



**Submittal - 024 Pump Station**

SIGMA Low Density Polyethylene 8 Mil Liner (Submittal on the following page(s), this sheet is the response page)

**Response:**

**MKEC ENGINEERING, INC.**  
411 North Webb Road - Wichita, KS 67206

Reviewed       Reviewed As Noted  
 Revise and Resubmit       Rejected  
 Not Required by the Contract Documents

Reviewed for conformance with the design concept of the project and compliance with the information given in the contract documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site, information that pertains solely to the fabrication process or to techniques of construction, and coordination of work of all other trades. If "Resubmit" or "Rejected" are not checked resubmission is neither desired or required.

By Billy Shind Date 6-29-16



Quality – Service – Commitment – Delivered.

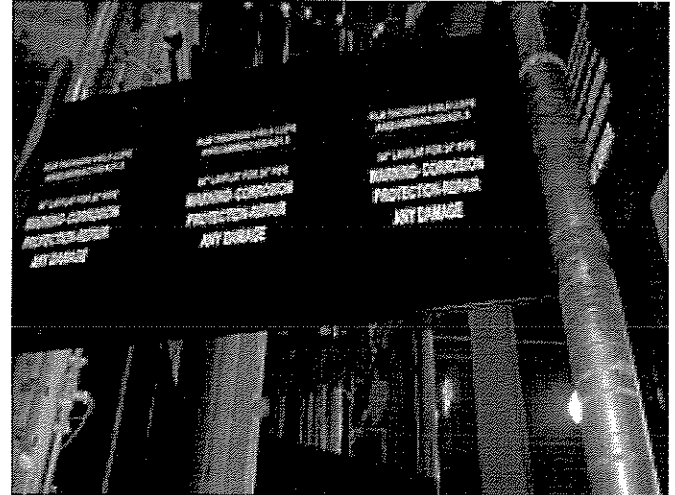
POLYETHYLENE ENCASUREMENT PRODUCTS

# 8 Mil Linear Low Density Polyethylene

Polycase LLDPE encasement film is a carefully engineered linear low density virgin polyethylene resin film designed to meet the requirements of the ANSI/AWWA C105/A21.5 standard.

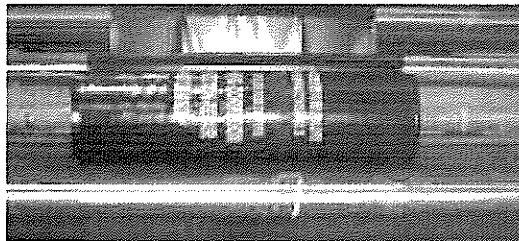
Carefully controlled molten resin is forced under high pressure through a die-head producing a bubble of polyethylene in a vertical column. The resulting tube is cooled and gathered onto spooling equipment at the top of the column.

Film strength characteristics are referred to as strength in the machine direction (direction of travel through the die-head), and the transverse direction (perpendicular to the machine direction). Minimum acceptable test values should consider both MD and TD.



## Specifications

Physical Attribute	Test Direction	ANSI/AWWA C105/A21.5 MINIMUM REQUIREMENT	SIGMA LLDPE TYPICAL TEST VALUES
TENSILE STRENGTH ASTM D882	MACHINE DIRECTION	3600psi	4635psi
	TRANSVERSE DIRECTION	3600psi	4216psi
ELONGATION ASTM D882	MACHINE DIRECTION	800%	948%
	TRANSVERSE DIRECTION	800%	1012%
DIELECTRIC STRENGTH ASTM D149 (VOLTS / MIL)	n/a	800 volts / mil	1786 volts / mil
IMPACT RESISTANCE ASTM D1709 (grams)	n/a	600 grams	928 grams
PROPAGATION TEAR RESISTANCE ASTM D1922 (gf)	MACHINE DIRECTION	2550 grams/force	4082 grams/force
	TRANSVERSE DIRECTION	2550 grams/force	6159 grams/force



Years of effort have gone into the establishment of the ANSI/AWWA C105/A21.5 American National Standard for polyethylene encasement for ductile-iron pipe systems. This quality polyethylene encasement film product that meets this minimum standard does not "just happen". The required design parameters must be defined. Product engineers must determine what raw materials and processes are necessary to meet the design characteristics. We know, from our own experience and testing, that only quality, virgin, materials that meet the criteria of the standard; coupled with proper manufacturing processes, will yield the required finished film physical properties. We are proud to offer certification per Section 5.1 of the standard.

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