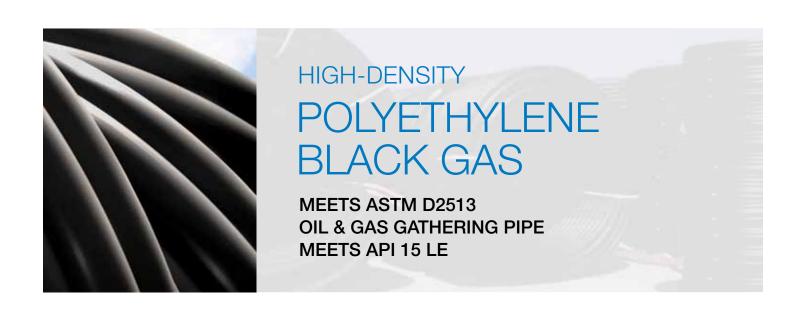


# HIGH-DENSITY POLYETHYLENE BLACK GAS











**HIGH-DENSITY** 

## POLYETHYLENE BLACK GAS

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## PRODUCT DESCRIPTION

#### HIGH-DENSITY POLYETHYLENE BLACK GAS

FOR FUEL GAS USE IN MULTIPLE APPLICATIONS FOR GAS DISTRIBUTION

#### **DESCRIPTION**

Polyethylene gas pipes are the preferred natural gas distribution piping product of choice with over 90% usage in North America today. High-density polyethylene gas pipes are lightweight, non-corrosive, available in coil lengths, and easy to install by heat fusion or mechanical fittings. For these reasons, PE pipes have been proven reliable, durable, and have been in use since the 1960's.



#### LONG LAYING LENGTHS

Standard coil lengths provide long, uninterrupted run capabilities. This means that more ground can be covered during installation while eliminating the cost of unnecessary joints. Longer lengths provide convenience in installation and allow for significant cost savings in labor and equipment.

#### **APPLICATIONS**

JM Eagle's Black/Yellow Striped High-Density PE3408/3608/4710 gas pipes are suitable for fuel gas use in multiple applications for gas distribution, and oil and gas gathering.

#### **QUALITY CONTROL**

JM Eagle<sup>™</sup> takes great pride in the quality and workmanship of all of our products. JM Eagle™ quality control programs encompass three critical aspects of the manufacturing process: the incoming raw material, pipe production, and the finished goods. Incoming material is visually inspected and tested to ensure the material meets all applicable requirements before its release for production. During production, the pipe will be visually examined for any cosmetic defect and pipe samples will be collected for physical verification and testing for compliance. The finished product is subjected to further visual inspection to ensure it has met all the appropriate specifications and packaging requirements. Without exception, our pipes are constantly monitored throughout the entire manufacturing process to validate that they are in accordance with all applicable specifications.

JM Eagle's Quality Management System is ISO 9001:2000 registered. Copies of the registration certificates are available on our website at *www.jmeagle.com*.





#### **CORROSION RESISTANCE**

JM Eagle's black/yellow-striped HDPE pipe, for all practical purposes, is chemically inert. It has good resistance to most solvents and chemicals that it is likely to encounter in dry natural and manufactured gas distribution services. All HDPE pipe meets the chemical resistance specifications outlined in ASTM D2513. And, with a relatively smooth inside surface, JM Eagle's Oil and Gas Gathering pipe provides high-volume liquid flow and will tolerate most downhole corrosion inhibitors, hotsoils and sour gas.

#### WEATHER RESISTANCE

Black/yellow-striped HDPE pipe is protected against degradation caused by ultraviolet rays from direct sunlight. The polyethylene resin contains 2%-3% of finely divided carbon black. This provides the black color for HDPE pipe. Carbon black is the most effective additive for enhancing the weathering characteristics of polyethylene pipe. JM Eagle™ black/yellow striped HDPE can be safely stored outside in most climates for periods of many years without danger of loss of physical properties due to ultraviolet (UV) exposure. In general, JM Eagle™ recommends the use of a first-in, first-out inventory management procedure.

#### SLOW CRACK GROWTH RESISTANCE

Another benefit of JM Eagle's HDPE pipe is its high slow crack growth resistance. Slow crack growth resistance is a valuable characteristic, which provides long lasting performance under long-term stress.



#### SAVE IN HANDLING COSTS

Save in handling cost. JM Eagle's HDPE pipes are lightweight and can reduce manpower requirements for installation.

#### FIELD CUTTING

HDPE pipe should be cut with pipe and tubing cutters designed for plastic pipe. These tools easily provide the square cut ends that are necessary to provide satisfactory fusion joints. If carpenter or hack saws are used to cut the pipe, special care must be taken to ensure square cut ends and to clean the resultant sawdust from inside the pipe.

## PRODUCT DESCRIPTION

#### HIGH-DENSITY POLYETHYLENE BLACK GAS

(CONTINUED)

#### **LIGHT WEIGHT**

A 500 foot length of 1" IPS SDR 11 HDPE pipe weighs approximately 95 pounds. That makes it easy to load, easy to transport, and easy to handle. Installers prefer it because it goes into the ground quickly—thus saving on installation cost.

#### **SERVICE LIFE**

Since polyethylene does not corrode and is resistant to most chemicals, this pipe does not lose strength due to either gas corrosion or external galvanic soil conditions. The design characteristics of flexible polyethylene pipe allows for long-term resistance to earth loading and soil movement.

Installer training for the proper use and installation of polyethylene pipe is a critical factor in its long-term performance. The JM Eagle™ HDPE systems have ample safety factors included in their design for providing reliable long-term performance in gas distribution service, when the system is properly installed and operated at design pressures.

#### **INSTALLATION**

This product should be installed in accordance with JM Eagle™ Publication JME-14B, "Polyethylene Black HDPE Gas Distribution Installation Guide."

#### LONG-TERM STRENGTH

The industry standard for establishing the design basis for polyethylene gas distribution systems is ASTM D2837, "Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials." This standard assigns the long-term strength of the pipe based on hydrostatically tested samples at a range of pressures which result in creep rupture failures over a period of 10,000 hours or more. A regression analysis of these burst data is made to project the failure curve to 100,000 hours establishing the Long-Term Hydrostatic Strength (LTHS). Based on this, a Hydrostatic

Design Basis (HDB) is assigned for each standard temperature tested.

The pressure rating and associated ASTM D2513 designation for two temperatures are summarized in **Table 1**.

TABLE 1

TEMPERATURE °F	HYDROSTATIC DESIGN, BASIC CATEGORY, psi	ASTM D2513
73	1600	PE 3408/3608/4710
140	800 for 3408/608 or 1000 for 4710	CD for 3408/3608 or CE for PE 4710

These are typical properties for basic characterization of the material and do not represent specific determinations or specifications.





#### **PHYSICAL PROPERTIES**

**Table 2** lists general physical properties of JM Eagle<sup>™</sup> high-density polyethylene pipe.

#### PHYSICAL PROPERTY DATA FOR HDPE POLYETHYLENE PIPE

#### TABLE 2

PROPERTY	UNIT	TEST PROCEDURE	TYPICAL VALUE	TYPICAL VALUE
Material Designation	_	PPI-TR4	PE 3408/3608	PE 4710
Cell Classification	_	ASTM D3350	345464C	445574C
Density	g/cm <sup>3</sup>	ASTM D1505	0.955	0.959
Melt Index	g/10 minutes	ASTM D1238	< 0.15	< 0.15
Flexural Modulus	psi	ASTM D790	110,000 - < 160,000	< 150,000
Tensile Strength	psi	ASTM D638	3,200	3600
SCG (PENT)	Hours	ASTM F1473	> 100	> 500
HDB @ 73.4°F (23°C)	psi	<b>ASTM D2837</b>	1600	1600
HDB @ 140°F (60°C)	psi	<b>ASTM D2837</b>	800	1000
Color; UV Stabilize	_	_	Black with minimum 2% carbon black	Black with minimum 2% carbon black
<b>Brittleness Temperature</b>	°F (°C)	ASTM D746	< -130	< -130
Hardness	Shore D	<b>ASTM D2240</b>	> 60	> 60

<sup>\*</sup> For data, sizes, or classes not reflected in these charts, please contact JM Eagle™ for assistance.

## **/02**

## SHORT FORM SPECIFICATION

#### HIGH-DENSITY POLYETHYLENE BLACK GAS

#### **SCOPE**

This specification designates general requirements for ½" through 12" JM Eagle™ HDPE pipe for the conveyance of fuel gas distribution and 2" through 20" JM Eagle™ Oil and Gas Gathering Pipe.

#### **MATERIALS**

JM Eagle's black/yellow-striped polyethylene gas distribution pipe, fittings, and oil and gas gathering pipe are manufactured from PE 3408/3608 or PE 3408/4710 high-density polyethylene material that is classified according to ASTM D3350 and has a cell classification of 345464C or 445574C for the PE 4710 product. These materials are listed with Plastics Pipe Institute (PPI) as PE3408/3608/4710.

#### **PIPE**

JM Eagle's high-density polyethylene gas pipes are manufactured in accordance with all applicable specifications including ASTM D2513, the standard specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings, and by reference meet the Department of Transportation Title 49, Part 192 "Transportation of Natural and Other Gas by Pipe Line Minimum Safety Standards".

JM Eagle's Oil & Gas Gathering pipe is manufactured to meet or exceed all industry requirements including ASTM D2513 specifications for Thermoplastic Gas Pressure Pipe, Tubing and Fittings. This product also meets the requirements of API 15LE (American Petroleum Institute's Standard for Polyethylene Line Pipe).

#### JOINING METHODS

JM Eagle's HDPE gas pipe systems can easily be joined by socket fusion, butt fusion, saddle fusion, mechanical fittings or electrofusion. All methods are reliable means of joining the piping system. Generally, the choice of which joining method to use is at the discretion of the individual gas company.

#### **INSTALLATION**

JM Eagle™ offers a full-line of socket, butt, and saddle fittings, in addition to the proven MetFit® mechanical fittings product line. With proper installation, our gas pipes provide a leak free product providing unconditional assurance for our customers. For these reasons, JM Eagle™ HDPE gas pipes are the natural choice piping products for use in the gas market. For installation procedures and more information, request a copy of the HDPE Technical & Installation Guide.





#### HIGH-DENSITY POLYETHYLENE BLACK GAS

#### **SUBMITTAL AND DATA SHEET**

#### HIGH-DENSITY PE 3408/3608/4710

COILS			PIPE D	ATA			PAC	KAGING DAT	ГА	
NOMINAL SIZE	SDR*	WEIGHT	MIN.	AVER.	FEET/ COIL	SILO PACKS		COIL DIMENSIONS		
		LB/100 (FT)	WALL (IN)	O.D. (IN)		COILS PACK	FEET/ PACK	NOMINAL ID	MAX OD	WIDTH
½" CTS (5%" OD)	7.0	7	0.090	0.625	1,000	12	12,000	2'6"	3'9"	5½"
½" CTS (5%" OD)	7.0	7	0.090	0.625	500	10	5,000	2'6"	3'9"	5½"
¾" CTS (%" OD)	9.7	10	0.099	0.875	500	7	3,500	2'6"	3'9"	7¾"
1" CTS (11%" OD)	11.5	14	0.102	1.125	500	7	3,500	2'6"	3'9"	11"
1" CTS (11%" OD)	12.5	13	0.090	1.125	500	7	3,500	2'6"	3'9"	11"
1¼" CTS (1¾" OD)	15.3	16	0.090	1.185	500	6	3,000	2'6"	3'9"	13"
1/2"	9.3	9	0.090	0.840	1,000	7	7,000	2'6"	3'9"	12"
3/4"	11.0	12	0.095	1.050	500	7	3,600	2'6"	3'9"	11"
1"	11.0	19	0.119	1.315	500	6	3,000	2'6"	3'9"	141/2"
11/4"	10.0	31	0.1651	1.660	500	12	6,000	4'3"	6'8"	7"
2"	11.0	64	0.216	2.375	500	7	3,500	4'3"	6'8"	12"
3"	11.0	139	0.318	3.500	500	4	2,000	5'10"	8'	23"

Other coil lengths may be available.

**Note:** Gas Pipe products (previously produced by US Poly) are currently manufactured by JM Eagle™.

#### **SUBMITTAL AND DATA SHEET**

(CONTINUED)

#### **40' STRAIGHT LENGTHS**

	SDR*	PIPE	DATA	PACKAGING DATA			
NOMINAL SIZE		WEIGHT	BAINI WALL	BULK PACKS			
		LB/100 (FT)	MIN. WALL (IN)	AVER. O.D. (IN)	FEET/PACK	NUMBER LENGTHS/ PACK	
2"**	11.0	63	0.216	2.375	4,200	105	
3"	11.5	131	0.304	3.500	2,000	50	
4"	11.5	217	0.391	4.500	1,160	29	
4"	13.5	188	0.333	4.500	1,160	29	
6"	11.5	472	0.576	6.625	520	13	
6"	13.5	408	0.491	6.625	520	13	
6"	21.0	271	0.316	6.625	520	13	
8"	11.0	833	0.785	8.625	560	14	
8"	13.5	692	0.639	8.625	560	14	
8"	21.0	457	0.410	8.625	560	14	
10"	13.5	1075	0.797	10.750	440	11	
12"	13.5	1511	0.945	12.750	160	4	
14"	11.0	2220	1.273	14.000	120	3	
16"	11.0	2900	1.455	16.000	120	3	
18"	11.0	3669	1.636	18.000	80	2	
20"	11.0	4530	1.818	20.000	80	2	

**Note:** Gas Pipe products (previously produced by US Poly) are currently manufactured by JM Eagle™.

OIL & GAS GATHERING

SUBMITTAL AND DATA SHEET

#### HIGH-DENSITY PE 3408/3608/4710

NOMINAL SIZE			PIPE I	DATA		PACKAGING DATA				
	SDR*		MIN.	AVER.	FEET/ COIL	SILO PACKS		COIL DIMENSIONS		
			WALL (IN)	O.D. (IN)		COILS/ PACK	FEET/ PACK	NOM. I.D.	MAX OD	WIDTH
1"	11.0	19	0.119	1.315	500	6	3,000	2'6"	3'9"	14½"
11/4"	10.0	31	0.1651	1.660	500	12	6,000	4'3"	6'8"	7"
2"	11.0	64	0.216	2.375	500	7	3,500	4'3"	6'8"	12"
3"	11.0	139	0.318	3.500	500	4	2,000	5'10"	8"	23"

Other coil lengths may be available.

OIL & GAS GATHERING

**SUBMITTAL AND DATA SHEET** 

(CONTINUED)

#### HIGH-DENSITY PE 3408/3608/4710

NOM. PIPE SIZE (IN)	AVERAGE O.D. (IN)	APPROX. ID (IN)	MINIMUM WALL THICKNESS (IN)	APPROX. WEIGHT (LBS/FT)							
	HDPE SDR 11 - P.R. 160 psi or PR 200 psi for PE 4710										
2	2.375	1.910	0.216	0.62							
3	3.500	2.820	0.318	1.35							
4	4.500	3.640	0.409	2.24							
6	6.625	5.360	0.602	4.85							
8	8.625	6.960	0.784	8.42							
10	10.750	8.680	0.977	13.09							
12	12.750	10.290	1.159	18.41							
14	14.000	11.302	1.273	22.20							
16	16.000	12.920	1.455	29.02							
18	18 18.000		1.636	36.69							
20	20.000	16.145	1.815	45.30							
	HDPE SDR 17 - P.R. 100 psi or PR 125 psi for PE 4710										
2	2.375	2.080	0.140	0.43							
3	3.500	3.060	0.206	0.91							
4	4.500	3.930	0.265	1.50							
6	6.625	5.810	0.390	3.26							
8	8.625	7.550	0.507	5.65							
10	10.750	9.410	0.632	8.78							
12	12.750	11.160	0.750	12.36							
14	14.000	12.250	0.824	14.92							
16	16.000	14.010	0.941	19.47							
18	18.000	15.755	1.059	24.64							
20	20.000	17.506	1.176	30.41							

 $<sup>^{\</sup>star}$  Other sizes and SDR may also be available, please contact JM Eagle  $^{\!\scriptscriptstyle{\mathrm{TM}}}$  Sales Department.

## SHORT FORM INSTALLATION GUIDE/ WARNING

This information is furnished in order to provide a brief review of the installation requirements for JM Eagle's black/ yellow-striped HDPE fuel gas piping system. It is not intended to serve as or replace the FULL VERSION of the complete product installation guide available upon request.

- 1. When inserting polyethylene pipe, avoid damage to the pipe both during installation and from shear forces caused by earth loading after the system is installed.
- 2. A starter ditch of sufficient length must be opened to allow the pipe to be inserted without buckling or excessive bending.
- 3. The casing pipe should be prepared to the extent necessary to prevent any sharp edges, projections or abrasive material from damaging the plastic pipe during or after insertion.
- 4. The edge of the casing opening should be shielded to prevent shaving or gouging of the pipe being inserted.
- 5. If polyethylene pipe is to be pulled through the casing pipe, the tensile loading should not exceed ½ the tensile strength of the inserted pipe.
- 6. The federal regulation requires that the leading end of the plastic be closed before insertion. Fabricated nose cones of wood, metal or PE pipe end caps can be used for this purpose. A straight length on the lead end of a coiled pipe will often aid insertion, especially in cold weather.
- 7. A newly inserted main or service line must be allowed to contract while cooling to ground temperature prior to tie-in. Tie-in or coupling of inserted mains or services can be accomplished using standard heat fusion, electrofusion or compression type fittings.

#### **WARNING: INSTALLATION SAFETY AND FIELD PRECAUTIONS**

THE IMPORTANCE OF PROPER TRAINING AND RETRAINING IN THE INSTALLATION AND OPERATION OF PLASTIC PIPING SYSTEMS CANNOT BE OVEREMPHASIZED. KNOWLEDGE OF PROPER INSTALLATION RECOMMENDATIONS AND REQUIREMENTS WILL MINIMIZE THE POTENTIAL FOR FAILURE RESULTING FROM IMPROPER INSTALLATION PRACTICES, ACCIDENTS AND INJURIES.

#### **BEFORE AND DURING INSTALLATION, ALWAYS:**

- Consult and follow the FULL VERSION of the product installation guide
- Consult The Code of Federal Regulations (CFR) Title 49, Subchapter D-Pipe-line Safety for specific guidance on installation requirements
- Closely follow the specifications of the individual gas company
- Use protective gear and equipment

#### BEFORE AND DURING PERFORMING JOINING METHODS, ALWAYS:

- Treat electrical tools as potential sources of ignition and follow standard safety procedures for working in explosive atmospheres
- Wear suitable gloves and eye protection
- Temperature of fusion tools should be checked to be sure that they conform to the recommended operating temperature range
- Before cutting coiled pipe, restrain both sides of cut
- Understand and follow all equipment manufacturer's recommendations and guidelines

Please contact JM Eagle™ Product Assurance at (800) 621-4404 to obtain FULL VERSION of the appropriate installation guide or for further assistance.

## 06

### WARRANTY

#### JM EAGLE™ PRODUCTS LIMITED WARRANTY

J-M Manufacturing Co., Inc. (JM Eagle™) warrants that its standard polyvinyl chloride (PVC), polyethylene (PE), conduit/ plumbing/solvent weld and Acrylonitrile-Butadiene-Styrene (ABS) pipe Products ("Products") are manufactured in accordance with applicable industry specifications referenced on the Product and are free from defects in workmanship and materials. Every claim under this warranty shall be void unless in writing and received by JM Eagle™ within thirty (30) days of the date the defect was discovered, and within one (1) year of the date of shipment from the JM Eagle™ plant. Claims for Product appearance defects, such as sun-bleached pipe etc., however, must be made within thirty (30) days of the date of the shipment from the JM Eagle™ plant. This warranty specifically excludes any Products allowed to become sun-bleached after shipment from the JM Eagle™ plant. Proof of purchase with the date thereof must be presented to the satisfaction of JM Eagle™, with any claim made pursuant to this warranty. JM Eagle™ must first be given an opportunity to inspect the alleged defective Products in order to determine if it meets applicable industry standards, if the handling and installation have been satisfactorily performed in accordance with JM Eagle™ recommended practices and if operating conditions are within standards. Written permission and/or a Return Goods Authorization (RGA) must be obtained along with instructions for return shipment to JM Eagle™ of any Products claimed to be defective.

The limited and exclusive remedy for breach of this Limited Warranty shall be, at JM Eagle's sole discretion, the replacement of the same type, size and like quantity of non-defective Product, or credits, offsets, or combination of thereof, for the wholesale purchase price of the defective unit.

This Limited Warranty does not apply for any Product failures caused by user's flawed designs or specifications, unsatisfactory applications, improper installations, use in conjunction with incompatible materials, contact with aggressive chemical agents, freezing or overheating of liquids in the product and any other misuse causes not listed here. This Limited Warranty also excludes failure or damage caused by fire stopping materials, thread sealants, plasticized vinyl Products or damage caused by the fault or negligence of anyone other than JM Eagle™, or any other act or event beyond the control of JM Eagle™.

JM Eagle's liability shall not, at any time, exceed the actual wholesale purchase price of the Product. The warranties in this document are the only warranties applicable to the Product and there are no other warranties, expressed or implied. This Limited Warranty specifically excludes any liability for general damages, consequential or incidental damages, including without limitation, costs incurred from removal, reinstallation, or other expenses resulting from any defect. IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY DISCLAIMED AND JM EAGLE™ SHALL NOT BE LIABLE IN THIS RESPECT NOTWITHSTANDING JM EAGLE'S ACTUAL KNOWLEDGE THE PRODUCT'S INTENDED USE.

JM Eagle's Products should be used in accordance with standards set forth by local plumbing and building laws, codes, or regulations and the applicable standards. Failure to adhere to these standards shall void this Limited Warranty. Products sold by JM Eagle™ that are manufactured by others are warranted only to the extent and limits of the warranty of the manufacturer. No statement, conduct or description by JM Eagle™ or its representative, in addition to or beyond this Limited Warranty, shall constitute a warranty. This Limited Warranty may only be modified in writing signed by an officer of JM Eagle™.



## PLANT LOCATIONS

#### **ADEL**

2101 J-M Drive Adel, Georgia 31620

#### **BATCHELOR**

2894 Marion Monk Road Batchelor, Louisiana 70715

#### **BUCKHANNON**

Old Drop 33, Mudlick Road Buckhannon, West Virginia 26201

#### **BUTNER**

2602 West Lyon Station Road Creedmoor, North Carolina 27522

#### **CAMERON PARK**

3500 Robin Lane Cameron Park, California 95682

#### **COLUMBIA**

6500 North Brown Station Road Columbia, Missouri 65202

#### CONROE

101 East Avenue M Conroe, Texas 77301

#### **FONTANA**

10990 Hemlock Avenue Fontana, California 92337

#### **HASTINGS**

146 North Maple Avenue Hastings, Nebraska 68901

#### **KINGMAN**

4620 Olympic Way Kingman, Arizona 86401

#### **MAGNOLIA**

2220 Duracrete Drive Magnolia, Arkansas 71753

#### **MCNARY**

31240 Roxbury Road Umatilla, Oregon 97882

#### **MEADVILLE**

15661 Delano Road Cochranton, Pennsylvania 16314

#### **PERRIS**

23711 Rider Street Perris, California 92570

#### **PUEBLO**

1742 E. Platteville Boulevard Pueblo West, Colorado 81007

#### **STOCKTON**

1051 Sperry Road Stockton, California 95206

#### **SUNNYSIDE**

1820 South First Street Sunnyside, Washington 98944

#### **TACOMA**

2330 Port of Tacoma Road Tacoma, Washington 98421

#### **TULSA**

4501 West 49th Street Tulsa, Oklahoma 74107

#### **VISALIA**

8875 Avenue 304 Visalia, California 93291

#### **WHARTON**

10807 US 59 RD Wharton, Texas 77488

#### **WILTON**

1314 W. Third Street Wilton, Iowa 52778

#### **MEXICO**

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#### **GLOBAL HEADQUARTERS**

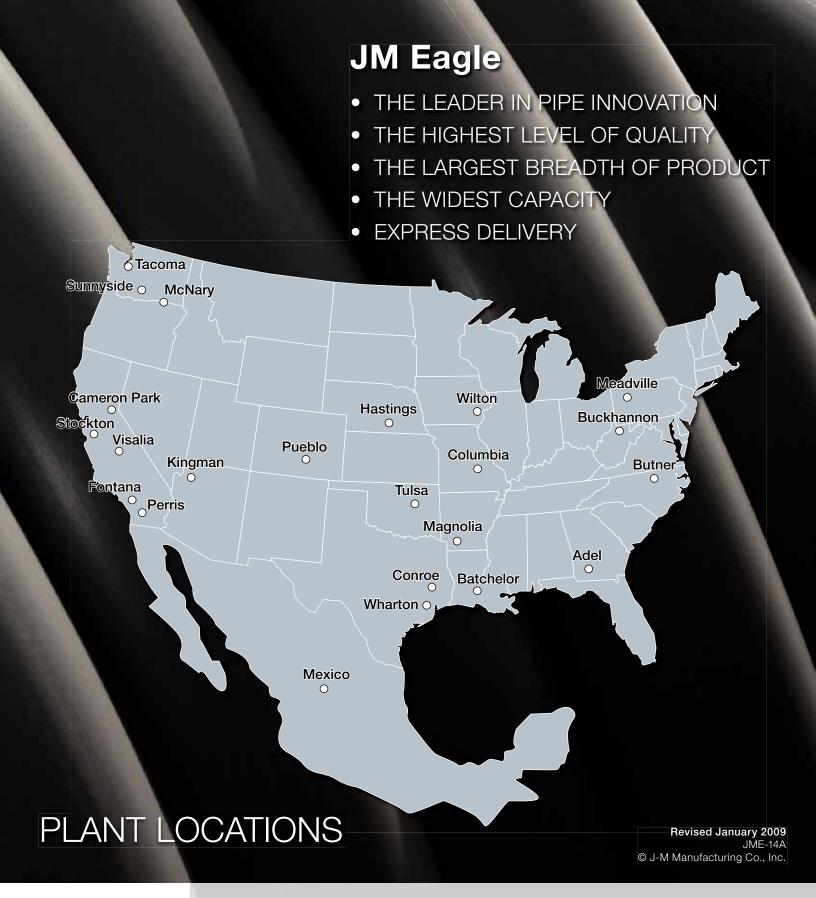
5200 West Century Boulevard Los Angeles, California 90045

#### **REGIONAL OFFICE**

Nine Peach Tree Hill Road Livingston, New Jersey 07039

J-M Manufacturing Co., Inc. and PW Eagle, Inc. are doing business as JM Eagle™.

<sup>\*</sup> Our Mexico location is a joint venture between JM Eagle™ and Plastics Technology





#### GLOBAL HEADQUARTERS:

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