1151 Boston-Providence Turnpike P.O. Box 9102 Norwood, MA 02062 USA T: (781) 762-4300 F: (781) 762-9375

APPROVAL AGRÉEMENT

The Agreement is made by and between Factory Mutual Research Corporation (herein called Factory Mutual Research)

and Extrumex, S.A. de C.V., Santa Catarina, N.L., C.P. 66350, Mexico

(herein called the Client). The Client is making a product or providing a service known and described as:

HIGH DENSITY POLYETHYLENE (HDPE) PIPE and FITTINGS FOR UNDERGROUND FIRE PROTECTION SERVICE

This product or service has been examined by Factory Mutual Research as described in a report bearing

Job Identification 3005011

dated August 1, 2001.

In consideration of Factory Mutual Research Approval of the product or service, the Client is authorized to indicate such Approval, as stated by the above report, and agrees to the following and terms stated on the reverse side of this Agreement:

- The Client shall place a unique identification mark (i.e. model or type number) on the product as stated in the above report and shall not place this mark on any other product unless covered by a separate Agreement with Factory Mutual Research.
- The Client shall use the Factory Mutual Research Approval Mark on the product, but shall not use this mark on any other product unless such other product is covered by separate Agreement with Factory Mutual Research.
- The Client shall not use, reproduce or distribute the above referenced report by Factory Mutual Research except in its entirety without any change, deletion or addition thereto. The Client agrees that Factory Mutual Research may distribute the referenced report and related information within FM Global.

EXTRUMEX, S.A. DE C.V.	FACTORY MUTUAL RESEARCH CORPORATION
MIGUEL GUTIERREZ	R.L. Martell
QUALITY ASSURANCE MGR.	Asst. V.P. – Approvals Division
LERDO DE TEJADA 899, STA. CATARINA,	8/1/01 Title
MEXICO 66350 Address NOV. 22, 2001.	Date

Date

An FM 610881 Affiliate

- 4. The Client shall assume full responsibility for the design, material, workmanship and operation of the product or the quality of the service rendered and agrees to hold harmless and indemnify Factory Mutual Research from any claims and liability to the Client or others for any kind or type of injury or damage, including without limitation, loss of earnings or profits, caused by or in any way connected with any of the services rendered by Factory Mutual Research, or arising out of any defect, accident, damage or injury related to the product or service referenced herein.
- 5. The Client shall manufacture the product or provide the service as Approved by Factory Mutual Research and no changes of any nature shall be made in the product or service unless notice of the proposed change has been given and written authorization obtained from Factory Mutual Research. Client agrees to make full and immediate disclosure to Factory Mutual Research of all information concerning any defect in or potential hazard of the product or service referenced herein. Failure to provide such notification of changes or defects may result in suspension or withdrawal of Factory Mutual Research Approval.
- 6. The Client shall (1) provide user with adequate instructions for the proper installation, maintenance, and operation of the product; (2) provide adequate facilities for repair of the product and supply replacement parts; (3) provide services to ensure proper installation, inspection or maintenance for products of such nature that it would not be reasonable to expect the average user to be able to provide such installation, inspection or maintenance.
- The Client shall permit periodic unannounced audits of the manufacturing facilities and quality control
 procedures for the Approved product or unannounced audits of the service locations by Factory Mutual Research
 or its representative and shall furnish samples of the Approved product for re-examination on request.
- 8: The Client shall manufacture the product or provide the service only at locations audited by Factory Mutual Research or its representative and manufacture of products bearing the Factory Mutual Research Approval mark shall not be done at any other location without prior written authorization by Factory Mutual Research.
- The Client shall pay thirty (30) days after day of invoice the costs of Approval, audit, and subsequent re-inspection, re-examination and listing as a condition of continued Approval.
- Factory Mutual Research does not imply or express any warranty of any kind with respect to the Client's product or service, and Factory Mutual Research assumes no responsibility for defects, failure in service or patent infringement.
- Factory Mutual Research reserves the right in its sole judgment to change or revise its standards, criteria, methods or procedures.
- 12. Approval may be withdrawn by Factory Mutual Research due to unsatisfactory performance, unsatisfactory results in meeting requirements of reexamination, unsatisfactory quality control, or for violation of or non-compliance with any part of this Agreement. The Client may at any time withdraw from the terms of this Agreement by so notifying Factory Mutual Research in writing. Regardless of whether withdrawal is made by Factory Mutual Research or the Client, all activities that would indicate or imply Approval shall be immediately discontinued by the Client unless otherwise agreed to in writing by Factory Mutual Research. Factory Mutual Research reserves the right to notify the public in general and/or appropriate party if in its sole judgment the product or service is found to present an unusual danger or hazard.
- This Agreement is not transferable to another party without prior written authorization by Factory Mutual Research.



Pipe, Fittings and Pipe Joints for Underground Fire Service Mains

Underground fire service mains are made from many different materials. Cast iron, ductile iron, stainless steel pipe, Polyvinyl Chloride (PVC), Polyethylene (PE), and Fiber Reinforced Composite (FRP of Fiberglass) pipe and fittings are acceptable when they are FM Approved.

Installation of these products should conform to FM Global Property Loss Prevention Data Sheets.

Polyethylene Pipe and FittingsPolyethylene pipe should be installed and anchored according to the pipe manufacturer's instructions and FM Global Property Loss Prevention Data Sheets. For underground use only.

Nominal pipe size is the approximate outside diameter of the pipe. Refer to manufacturer's catalog for pipe inside diameter.

Polyethylene Pipe and Fittings

Product Designation	Nominal Pipe Size, in.	Pressure Rating, psi (kPa)	Remarks
Pipe, Class 150	4, 6, 8, 10, 12, 14, 16, 18, 20	150 (1035)	a, b
Pipe, Class 200	4, 6, 8, 10, 12, 14, 16 and 18	200 (1380)	a, b
Molded Tee, Class 150	4 and 6	150 (1035)	a, b
Molded Tee, Class 200	4 and 6	200 (1380)	a, b
Molded 90° Elbow, Class 150	4 and 6	150 (1035)	a, b
Molded 90° Elbow, Class 200	4 and 6	200 (1380)	a, b
Molded 45° Elbow, Class 150	4 and 6	150 (1035)	a, b
Molded 45° Elbow, Class 200	4 and 6	200 (1380)	a, b
Molded Concentric Reducer, Class 150	6 x 4, 8 x 4, 8 x 6, 10 x 6, 10 x 8, 12 x 8, 12 x 10, 14 x 10, 14 x 12, 16 x 12, 16 x 14, 18 x 14, 18 x 16, 20 x 18	150 (1035)	a, b
Molded Concentric Reducer, Class 200	6 x 4, 8 x 4, 8 x 6, 10 x 6, 10 x 8, 12 x 8, 12 x 10, 14 x 10, 14 x 12, 16 x 12, 16 x 14, 18 x 14, 18 x 16, 20 x 18	200 (1380)	a, b
Molded Stub End, Class 150	4, 6, 8, 10, 12, 14, 16, and 18	150 (1035)	a, b
Ductile Iron Backup Ring, Class 150	4, 6, 8, 10, 12, 14, 16, and 18	150 (1035)	a, b
Molded Stub End, Class 200	4, 6, 8, 10, 12, 14, 16, and 18	200 (1380)	a, b
Ductile Iron Backup Ring, Class 200	4, 6, 8, 10, 12, 14, 16, and 18	200 (1380)	a, b



Fabricated Equal Tee,	8, 10, 12, 14,	150	a, b
Class 150	16, and 18	(1035)	
Fabricated Equal Tee,	8, 10, 12, 14,	200	a, b
Class 200	16, and 18	(1380)	
Fabricated 90° Elbow,	8, 10, 12, 14,	150	a, b
Class 150	16, 18, 20	(1035)	
Fabricated 90° Elbow,	8, 10, 12, 14,	200	a, b
Class 200	16, and 18	(1380)	
Fabricated 45° Elbow,	8, 10, 12, 14,	150	a, b
Class 150	16, 18, 20	(1035)	
Fabricated 45° Elbow,	8, 10, 12, 14,	200	a, b
Class 200	16, and 18	(1380)	

<sup>a. Pipe and fittings may be directly connected together by the butt fusion process. Manufacturer fusion instructions must be strictly followed for a proper fusion joint.
b. The diameter basis for pipe and fittings is Mexican Standard NMX-E-18 which is dimensionally equivalent to IPS sizes.</sup>

Company Name:	Extrumex SA
	de C.V. Lerdo de Tejada, No. 899 Col. El Lechugal, Santa Catarina N.L., C.P. 66350, Mexico
Company Website:	http://www.extrumex.com.mx
Listing Country:	Mexico
Certification Type:	FM Approved