Overexposure: Specialty bare & insulated wire is generally not considered hazardous in the form shipped. However, if your process involves grinding, melting, welding, cutting, or any other process that causes a release of dust, fumes, or gas the following adverse effects may result.

Route(s) of Entry: Ingestion or inhalation and may cause skin dysfunction including discoloration.

Acute Exposure: "Metal Fume Fever" characterized by metallic taste in mouth; irritation of eyes, nose, throat, and skin; (flu-like symptoms) nausea, tightness of chest; loss of consciousness or even death due to welding gases or lack of oxygen.

Chronic Exposure: skin sensitization; neurological damage; respiratory disease; and kidney dysfunction.

Carcinogenicity: NTP – (*Chromium VI*) Known Carcinogen, (*Beryllium, Cadmium, Nickel*) Reasonably Anticipated Carcinogen; IARC – (*Beryllium, Cadmium, Chromium VI*) Group 1 Carcinogen; OSHA – (*Cadmium*).

SECTION IV. FIRST AID MEASURES

Eyes: Flush eyes with plenty of water for at least 15 minutes.

Skin: Wash with soap and water.

Ingestion: If conscious, give water. Consult a physician.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.

SECTION V. FIRE FIGHTING MEASURES

NFPA Hazard Classification:	Health Hazard: 2	Fire Hazard: 0	Reactivity: 0
Flash Pt:	Not applicable		
Flammable Limits in Air-Lower:	Not applicable		
Flammable Limits in Air – Upper:	Not applicable		
Auto-Ignition Temperature:	Not applicable		
Fire Fighting Extinguishing Media:	Water fog, foam, dry chemical, CO ₂		

SECTION V. FIRE FIGHTING MEASURES (Cont'd)

Fire Fighting Equipment: As in any fire, wear self-contained breathing apparatus pressure-demand, OSHA/NIOSH (approved or equivalent) and full protective gear.

Fire Fighting Instructions: Evacuate area and fight fire from a safe distance.

Fire and Explosion Hazards: Will not burn.

Unusual Hazards: None.

SECTION VI. ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Not applicable.

SECTION VII. HANDLING AND STORAGE

Signal Word: None

Handling Information: Not hazardous with normal use.

Storage Information: Do not store near acetylene, chlorine, hydrogen peroxide, or acids.

SECTION VIII. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: None required in normal use

Eye Protection: None required

Skin Protection: None required

Respiratory Protection: None required in normal use. If dust or vapors are created and workplace conditions warrant respirator use, a respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed. For concentrations up to 10 times the exposure limit, use NIOSH or MSHA approved half- or full-face, air-purifying respirator with appropriate particulate cartridges. For higher concentrations, consult a professional industrial hygienist. The American Conference of Governmental Industrial Hygienists (ACGIH) 8-hour time-weighted average (TWA), threshold limit value (TLV) for welding fume (total particulate) is 5 mg/m³.

Ventilation: General ventilation is recommended. Local exhaust recommended if dust, mist, or fumes are being generated.

SECTION IX. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid metals shaped as wire, strip or ribbon with various colors depending on the type of insulation.
Melting Point:	Varies depending on the type of conductor.
Flash Point:	N/A
Boiling Point:	N/A
Decomposition Temperature:	Not determined
Specific Gravity:	N/A
Vapor Pressure:	N/A
Vapor Density:	N/A
Solubility in Water:	Insoluble
Molecular Weight:	N/A

SECTION X. STABILITY AND REACTIVITY

Stability: Stable. Decomposition products may be present when heated.

Incompatibility: Resistant to a wide variety of chemicals. It is soluble in strong acids and bases. Incompatible with oxidizing agents. It is infusible.

Hazardous Decomposition Products: May include carbon monoxide, ozone, and oxides of nitrogen. Polyurethanes used as insulation also emit isocyanate derivatives.

Hazardous Polymerization: Will not occur.

SECTION XI. TOXICOLOGICAL INFORMATION

Material is not hazardous in normal use.

SECTION XII. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Waste must be disposed of in accordance with federal, state and local environmental control regulations.

SECTION XIII. TRANSPORT INFORMATION

DOT:	Proper Shipping Name:	Technical Name (If N.O.S.):	Hazard Class	ID:	PG:
	Not Regulated				

SECTION XIV. REGULATORY INFORMATION**US Federal**

Sara Title III: This product may contain one or more of the following toxic chemicals subject to reporting requirements of Section 313: aluminum (fume or dust); beryllium; cadmium; chromium; copper; manganese; nickel; silver; zinc (fume or dust).

CERCLA: Not Listed

RCRA: Not listed

TSCA: Listed

SECTION XV. OTHER INFORMATION

Prepared By: IWG High Performance Conductors Environmental, Health and Safety Department.

Disclaimer: This information is based on available scientific evidence known to IWG High Performance Conductors. It is provided solely for compliance to the Hazard Communication Standard. This information is furnished without warranty, expressed or implicit.

APPENDIX A - 1

TRADE NAME AND PERCENT COMPOSITION

	Cu	Ag	Ni	Sn	Cd	Mn	Zn	Be	Al	Cr	Fe	Si	Pt	Ir	Au	Mo	W
Silver Plated ETP/of/CDA 107 Copper	>80	<20															
Silver Plated CS-95	>80	<10	<5					<3									
Silver Plated Tensile/Flex (Alloy 135)	>88	<10			<1					<1							
Silver Plated Cadmium Copper	>88	<10			<2												
Silver Plated Copper Covered Steel	30-70	<10				<1					30-70						
Silver Plated Brass	>65	<5					<30										
Silver Plated Phosphor Bronze	>80	<10		<6			<1										
Silver Plated Beryllium Copper	>85	<10	<1					<3									
Sod-R-Rite	>90	<1		<6													
Silver Plated "A" Nickel		<10	>90														
Silver Plated "D" Nickel		<10	>85			<5											
Nickel Plated ETP/of/CDA 107 Copper	>70		<30														
Nickel Plated Tensile/Flex (Alloy 135)	>88		<10		<1					<1							
Nickel Plated Cadmium Copper	>88		<10		<2												
Nickel Plated Copper Covered Steel	30-70		<10			<1					30-70						
Nickel Plated Phosphor Bronze	>80		<10	<6			<1										
Nickel Plated Iron			<10			<1					>90						
Tin Plated ETP/of/Copper	>90			<10													
Tin Plated Tensile/Flex (Alloy 135)	>88			<10	<1					<1							
Tin Plated Cadmium Copper	>88			<10	<2												
Tin Plated Copper Covered Steel	30-70			<10		<1					30-70						
Tin Plated Brass	>65			<5			<30										
Bare Brass	>70						<30										
Silicon Bronze	>97											<3					
Phosphor Bronze	>90			<6			<1										
Nickel Silver	>50		<20				<30										
EC Aluminum									>99								
Stainless Steel 302, 304			<12			<2				<20	>65						
Stainless Steel 416										<14	>85						
Bare Copper	>99																
"A" Nickel			>99														
"D" Nickel			>95			<5											
Copper Covered Steel	30-70										30-70						
Tensile/Flex (Alloy 135)	>98				<1					<1							
Cadmium Copper	>98				<2												
Beryllium Copper	>97							<3									
Copper/Tin Alloy CT-37	>98			<2													
Copper Clad Aluminum	<20								>80								
Tungsten																	>99
Nichrome 60			>59								<24	<16					
Constantan	>55		<45														
Iron											>99						
Gold Plated 101 Copper	70-93														7-30		
Molybdenum																>99	
Monel	>25		63-70			<2					<2.5	<.05					<1
Platinum													>99				
Platinum Iridium													>90	>10			
Pure Gold															>99		
Pure Silver		>99															
CS-95	>99	<5						<3									

LEGEND

Be-Beryllium	Ni-Nickel	Fe-Iron	Zn-Zinc	Cu-Copper	Al-Aluminum
Cr-Chromium	Au-Gold	Pt-Platinum	Si-Silicon	Ag-Silver	Mo-Molybdenum
Mn-Manganese	Cd-Cadmium	Ir-Iridium	W-Tungsten	Sn-Tin	>Greater Than
					<-Less Than

APPENDIX A-2

HAZARDOUS INGREDIENTS

COMPONENT	CAS#	OSHA - PEL			TLV-TWA
		TWA (mg/m3)	STEL (mg/m3)	CEILING (mg/m3)	
Aluminum Total Dust	7429-90-5	15			10
Respirable Fraction		5			
Welding Fumes (as A1+3)		5			5
Beryllium	7400-41-7	0.002	0.005*	0.025	0.002
Cadmium Dust	7440-43-9	0.005			0.05
Chromium	7440-47-3	1			0.5
Copper Fume Dust/Mist	7440-50-8	0.1 1			0.2 1
Iron Fume (Iron Oxide)	7439-86-6 1309-37-1	10			5
Manganese Dust Fume	7439-96-5			5	5 1
Nickel	7440-02-0	1			1
Platinum Soluble Salts	7440-06-4	0.002			1
Silicon Total Dust Respirable Fraction	7440-21-3	15 5			10
Silver Dust/Fume	7440-22-4	0.01			0.1
Tin	7440-31-5	2			2
Zinc Fume (as Zinc Oxide) Total Dust Respirable Fraction	7440-66-6 1314-13-2	15 5			5 10

* 30 Minutes

PEL: OSHA Permissible Exposure Limit

TWA: 8-Hour Time Weighted Average - OSHA 29 CFR 1910.1000

STEL: Short-Term Exposure Limit for 15 minutes in any 8 hour period, unless otherwise noted. OSHA 29 CFR 1910.1000.

CEILING: Exposure Limit never to be exceeded. OSHA 29 CFR 1910.1000.

TLV: Threshold Limit Value – ACGIH

APPENDIX B-2

INSULATION

TRADE NAME	ABBREVIATION		NEMA TEMPERATURE CLASS	SPECIFICATIONS NEMA 1177/A	MATERIAL DESCRIPTION
	GRADE 1	GRADE 2			
<u>Ref. Metals Glossary</u>					
Formvar	T	T2	105	MW-15, 18 /4, /16	Polyvinyl Formal
Formvar N	TN	TN2	105	MW-17 /5	Polyvinyl Formal/Polyamide
Polyurethane	SU	HU	130	MW-2, 75 /2	Modified Polyurethane
Polyurethane N	SUN	HUN	130	MW-28 /9	Modified Polyurethane/Polyamide
Polyester N	SEN	HEN	180	MW-24 /11	Modified Polyester/Polyamide
Polyesterimide	SEI	HEI	180	MW-26 /10	Modified Esterimide
Polyesterimide N	SEIN	HEIN	180	MW27	Modified FS/Polyamide
Polyester Amideimide	SEAI	HEAI	200	MW35 /14	Modified Polyester/Amideimide
Polyimide	SML	HML	220	MW16 /15, /20	Polyimide

APPENDIX C

INSULATION

TRADE NAME	ABBREVIATION		NEMA TEMPERATURE CLASS	MATERIAL DESCRIPTION
	GRADE 1	GRADE 2		
<u>Ref. Metals Glossary</u>				
Formvar B Bond	SFBB	HFBB	105	Formvar/Butvar
Formvar N/B Bond	SFNBB	HFNB	105	Formvar/Polyamide/Butvar
Formvar P Bond	SFPB	HFBP	105	Formvar/Polyester
Formvar N/P Bond	SFNPB	HFNPB	105	Formvar/Polyamide/Polyester
Formvar E Bond	SFEB	HFEB	105	Formvar/Epoxy
Formvar N/E Bond	SFNEB	HFNEB	105	Formvar/Polyamide/Epoxy
Polyurethane B Bond	SUBB	HUBB	130	Polyurethane/Butvar
Polyurethane N/B Bond	SUNBB	HUNBB	130	Polyurethane/Polyamide/Butvar
Polyurethane P Bond	SUPB	HUPB	130	Polyurethane/Polyester
Polyurethane N/P Bond	SUNPB	HUNPB	130	Polyurethane/Polyamide/Polyester
Polyurethane E Bond	SUEB	HUEB	130	Polyurethane/Epoxy
Polyurethane N/E Bond	SUNEB	HUNEB	130	Polyurethane/Polyamide/Epoxy
Polyester B Bond	SEBB	HEBB	180	Polyester/Butvar
Polyester N/B Bond	SENBB	HENBB	180	Polyester/Polyamide/Butvar
Polyester P Bond	SEPB	HEPB	180	Polyester/Polyester
Polyester N/P Bond	SENPB	HENPB	180	Polyester/Polyamide/Polyester
Polyester E Bond	SEEB	HEEB	180	Polyester/Epoxy
Polyester N/E Bond	SENEB	HENEb	180	Polyester/Polyamide/Epoxy
Polyesterimide B Bond	SEIBB	HEIBB	200	Modified Esterimide/Butvar
Polyesterimide N/B Bond	SEINBB	HEINBB	180	Modified Esterimide/Polyamide/Butvar
Polyesterimide P Bond	SEIPB	HEIPB	200	Modified Esterimide/Polyester
Polyesterimide N/P Bond	SEINPB	HEINPB	180	Modified Esterimide/Polyamide/Polyester
Polyesterimide E Bond	SEIEB	HEIEB	200	Modified Esterimide/Epoxy
Polyesterimide N/E Bond	SEINEB	HEINEB	180	Modified Esterimide/Polyamide/Epoxy
Polyester AI B Bond	SEAIBB	HEAIBB	200	Modified Polyester/Amideimide/Butvar
Polyester AI P Bond	SEAIPB	HEAIPB	200	Modified Polyester/Amideimide/Polyester
Polyester AI E Bond	SEAIEB	HEAIEB	200	Modified Polyester/Amideimide/Epoxy
Polyimide B Bond	SMLBB	HMLBB	220	Polyimide/Butvar
Polyimide P Bond	SMLPB	HMLPB	220	Polyimide/Polyester
Polyimide E Bond	SMLEB	HMLEB	220	Polyimide/Epoxy