



MATERIAL SAFETY DATA SHEET

FMP – Flanged Maintenance Pipe

General Use

The Flanged Maintenance Pipe (FMP) System is an engineered conduit solution designed to replace field-fabrication split-steel and other types of steel pipe that have been cut and reassembled with tabs, hinges, etc. FMP provides many near and long-term advantages that will maintain and enhance the integrity and usability of the raceway.

Product Description

FMP consists of two halves with flanges that are bolted together with stainless fasteners. Sizing has been engineered so that FMP's inside diameter matches the outside diameter of 1.5" through 54" IPS conduit, therefore eliminating the need for most connector fittings. The product's top and bottom halves are staggered and once bolted together, produce an assembly that eliminates the problem of joint buckling during backfill, lifting or moving. The 10" sections allow re-entry at any point along a given run by simply unfastening the top half. The lack of need for couplers along with the separated halves design, allows for a lighter and less awkward product to handle in the trench or overhead. Installation times have been reported to be much improved from conventional split steel duct.

Galvanized FMP is typically used for above-ground and under-bridge applications. For galvanized walls up to and including .188" the product is formed using pre-galvanized material. For galvanized walls above .188" the finished (black) product is fabricated, then dipped to ensure full coverage and protection for all ends, seams, and holes. The product may be gasketed with a visco-elastic adhesive compound layered over polyethylene film.

Typical Use Areas

Primary uses are utility relocation: Buried and bridge maintenance applications, temporary and emergency cable protection, road-widening casing pipe extension, railroad construction casing pipe extension, and security applications.

Technical Data

FMP is available in 10" sections, galvanized or black steel sized as follows (+/-5% tol). FMP is sized as a sleeve; its inside dimension equals IPS-sized pipe's outside dimension:

I.D.(in) = 1.9", 2.375", 2.875", 3.5", 4.0", 4.5", 5.0", 5.563", 6.625", 7.625", 8.625", 9.625", 10.75", 11.75", 12.75", 14.0", 16.0", 18.0", 20.0", 22.0", 24.0", 26.0", 28.0", 30.0", 54.0". (custom sizes are available).

WALL(in) = .074", .137", .188", .237", .250", .280", .312", .375", .500", .516", .625", .750".

FMP sweeps can be connected by internal or external couplings and are built to specification. Available in 11.25, 22.5, 30, 45, & 90 degree from an 18" to 48" radius. Custom sizes, expansion joints, adaptors, and fittings are available.



RAW STEEL FMP SOURCE MATERIAL

American Specification: ASTM - A36. HOT ROLLED STEEL SHEET, COMMERCIAL (CS)

Typical Mechanical Properties	Value
Tensile Strength (ksi)	53-63.8
Yield Point (ksi)	36-53.7
Elongation (% in 2")	≥25
Weldability	yes
Rockwell Hardness (B scale)	75 or less

Chemical Composition	Value
C	.1
Mn	.6
P	.03
S	.035
Cu	.2
Ni	.2
Cr	.15
Mo	.06
V	.008
Cb	.008
TiC	.025

GALVANIZED FMP SOURCE MATERIAL

** (This data pertains to .137" wall or less which is galvanized prior to fabrication).

American Specification: ASTM A653
 GALVANIZED CARBON SHEET, COMMERCIAL (CS)

Typical Mechanical Properties	Value
Tensile Strength (ksi)	55
Yield Point (ksi)	25 - 55
Elongation (% in 2")	≥20
Weldability	yes
Rockwell Hardness (B scale)	75 or less

Chemical Composition	Value
C	.10
Mn	.60
P	.03
S	.035
Cu	.20
Ni	.20
Cr	.15
Mo	.06
V	.008
Cb	.008
TiC	.025



FMP GALVANIZING COATING MATERIAL

**** (This data pertains to the coating material used to galvanize .137” or greater wall after fabrication).**

Zinc (Hot-Dip Galvanized) Coatings Specification: ASTM A 123/A 123M - 02

SECTION I - GENERAL INFORMATION

NAME: ZINC METAL

MANUFACTURER:
HORSEHEAD CORPORATION
300 Frankfort Road
Monaca, PA 15061
724-774-1020

TRANSPORTATION EMERGENCY:
CHEMTREC: 800-424-9300

CHEMICAL FAMILY: Nonferrous Heavy Metal

CAS NO.: 7440-66-6

FORMULA: Zn

DOT HAZARD CLASS: Not listed **UN NO.:** NAIF* **NA NO.:** NAIF*

SARA SECTION 313: This product is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act and 40 CFR 372. The materials underlined below are present in quantities above the applicable deminimis concentrations and are listed as Toxic Chemicals in 40 CFR 372.65.

ISSUE DATE: 2/25/88

REVISION DATE: 4/6/05

* NAIF - No applicable information found.

SECTION II - INGREDIENTS

<u>MATERIAL</u>	<u>CAS NO.</u>	<u>%</u>
ZINC	7440-66-6	98-99.9
<u>LEAD</u>	7439-92-1	1.4 max
CADMIUM	7440-43-9	0.09 max
ALUMINUM	7429-90-5	0.01 max



SECTION III PHYSICAL DATA

BOILING POINT (760 MM HG): 1665° F **MELTING POINT:** 788° F
SPECIFIC GRAVITY: 7.12 **EVAPORATION RATE (=1):** N/A
VAPOR DENSITY (air = 1): N/A **SOLUBILITY IN WATER:** Negligible
PERCENT VOLATILE BY VOLUME (%): N/A **VAPOR PRESSURE AT 909° F:** 0.13kPa
APPEARANCE AND ODOR: Silver-white, or Bluish-white metal

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Zinc does not introduce a serious fire hazard in sheets, castings, or other massive forms because of the difficulty of ignition, although once ignited (above 1665° F), large pieces burn vigorously.

FLASH POINT (METHOD USED): N/A **NFPA FIRE RATING**

FLAMMABLE LIMITS:	LEL: N/A	HEALTH	0
	UEL: N/A	FLAMMABILITY	0
		REACTIVITY	0

EXTINGUISHING MEDIA: Smother and cool with a suitable dry extinguishing agent (class D fires) such as dry powder (Ansul Met-L-X), zinc oxide or dry sand. Water should not be used; however wherever it is necessary to cool exposures, extreme caution should be taken to prevent contact with molten zinc or burning zinc products.

SPECIAL FIRE FIGHTING PROCEDURES: Use NIOSH/MSHA approved self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Heating of metal beyond boiling point results in evolution of zinc vapors, which immediately reacts with air to form zinc oxide fume. Slabs must be completely dry before charging into molten metal to prevent a steam explosion.

SECTION V - HEALTH HAZARD DATA

<u>MATERIAL</u>	<u>FORM</u>	<u>OSHA-PEL</u>	<u>ACGIH-TLV</u>	
		TWA mg/m ³	TWA mg/m ³	STEL mg/m ³
ZINC	Oxide Fume	5	2	10
LEAD		0.05	0.05	--



ROUTES OF ENTRY

PRIMARY: Inhalation, if material has been heated above the boiling point, driving off zinc fume.

SECONDARY: Ingestion of dusts.

EFFECTS OF SHORT TERM OVEREXPOSURE:

ZINC: Inhalation of high levels of zinc vapor (zinc oxide fumes) may result in tightness of chest, metallic taste, cough, dizziness, fever, chills, headache, nausea, and dry throat. Overexposure may produce symptoms known as metal fume fever or "zinc shakes"; an acute, self-limiting condition without recognized complications. Symptoms of metal fume fever include: chills, fever, muscular pain, nausea and vomiting.

LEAD: Exposure to high concentrations of lead may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia, and pain in legs, arms and joints.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Inhalation of dust may be an irritant to pre-existing respiratory conditions.

EMERGENCY AND FIRST AID PROCEDURES: Symptoms resulting from inhalation overexposure usually disappear within 24 hours. Symptomatic treatment, such as bed rest and possibly aspirin is recommended to provide relief from fever and chills. In all cases, consult physician for medical attention.

EFFECTS OF LONG TERM OVEREXPOSURE:

ZINC: Chronic exposure to zinc may cause respiratory tract irritation with nasopharyngitis and laryngitis.

LEAD: Prolonged exposure to lead may produce many of the symptoms of short-term exposure and may also cause central nervous system damage, gastrointestinal disturbances, anemia, and weight drop. Symptoms of central nervous system damage include fatigue, headaches, tremors, hypertension, hallucinations, convulsions, and delirium. Kidney dysfunction and possible injury has also been associated with chronic lead poisoning.

Chronic overexposure to lead has been implicated as a causative agent for the impairment of male and female reproductive organs, but there is not present substantiation of this.

Pregnant women should be protected from excessive exposure. Lead can cross the placental barrier and it is reported that infants with neurological disorders have been born to women who have experienced excessive exposure.

CARCINOGENIC ASSESSMENT:

NTP? No **IARC MONOGRAPH?** No **OSHA?** No

NOTE: Lead is a listed Group 2B possible human carcinogen.



SECTION VI - REACTIVITY DATA

STABILITY: () Unstable
(X) Stable

CONDITIONS TO AVOID: None

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with acids and alkalis.

HAZARDOUS DECOMPOSITION PRODUCTS: Zinc boils off as vapor at elevated temperatures.

HAZARDOUS POLYMERIZATION: () May occur
(X) Will not occur

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Material should be contained for recycling.

WASTE DISPOSAL METHOD: Material may be recycled or disposed of in accordance with Federal, State, and Local Environmental Regulations. This material may be regulated under CERCLA, TSCA, SARA, and/or RCRA Regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): Use NIOSH/MSHA approved type respirator for protection against dust and metal fume.

VENTILATION: Local exhaust or other ventilation that will reduce dust concentrations to less than permissible exposure limits.

PROTECTIVE GLOVES: Recommended to prevent skin irritation in hypersensitive individuals.

EYE PROTECTION: Use safety eyewear for protection against airborne particulate matter.

OTHER PROTECTIVE EQUIPMENT: To prevent burns from contact with molten metal, appropriate protective garments should be worn. Such garments may include aprons, face shields, leggings, etc., depending on conditions of use.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a dry location, separate from acids and alkalis. Keep metal dry so it does not contain any moisture when ready for use.

OTHER PRECAUTIONS: Damp slabs placed in molten metal may result in a steam explosion. Always practice good personal hygiene when working in areas where this material exists.



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