



CONSOLIDATED SYSTEMS, INC.

P.O. BOX 1756

COLUMBIA, SOUTH CAROLINA 29202

BRANCH FACILITY:

P.O. BOX 181035 - MEMPHIS, TENNESSEE 38181 - 1035

METAL DECKING

Gentlemen:

OSHA Hazard Communication Standard (29 CFR1910, 1200) requires that Material Safety Data Sheets be provided to end users on hazardous substances. A Material Safety Data Sheets (MSDS) contains health and safety information on the product and its ingredients.

In order to comply with OSHA requirements Consolidated Systems, Inc. is enclosing a set of MSDS's for the products that we sell. Although you may not be currently purchasing steel products from all these categories, we believe that supplying your facility with a complete set of MSDS's for the products we sell will be beneficial in the event that you should purchase other steel products in the future.

The steel products sold by Consolidated Systems, Inc. are not identified as hazardous substances; and in their usual physical form do not pose any health hazards. However, burning, welding, grinding cutting or similar operations may emit dust or fumes. Employee exposure to metallic dust or fumes should be maintained to within the permissible exposure limits established by OSHA. Generally, this can be accomplished by utilizing adequate ventilation and/or personal protective equipment.

The enclosed MSD Sheets were supplied to Consolidated Systems, Inc. by United States Steel Corporation. Please note that the product you receive may or may not be manufactured by this mill. These MSD Sheets are being used rather than those from other mills for convenience sake only.

Any future revisions of these sheets will be sent to you as they become available. If you have any questions concerning the Material Safety Data Sheet program please contact the Technical Services Department at Consolidated Systems, Inc.

Sincerely,

CONSOLIDATED SYSTEMS, INC.

Fritz Neubert
H. Fritz Neubert
Technical Services Manager

HFN:jm
ENCLOSURES

ANNEX II
RUST PREVENTATIVES AND PROTECTIVE COATINGS



FAIRFIELD WORKS

Cold Rolled Products

Rust Preventative Oil 3753A

Chevron Oil Company

Galvanize Products

Sunkote 1303

Sun Oil and Refining Company

Tru-Krome 100

J.M.E. Chemicals, Inc.

Electrolytic Tin Products

ATBC Oil

Moreflex Chemical Company

Pipe Products

41-5108 Clear Pipe Varnish

U. S. Steel Supply Division

02306 API Modified Thread
Compound

Texaco, Inc.

Kendex OCPG Orange Corrosion
Inhibitor

Kendall/Amalie Division Witco
Chemical Corporation

Rust Veto 4214 HF

E. F. Houghton and Company

FAIRLESS WORKS

Hot Rolled Products

61AUS

Quaker Chemical Corporation

Cold Rolled Products

61AUS

Quaker Chemical Corporation

Galvanize Products

Vanishing Oil 8MA625

Nalco Chemical Company

Sunkote 1303

Sun Oil and Refining Company

Electrolytic Tin Products

ATBC Oil

Moreflex Chemical Company

Tin Free Steel Products

Butyl Sterate Oil

Emery Industries

Black Plate Products

Quaker 61AUS

Quaker Chemical Corporation

Pipe Products

No. 1 MA035
No. G-4205
G-4135
No. 54C
30-5100
Paraffin Oil No. 19
Raincoat 70
No. 116BD
Thread Compound
High Pressure API No. 72732

Nalco Chemical Company
Ball Chemical Company
U. S. Steel Supply Division
Gulf Oil Corporation
Charles J. Haas, Inc.
Quaker Chemical Corporation
Shell Oil Company

GARY WORKS

Cold Rolled Products

Nalco 6292
Nalco 88 1BFB
Ferrocote 673
Rustolene 100

Nalco Chemical Company
Nalco Chemical Company
Quaker Chemical Corporation
Arco Corporation

Hot Rolled Products

Pickle Milbond MC560
Cora 388
Nalco 581-S

H. A. Montgomery Company
Coral Company
Nalco Chemical Company

Hot and Cold Rolled Products

XB-110N
1052L (zinchro metal)
Nalco 88-1B-FB
Ferrocote 673
Ferrocote 61AUS
Ferrocote EGL-1

Arco Corporation
Texaco, Inc.
Nalco Chemical Company
Quaker Chemical Corporation
Quaker Chemical Corporation
Quaker Chemical Corporation

Galvanize Products

Tru-Rinse No. 10
Tru-Zite 2107-F
Tru-Krome "0"-100

J.M.E. Chemicals, Inc.

Sunkote 1303

Sun Oil and Refining Company

Electrolytic Tin Products

ATBC Oil
BSO Oil
(B-55 Lubricant)
Chronic Acid
Sodium Bichromate

Pfizer, Inc.
Pro-Chem Company, Inc.
Diamond Shamrock Corporation



MATERIAL SAFETY DATA SHEET STEEL PRODUCTS

USS CODE NO. 3H011

ORIGINAL ISSUE DATE: 8/1/95 REVISED:

I. IDENTIFICATION

INFORMATION & EMERGENCY TELEPHONE NUMBER:
(412) 433-6840 (8 a.m. - 5 p.m., Mon.-Fri.)
(412) 433-5811 (Off Hour Emergencies)PRODUCT NAME: Hot or Cold Rolled HSLA Steel
Sheet/Strip and Hot Rolled Skelp

COMMON NAME(S): Same

CAS NO.: 65997-19-5

MANUFACTURER:
U. S. Steel Corporation
P. O. Box 206 (MSDS)
Pittsburgh, PA 15230

II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard (See Section VI.).

| BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS | X WEIGHT | EXPOSURE LIMITS | |
|---|----------|--|--|
| | | OSHA PEL | ACGIH TLV |
| Base Metal: Iron | Balance | 10 mg/M ³ for iron oxide fume | 5 mg/M ³ for iron oxide fume |
| Alloying Elements: Carbon | .25 max | None established | None established |
| Manganese | .05/1.90 | (c) 5 mg/M ³ | (c) 5 mg/M ³ -dust 1 mg/M ³ -fume |
| Phosphorus | .15 max | None for inorganic phosphates | None for inorganic phosphate |
| Sulfur | .05 max | 13 mg/M ³ as SO ₂ | 5 mg/M ³ as SO ₂ |
| Columbium | .10 max | None established | None established |
| Vanadium | .20 max | (c) 0.5 mg/M ³ as V ₂ O ₅ dust (c) 0.1 mg/M ³ as V ₂ O ₅ fume | 0.05 mg/M ³ as respirable dust and fume |
| Titanium | .30 max | 15 mg/M ³ as TiO ₂ | 10 mg/M ³ -Total dust 5 mg/M ³ -Respirable dust |
| Rare Earth (Ce) | .10 max | None established | None established |
| Aluminum | .10 max | None established | 10 mg/M ³ |
| Oil coating may be used; see Annex II. | | (c) denotes "ceiling limit" which is not to be exceeded at any time | |

NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.

III. PHYSICAL DATA

MELTING POINT
BASE METAL: 2750° F

METALLIC COATING: Not applicable.

APPEARANCE AND ODOR: Metallic Gray,
No Odor

IV. FIRE AND EXPLOSION HAZARD DATA

STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.

V. REACTIVITY DATA

Stable under normal conditions of use, storage, and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point, may liberate fumes containing oxides of iron and alloying elements.

VI. HEALTH HAZARD DATA

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazards.

EFFECTS OF OVEREXPOSURE:

MAJOR EXPOSURE HAZARD

☒ INHALATION

☐ SKIN CONTACT

☐ EYE CONTACT

☐ INGESTION

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

EMERGENCY AND FIRST AID PROCEDURES For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly.

Treat metal fume fever by bed rest, and administer a pain and fever reducing medication.

VII. SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN: Protective gloves should be worn as required for welding, burning or handling operations.

EYE: Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT: Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

OTHER COMMENTS:

No additional comments are believed to be necessary for these products.

THIS INFORMATION IS TAKEN FROM SOURCES OR BASED UPON DATA BELIEVED TO BE RELIABLE; HOWEVER, UNITED STATES STEEL CORPORATION MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OF ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR CONDITIONS.

USS Code No. 3H011



MATERIAL SAFETY DATA SHEET STEEL PRODUCTS

USS CODE NO. 3H012

ORIGINAL ISSUE DATE: 8/1/85 REVISED:

| | | |
|---|--|--|
| I. IDENTIFICATION | | INFORMATION & EMERGENCY TELEPHONE NUMBERS (412) 433-6840 (8 a.m. - 5 p.m., Mon.-Fri.) (412) 433-5811 (Off Hour Emergencies) |
| PRODUCT NAME: Galvanized Sheet-HSLA Steel (Hot Dipped) | | MANUFACTURER: U. S. Steel Corporation P. O. Box 206 (MSDS) Pittsburgh, PA 15230 |
| COMMON NAME(S): Same | | |
| CAS NO.: 65997-19-5 | | |

II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard (See Section VI.).

| BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS | % WEIGHT | EXPOSURE LIMITS | |
|---|----------|--|--|
| | | OSHA PEL | ACGIH TLV |
| Base Metal: Iron | Balance | 10 mg/M ³ for iron oxide fume | 5 mg/M ³ for iron oxide fume |
| Alloying Elements: | | | |
| Carbon | .25 max | None established | None established |
| Manganese | .05/1.90 | (c) 5 mg/M ³ | (c) 5 mg/M ³ -dust 1 mg/M ³ -fume |
| Phosphorus | .15 max | None for inorganic phosphates | None for inorganic phosphates |
| Sulfur | .05 max | 13 mg/M ³ as SO ₂ | 5 mg/M ³ as SO ₂ |
| Columbium | .10 max | None established | None established |
| Vanadium | .20 max | (c) 0.5 mg/M ³ as V ₂ O ₅ dust (c) 0.1 mg/M ³ as V ₂ O ₅ fume | 0.05 mg/M ³ as respirable dust and fume |
| Titanium | .30 max | 15 mg/M ³ as TiO ₂ | 10 mg/M ³ -Total 5 mg/M ³ -Resp. dust |
| Rare Earth (Ce) | .10 max | None established | None established |
| Aluminum | .10 max | None established | 10 mg/M ³ |
| Metallic Coating: | | | |
| Zinc | 8.5/9.9 | 5 mg/M ³ | 10 mg/M ³ -Total ZnO dust 5 mg/M ³ -Resp. ZnO dust & fume |
| Aluminum | 0.04 max | None established | 10 mg/M ³ |
| Antimony | 0.02 max | 0.5 mg/M ³ | 0.5 mg/M ³ |
| Lead | 0.02 max | 0.05 mg/M ³ | 0.15 mg/M ³ |
| Iron | 0.1/1.5 | 10 mg/M ³ for iron oxide fume | 5 mg/M ³ for iron oxide fume |

Oil coating may be used; see Annex II. (c) denotes "ceiling limit" which is not to be exceeded at any time

NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.

III. PHYSICAL DATA

| | | |
|--------------------------------------|------------------------------|--|
| MELTING POINT BASE METAL: 2750° F | METALLIC COATING: 800-900° F | APPEARANCE AND ODOR: Metallic Gray, No Odor |
|--------------------------------------|------------------------------|--|

IV. FIRE AND EXPLOSION HAZARD DATA

STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.

V. REACTIVITY DATA

Stable under normal conditions of use, storage, and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point of the coating, may liberate zinc fumes.

VI. HEALTH HAZARD DATA

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazards.

EFFECTS OF OVEREXPOSURE:

MAJOR EXPOSURE HAZARD

☒ INHALATION ☐ SKIN CONTACT ☐ EYE CONTACT ☐ INGESTION

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

EMERGENCY AND FIRST AID PROCEDURES For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly.

Treat metal fume fever by bed rest, and administer a pain and fever reducing medication.

VII. SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN: Protective gloves should be worn as required for welding, burning or handling operations.

EYE: Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT:

Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

OTHER COMMENTS:

No additional comments are believed to be necessary for this product.

INFORMATION IS TAKEN FROM SOURCES OR BASED UPON DATA BELIEVED TO BE RELIABLE; HOWEVER, UNITED STATES STEEL CORPORATION MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OF ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR CONDITIONS.

USS Code No. 3H012



MATERIAL SAFETY DATA SHEET STEEL PRODUCTS

USS CODE NO. 3C011

ORIGINAL ISSUE DATE: 8/1/85 REVISED:

| | | |
|---|--|--|
| I. IDENTIFICATION | | INFORMATION & EMERGENCY TELEPHONE NUMBERS (412) 433-6840 (8 a.m. - 5 p.m., Mon.-Fri.) (412) 433-6811 (Off Hour Emergencies) |
| PRODUCT NAME: Hot or Cold Rolled Carbon Steel Sheet/Strip and Hot Rolled Skelp | | MANUFACTURER: U. S. Steel Corporation P. O. Box 206 (MSDS) Pittsburgh, PA 15230 |
| COMMON NAME(S): Same | | |
| CAS NO.: 65997-19-5 | | |

II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard (See Section VI.).

| BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS | % WEIGHT | EXPOSURE LIMITS | |
|---|----------|---|--|
| | | OSHA PEL | ACGIH TLV |
| Base Metal: Iron | Balance | 10 mg/M ³ for iron oxide fume | 5 mg/M ³ for iron oxide fume |
| Alloying Elements: Carbon | .005/.60 | None established | None established |
| Manganese | .05/1.50 | (c) 5 mg/M ³ | (c) 5 mg/M ³ -dust 1 mg/M ³ -fume |
| Phosphorus | .15 max | None for inorganic phosphates | None for inorganic phosphate |
| Sulfur | .05 max | 13 mg/M ³ as SO ₂ | 5 mg/M ³ as SO ₂ |
| Aluminum | .10 max | None established | 10 mg/M ³ |
| Oil coating may be used; see Annex II. | | (c) denotes "ceiling limit" which is not to be exceeded at any time | |

NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.

III. PHYSICAL DATA

| | | |
|--------------------------------------|-----------------------------------|--|
| MELTING POINT BASE METAL: 2750° F | METALLIC COATING: Not applicable. | APPEARANCE AND ODOR: Metallic Gray, No Odor |
|--------------------------------------|-----------------------------------|--|

IV. FIRE AND EXPLOSION HAZARD DATA

STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.

V. REACTIVITY DATA

Stable under normal conditions of use, storage, and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point, may liberate fumes containing oxides of iron and alloying elements.

VI. HEALTH HAZARD DATA

Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazards.

EFFECTS OF OVEREXPOSURE:

MAJOR EXPOSURE HAZARD

☒ INHALATION ☐ SKIN CONTACT ☐ EYE CONTACT ☐ INGESTION

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

EMERGENCY AND FIRST AID PROCEDURES For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly.

Treat metal fume fever by bed rest, and administer a pain and fever reducing medication.

VII. SPILL OR LEAK PROCEDURES

APPLICABLE TO STEEL IN THE SOLID STATE.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN: Protective gloves should be worn as required for welding, burning or handling operations.

EYE: Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT:

Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

OTHER COMMENTS:

No additional comments are believed to be necessary for these products.

THIS INFORMATION IS TAKEN FROM SOURCES OR BASED UPON DATA BELIEVED TO BE RELIABLE; HOWEVER, UNITED STATES STEEL CORPORATION MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OF ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR CONDITIONS.

USS Code No. 3C011



MATERIAL SAFETY DATA SHEET STEEL PRODUCTS

USS CODE NO. 3C012

ORIGINAL ISSUE DATE: 8/1/85 REVISED:

| | | |
|---|--|--|
| I. IDENTIFICATION | | INFORMATION & EMERGENCY TELEPHONE NUMBER: (412) 433-6840 (8 a.m. - 5 p.m., Mon.-Fri.) (412) 433-5811 (Off Hour Emergencies) |
| PRODUCT NAME: Galvanized Sheet-Carbon Steel (Hot Dipped) | | MANUFACTURER: U. S. Steel Corporation P. O. Box 206 (MSDS) Pittsburgh, PA 15230 |
| COMMON NAME(S): Same | | |
| CAS NO.: 65997-19-5 | | |

II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard (See Section VI.J).

| BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS | % WEIGHT | EXPOSURE LIMITS | |
|---|----------|--|---|
| | | OSHA PEL | ACGIH TLV |
| Base Metal: Iron | Balance | 10 mg/M ³ for iron oxide fume | 5 mg/M ³ for iron oxide fume |
| Alloying Elements: Carbon | .005/.60 | None established | None established |
| Manganese | .05/1.50 | (c) 5 mg/M ³ | (c) 5 mg/M ³ -dust 1 mg/M ³ -fume |
| Phosphorus | .15 max | None for inorganic phosphates | None for inorganic phosphates |
| Sulfur | .05 max | 13 mg/M ³ as SO ₂ | 5 mg/M ³ as SO ₂ |
| Aluminum | .10 max | None established | 10 mg/M ³ |
| Metallic Coating: Zinc | 8.5/9.9 | 5 mg/M ³ | 10 mg/M ³ -Total ZnO dust 5 mg/M ³ -Respirable ZnO dust & fume |
| Aluminum | 0.04 max | None established | 10 mg/M ³ |
| Antimony | 0.02 max | 0.5 mg/M ³ | 0.5 mg/M ³ |
| Lead | 0.02 max | 0.05 mg/M ³ | 0.15 mg/M ³ |
| Iron | 0.1/1.5 | 10 mg/M ³ for iron oxide fume | 5 mg/M ³ for iron oxide fume |
| (c) denotes "ceiling limit" which is not to be exceeded at any time | | | |
| Oil coating may be used; see Annex II. | | | |

NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.

III. PHYSICAL DATA

| | | |
|--------------------------------------|------------------------------|--|
| MELTING POINT BASE METAL: 2750° F | METALLIC COATING: 800-900° F | APPEARANCE AND ODOR: Metallic Gray, No Odor |
|--------------------------------------|------------------------------|--|

IV. FIRE AND EXPLOSION HAZARD DATA

STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.

V. REACTIVITY DATA

Stable under normal conditions of use, storage, and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point of the coating, may liberate zinc fumes.

VI. HEALTH HAZARD DATA

Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazards.

EFFECTS OF OVEREXPOSURE:

MAJOR EXPOSURE HAZARD

☒ INHALATION ☐ SKIN CONTACT ☐ EYE CONTACT ☐ INGESTION

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

EMERGENCY AND FIRST AID PROCEDURES For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly.

Treat metal fume fever by bed rest, and administer a pain and fever reducing medication.

VII. SPILL OR LEAK PROCEDURES

APPLICABLE TO STEEL IN THE SOLID STATE.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN: Protective gloves should be worn as required for welding, burning or handling operations.

EYE: Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT:

Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

OTHER COMMENTS:

No additional comments are believed to be necessary for this product.

THIS INFORMATION IS TAKEN FROM SOURCES OR BASED UPON DATA BELIEVED TO BE RELIABLE; HOWEVER, UNITED STATES STEEL CORPORATION MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OF ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR CONDITIONS.

USS Code No. 3C012



MATERIAL SAFETY DATA SHEET STEEL PRODUCTS

USS CODE NO. 3A011

ORIGINAL ISSUE DATE: 8/1/85

REVISED:

I. IDENTIFICATION

PRODUCT NAME: Hot or Cold Rolled Alloy Steel
Sheet/Strip and Hot Rolled Skelp

COMMON NAME(S): Same

CAS NO.: 65997-19-5

INFORMATION & EMERGENCY TELEPHONE NUMBER
(412) 433-6840 (8 a.m. - 5 p.m., Mon.-Fri.)
(412) 433-5811 (Off Hour Emergencies)MANUFACTURER:
U. S. Steel Corporation
P. O. Box 206 (MSDS)
Pittsburgh, PA 15230

II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard (See Section VI.).

| BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS | % WEIGHT | EXPOSURE LIMITS | |
|---|----------|--|---|
| | | OSHA PEL | ACGIH TLV |
| Base Metal: Iron | Balance | 10 mg/M ³ for iron oxide fume | 5 mg/M ³ iron oxide fume |
| Alloying Elements: Carbon | .01/.60 | None established | None established |
| Manganese | .05/1.90 | (c) 5 mg/M ³ | (c) 5 mg/M ³ -dust 1 mg/M ³ -fume |
| Phosphorus | .15 max | None for inorganic phosphates | None for inorganic phosphates |
| Sulfur | .05 max | 15 mg/M ³ as SO ₂ | 5 mg/M ³ as SO ₂ |
| Nickel | 2.00 max | 1 mg/M ³ | 1 mg/M ³ |
| Chromium | 1.20 max | 1 mg/M ³ -Cr metal | 0.5 mg/M ³ -Cr metal 0.05 mg/M ³ -Cr(VI) compounds |
| Molybdenum | 0.50 max | 15 mg/M ³ -Insoluble compounds | 10 mg/M ³ -Insoluble compounds |
| Copper | 1.00 max | 0.1 mg/M ³ -fume; 1 mg/M ³ -dust | 0.2 mg/M ³ -fume; 1 mg/M ³ -dust |
| Silicon | 1.00 max | None established | 10 mg/M ³ -Total dust 5 mg/M ³ -Respirable dust |
| Vanadium | .10 max | (c) 0.5 mg/M ³ as V ₂ O ₅ dust (c) 0.1 mg/M ³ as V ₂ O ₅ fume | 0.05 mg/M ³ as respirable dust and fume |
| Aluminum | .10 max | None established | 10 mg/M ³ |
| (c) denotes "ceiling limit" which is not to be exceeded at any time | | | |

Oil coating may be used; see Annex II.

NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "traces" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.

III. PHYSICAL DATA

MELTING POINT

BASE METAL: 2750° F

METALLIC COATING: Not applicable.

APPEARANCE

Metallic Gray,

AND ODOR:

No Odor

IV. FIRE AND EXPLOSION HAZARD DATA

STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.

V. REACTIVITY DATA

Stable under normal conditions of use, storage, and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point, may liberate fumes containing oxides of iron and alloying elements.

VI. HEALTH HAZARD DATA

Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazards.

EFFECTS OF OVEREXPOSURE:

MAJOR EXPOSURE HAZARD

☒ INHALATION ☐ SKIN CONTACT ☐ EYE CONTACT ☐ INGESTION

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

Exposure to high concentrations of nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis and edema. Certain forms of nickel dust may cause nasal or lung cancer in humans (see Section IX).

Repeated or prolonged exposure to hexavalent chromium compounds may cause respiratory irritation, nosebleed, ulceration and perforation of the nasal septum. Industrial exposure to certain forms of hexavalent chromium has been related to an increased incidence of lung cancer (see Section IX).

EMERGENCY AND FIRST AID PROCEDURES For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly.

Treat metal fume fever by bed rest, and administer a pain and fever reducing medication.

VII. SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN: Protective gloves should be worn as required for welding, burning or handling operations.

EYE: Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT: Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

OTHER COMMENTS:

IARC (Suppl. 1, 29-30, 1979) has determined that there is sufficient evidence of increased lung cancer among workers in the chromate-producing industry and possibly chromium alloy workers. This determination is supported by sufficient evidence for carcinogenicity to animals and possible mutagenicity testing of Cr VI compounds.

IARC (II, 75-112, 1976) has determined that there is at least limited evidence that nickel and certain nickel compounds may be human carcinogens. Several nickel compounds are carcinogenic to laboratory animals by various routes of exposure.

THE INFORMATION IS TAKEN FROM SOURCES OR BASED UPON DATA BELIEVED TO BE RELIABLE; HOWEVER, UNITED STATES STEEL CORPORATION MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OF ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR CONDITIONS.

USS Code No. 3A011

M A T E R I A L S A F E T Y D A T A S H E E T

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SECTION I - PRODUCT IDENTIFICATION

DECKGARD GRAY ENAMEL
MODIFIED ACRYLIC LATEX - PAINT UN1263
82563

SECTION II - HAZARDOUS INGREDIENTS

| CHEMICAL NAME | CAS NUMBER | WT. PERCENT | (TLV-TWA) | OCCUPATIONAL EXPOSURE LIMITS | | (PEL) | VAPOR PRESSURE mmHg 20C | KNOWN OR SUSPECTED CARCINOGEN | | SEC 313 |
|---------------------------------------|------------|-------------|------------|------------------------------|---------|-------|-------------------------|-------------------------------|--|---------|
| | | | | (TLV-STEL) | | | | | | |
| N-BUTOYL ETHANOL | 111-76-2 | 51 | 25 PPM | 75 PPM | 50 PPM | | 0.9 | NO | | YES |
| HEXAVALENT CHROMIUM COMPOUNDS (AS CR) | 7440-47-3 | 0.81 | 0.05 mg/m3 | 0.10 mg/m3 | NO INFO | | 0.0 | YES | | YES |

THIS PRODUCT CONTAINS ONE OR MORE MATERIALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF THE EMERGENCY PLANNING AND THE COMMUNITY RIGHT-TO-KNOW ACTS OF 1986 AND OF 40 CFR 372.

N.A. - NOT APPLICABLE

SECTION III - PHYSICAL DATA

| | |
|---------------------------|--|
| BOILING RANGE : 80-441 F | VAPOR DENSITY : IS HEAVIER THAN AIR |
| ODOR : CHARACTERISTIC | EVAPORATION RATE: IS SLOWER THAN ETHER |
| APPEARANCE : GRAY LIQUID | |
| VOLATILE BY WEIGHT: 52.2% | SOLUBILITY : NOT APPLICABLE |
| VOLATILE BY VOLUME: 58.5% | PRODUCT DENSITY : 9.3 LBS./GAL. (U.S.) |

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION:

OSHA - COMBUSTIBLE LIQUID - CLASS IIIA
DOT - NOT REGULATED

FLASH POINT: 205 F
(SETAFLASH CLOSED CUP)

LEL: 0.9 %
UEL: 24.6 %

EXTINGUISHING MEDIA: ALCOHOL CARBON DIOXIDE DRY CHEMICAL

UNUSUAL FIRE AND EXPLOSION HAZARDS: CLOSED CONTAINERS MAY RUPTURE EXPLOSIVELY IF EXPOSED TO EXTREME HEAT. KEEP CONTAINERS CLOSED AND ISOLATED FROM HEAT, SPARKS AND OPEN FLAME.

SPECIAL FIREFIGHTING PROCEDURES: WATER FOG SHOULD BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION.

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVER EXPOSURE: OVEREXPOSURE TO VAPORS MAY CAUSE HEADACHE, DIZZINESS AND NAUSEA. SKIN CONTACT: POSSIBLE PRIMARY IRRITATION. CONTAINS 2-BUTOXY ETHANOL WHICH PENETRATES THE SKIN READILY. FREQUENT OR PROLONGED CONTACT MAY RESULT IN ABSORPTION OF POTENTIALLY HARMFUL AMOUNTS. EYE CONTACT: PRIMARY IRRITATION.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: PERSONS WITH PRE-EXISTING SKIN DISORDERS MAY BE MORE SUSEPTIBLE TO CHAPPING AND IRRITATION FROM THIS PRODUCT. PERSONS WITH IMPAIRED LUNG FUNCTION OR ASTHMA-LIKE CONDITIONS MAY EXPERIENCE ADDITIONAL BREATHING DIFFICULTIES.

PRIMARY ROUTE(S) OF ENTRY: DERMAL INHALATION INGESTION

EMERGENCY AND FIRST AID PROCEDURES: INHALATION: REMOVE VICTIM TO FRESH AIR AND GIVE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF VICTIM IS NOT BREATHING. GET MEDICAL ATTENTION. SKIN CONTACT: REMOVE CONTAMINATED CLOTHING AND SHOES. WASH SKIN WITH SOAP AND WATER. IF IRRITATION OR REDNESS DEVELOPES AND PERSISTS, SEEK MEDICAL ATTENTION. EYE CONTACT: FLUSH EYES WITH LOW PRESSURE WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SECTION VI - REACTIVITY DATA

STABILITY: THIS PRODUCT IS STABLE UNDER NORMAL STORAGE CONDITIONS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR UNDER NORMAL CONDITIONS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY PRODUCE HAZARDOUS FUMES WHEN SUBJECT TO THERMAL DECOMPOSITION. FUMES MAY CONTAIN SOOT, SMOKE, CARBON DIOXIDE AND/OR CARBON MONOXIDE.

CONDITIONS TO AVOID: ELEVATED STORAGE TEMPERATURE AND INADEQUATE VENTILATION.

INCOMPATABILITY: STRONG OXIDIZING AGENTS

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SECTION VII - SPILL OR LEAK PROCEDURES

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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: USE SAND OR EARTH DIKES TO CONTAIN THE SPILL. SPREAD INERT ABSORBENT ON SPILL AREA AND REMOVE TO A METAL CONTAINER USING NON-SPARKING TOOLS. SEAL CONTAINER USING NON-SPARKING TOOLS. DO NOT ALLOW SPILLED MATERIAL OR WASHINGS TO ENTER STREAMS OR WATERWAYS.

WASTE DISPOSAL METHOD: DISPOSE OF WASTE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. DO NOT INCINERATE CLOSED CONTAINERS.

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SECTION VIII - SAFE HANDLING AND USE INFORMATION

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RESPIRATORY PROTECTION: N.I.O.S./O.S.H.A. APPROVED RESPIRATOR SUITABLE FOR MATERIALS LISTED IN SECTION II RECOMMENDED.

VENTILATION: SUFFICIENT VENTILATION, IN VOLUME AND PATTERN, SHOULD BE PROVIDED TO KEEP TLV OF MATERIALS LISTED IN SECTION II BELOW ACCEPTABLE LIMITS AND L.E.L. IN SECTION IV BELOW STATED LIMIT.

PROTECTIVE GLOVES: GLOVES REQUIRED FOR PROLONGED OR REPEATED CONTACT.

EYE PROTECTION: USE SAFETY EYEWEAR DESIGNED TO PROTECT AGAINST SPLASH OF LIQUID.

OTHER PROTECTIVE EQUIPMENT: CLOTHING ADEQUATE TO PROTECT SKIN REQUIRED. CONVENIENT EGRESS EYE BATH AND SAFETY SHOWER RECOMMENDED.

HYGENIC PRACTICES: WASH HANDS BEFORE EATING OR SMOKING. SMOKE ONLY IN DESIGNATED AREAS.

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SECTION IX - SPECIAL PRECAUTIONS

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PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: AVOID PROLONGED OR REPEATED CONTACT WITH SKIN OR BREATHING OF VAPORS. KEEP AWAY FROM EXCESS HEAT THAT COULD CAUSE PRESSURE BUILD-UP IN CLOSED CONTAINERS.

OTHER PRECAUTIONS:

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SECTION X - HMIS RATINGS

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| | | | |
|-----------|-----------------|---------------|------------------------|
| HEALTH: 3 | FLAMMABILITY: 1 | REACTIVITY: 0 | PERSONAL PROTECTION: X |
|-----------|-----------------|---------------|------------------------|

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THE INFORMATION CONTAINED HEREIN IS, TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE. HOWEVER, SINCE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO GUARANTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY USE OF THIS MATERIAL. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.