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Environmental & Regulatory Services Division
Bureau of Petroleum Products and Tanks
201 West Washington Avenue
P.O. Box 7837
Madison, WI 53707-7837

Wisconsin COMM 10 Material Approval

Equipment: S*MARTFLEX*® and *SUPERSMARTFLEX*® Nonmetallic Semi-Rigid Underground Piping and Fittings

Manufacturer: NUPI Americas, Inc
1511 Superior Way
Houston, TX 77033

Expiration of Approval: December 31, 2013

SCOPE OF EVALUATION

The *SMARTFLEX* lined underground piping system as manufactured by NUPI S.p.A., Imola, Italy (d.b.a.: NUPI Americas, Inc.), was evaluated for use as petroleum product piping for underground storage tank systems in accordance with **Comm 10.130(1)**, of the Wisconsin Administrative Flammable and Combustible Liquids Code.

This evaluation summary is condensed to provide the specific installation, application and operation parameters necessary to maintain the subject systems in compliance with the Wisconsin Administrative Code – Comm 10.

DESCRIPTION AND USE

The NUPI - *SMARTFLEX* semi-rigid pipe system consists of a high-density polyethylene (HDPE) pipe with an internal barrier lining, which reduces hydrocarbon permeation through the pipe system. The *SMARTFLEX* pipes and fittings are connected by electro-fusion welded joints and are available in the following sizes:

Primary Pipe Diameters		**Secondary Pipe Diameters**	
1”	TSMA32	1” x 1-1/4”	TSMAD32
1-1/2”	TSMA50	1-1/2” x 2”	TSMAD50
2”	TSMA63	2” x 2-1/2”	TSMAD63
3”	TSMA90	3” x 6”	TSMA90/TSMAS125
4”	TSMA110	4” x 8”	TSMA110/TSMAS125

The NUPI - *SUPERSMARTFLEX* semi-rigid pipe system consists of a high-density polyethylene (HDPE) layer sandwiched between PVDF layers bonded together by the use of adhesion tie layers, which reduces hydrocarbon permeation through the pipe system. The *SUPERSMARTFLEX* pipes and fittings are connected by electro-fusion welded joints and are available in the following sizes:

Primary Pipe Diameters (Carrier Pipe, Vent, Vapor, Fill)		**(Vent, Vapor)**
1-1/2”	TSMAXP50	TSMAUXP50
2”	TSMAXP63	TSMAUXP63
3”	TSMAXP90	TSMAUXP90
4”	TSMAXP110	TSMAUXP110

Secondary Pipe Diameters (Double wall configuration)		**(Secondary Pipe Only)**
1-1/2”	TSMAXPD50	N/A
2”	TSMAXPD63	TSMAXS63
2-1/2”	N/A	TSMAXS75
3”	TSMAXPD90	TSMAXS125
4”	TSMAXPD110	TSMAXS125
5”	N/A	TSMAXS125

TESTS AND RESULTS

SMARTFLEX and *SUPERSMARTFLEX* semi-rigid pipe and fittings were found to comply with the current Underwriters Laboratories’ requirements (Standard 971) for this class of piping and are suitable for use in the distribution of petroleum products, alcohol, and alcohol-gasoline mixtures.

LIMITATIONS / CONDITIONS OF APPROVAL

- *SMARTFLEX and SUPERSMARTFLEX* semi-rigid pipe and fittings are approved as meeting the design and construction standards for underground piping as specified in **s. Comm 10.500** and **Comm 10.520** up to 116 psig for primary pipe and 58 psig for secondary containment and up to full vacuum for both primary and secondary containment systems.

- *SMARTFLEX and SUPERSMARTFLEX* semi-rigid pipe and fittings can be used as carrier, fill, vent, and vapor recovery piping.

- Critical performance parameters for the *SMARTFLEX and SUPERSMARTFLEX* semi-rigid pipe and fittings:

Primary Pipe

SMARTFLEX Pipe Size (in.)	Minimum Bend Radius (in.)	Bulk Modulus (psi)
1	22.7	12,300
1-1/2	35.4	12,300
2	44.6	12,300
3	63.8	12,300
4	N/A	12,300

SUPERSMARTFLEX Pipe Size (in.)	Minimum Bend Radius (in.)	Bulk Modulus (psi)
1-1/2	38.4	12,300
2	44.5	12,300
4	N/A	12,300

Secondary Containment Piping

SMARTFLEX Pipe Size (in.)	Minimum Bend Radius (in.)	Bulk Modulus (psi)[1]
1 1/4	28.3	6,200
2	44.6	6,200
2 ½	52.7	6,200
5	N/A	-

[1]: For secondary containment only; a bulk modulus value is not necessary for this application.

SUPERSMARTFLEX Pipe Size (in.)	Minimum Bend Radius (in.)	Bulk Modulus (psi)[1]
1-1/2	38.4	6,200
2	44.6	6,200
2-1/2	53.8	6,200
3	63.8	6,200
5	N/A	6,200

[1]: For secondary containment only; a bulk modulus value is not necessary for this application.

- *SMARTFLEX and SUPERSMARTFLEX* semi-rigid pipe and fittings are approved for underground (buried) installations only.

- *SMARTFLEX and SUPERSMARTFLEX* secondary containment fittings that **DO NOT** have an interstitial space around the entire circumference of the primary piping must be placed within a containment sump.

- The *SMARTFLEX and SUPERSMARTFLEX* secondary containment piping and fittings are approved for use as a secondary barrier for interstitial monitoring systems in compliance with **s. Comm 10.515(7)**.

- Installation, use and maintenance of all products shall be in accordance with the manufacturer's recommendations and this approval. In the event of conflicts, the stricter requirement shall govern.

- Leak detection for the piping system shall be provided in accordance with **s. Comm 10.510**. The specific leak detection system must be shown on the plans that are submitted for review in accordance with **s. Comm 10.100**. Automatic line leak detectors and line tightness testing methods must be specifically approved for use with semi-rigid piping in accordance with **s. Comm 10.130(1)**. (Note: Evaluation of these leak detection methods with the standard EPA protocol does not demonstrate acceptability for use with semi-rigid piping.)

This approval will be valid through December 31, 2013, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Material Approval Number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The Department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement unless specified in this document.

Effective Date: January 1, 2011

Reviewed by: Signature on File
Greg Bareta, P. E.
Engineering Consultant
Bureau of Petroleum Products and Tanks

Approved by: Signature on File Date: _____