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1149 S. BROADWAY, SUITE 700  
LOS ANGELES, CA 90015-2213

<http://eng.lacity.org>

September 14, 2022

Thomas Christiansen  
BKP Berolina Polyester GMBH+Co KG  
Heidering 28  
D-16727 Velten / Germany

**SUBJECT: RENEWAL OF BEROLINA-LINER-UP AND BEROLINA-LINER-UP HF  
FIBERGLASS REINFORCED ULTRAVIOLET LIGHT CURED-IN-PLACE PIPE  
USING AOC VIPEL L720-LCB ISO-NPG POLYESTER RESIN BR800026**

Dear Mr. Christiansen:

Your request for the renewal of the above listed product is approved for Citywide Use in the public right of way. This renewal will expire on September 14, 2026. You are required to report any change in the material composition of this product to the City immediately.

All installations must comply with the following materials and properties, which will be listed in the Approved Products database.

Berolina-Liner UP Design Properties

Resin: .....AOC VIPEL L720-LCB ISO-NPG  
Fiberglass: .....Advantex E-CR glass  
Initial Hoop Tensile Strength: ..... 26,500 psi  
Long-term (50-year) Hoop Tensile Strength: .... 15,900 psi  
Initial Hoop Flexural Modulus: .....1,215,000 psi  
Long-term (50-year) Hoop Flexural Modulus: ... 729,000 psi

Berolina-Liner HF UP Design Properties

Resin: .....AOC VIPEL L720-LCB ISO-NPG  
Fiberglass: .....Advantex E-CR glass  
Initial Hoop Tensile Strength: ..... 29,150 psi  
Long-term (50-year) Hoop Tensile Strength: .... 24,780 psi  
Initial Hoop Flexural Modulus: .....2,410,000 psi  
Long-term (50-year) Hoop Flexural Modulus: ... 2,048,500 psi



The material properties listed above are for the structural wall or “Reinforced Wall” portion of the liner as defined by ASTM D3567, Section 7.3.2, 2017 version. All calculations are based on this reinforced wall thickness. For the purposes of contract compliance, the reinforced wall thickness shall be measured by the laboratory using the ASTM D3567 and evaluated per ASTM F2019. The average reinforced wall thickness must meet or exceed the project specifications. The “Surface Layer Thickness” as defined by ASTM D3567 Section 7.3.3 and “Nonreinforced Layers” per Section 7.3.4 shall be measured. Laboratory test reports must contain all information stated in Section 7.5 “Report”.

Initial hoop tensile strength is based on limited data from Ramtech Laboratories Report Number 3265, dated December 3, 2013. Please contact my staff if you wish to have this reevaluated.

Berolina-Liner must be installed per the conditions stated in the City of Los Angeles specification Section 02582 and the Deutsches Institut für Bautechnik (DIBt) Approval Number Z-42.3-336, latest version. If there is any conflict between the DIBt approval and City of Los Angeles specifications, the more stringent shall govern.

You may apply for another four-year extension of this approval 120 days before it expires. Please maintain a copy of this approval for your records. This letter will be required as part of a contractor’s submittal package. If you have any questions, please contact Chiu Tam at (213) 485-1694 or Edward Arrington at (213) 792-6841.

Sincerely,



Chiu Leong Tam, SE., LEED AP  
Senior Structural Engineer  
Wastewater Conveyance  
Engineering Division

Cc: David Miles, Bureau of Contract Administration  
Shailesh “Sunny” Patel, Structural Engineering Division  
Shirish Mistry, Structural Engineering Division



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CITY ENGINEER

1149 S. BROADWAY, SUITE 700  
LOS ANGELES, CA 90015-2213

<http://eng.lacity.org>

December 2, 2019

Michael Roeling  
BKP Berolina Polyester GMBH+Co KG  
Heidering 28  
D-16727 Velten / Germany

**SUBJECT: RENEWAL OF BEROLINA-LINER FIBERGLASS REINFORCED  
ULTRAVIOLET LIGHT CURED-IN-PLACE PIPE USING ATAC E-NOVA RE 3475  
RESIN BR800026**

Dear Mr. Roeling:

Your request for the renewal of the above listed product is approved for Citywide Use in the public right of way. This renewal will expire on December 22, 2023. You are required to report any change in the material composition of this product to the City immediately.

All installations must comply with the following materials and properties, which will be listed in the Approved Products database.

Resin: .....Atlac E-Nova RE 3475  
Fiberglass: .....Advantex E-CR glass  
Initial Hoop Tensile Strength: ..... 26,500 psi  
Initial Hoop Flexural Modulus: ..... 1,450,000 psi  
Long-term (50-year) Hoop Flexural Modulus: ... 870,000 psi

The initial hoop tensile strength is based on limited data from Ramtech Laboratories Report Number 3265, dated December 3, 2013. Please contact my staff if you wish to have this reevaluated.

The long-term retention is based on Testing Report No. 1403369-2 from the Microbac-Hauser laboratory which commenced August 11, 2016.



Berolina-Liner must be installed per the conditions stated in the Deutsches Institut für Bautechnik (DIBt) Approval Number Z-42.3-336. If there is any conflict between the DIBt approval and City of Los Angeles specifications, the more stringent shall govern.

You may apply for another four-year extension of this approval 120 days before it expires. Please maintain a copy of this approval for your records. This letter will be required as part of a contractor's submittal package. If you have any questions, please contact Kent W. Welling at (213) 485-5405 or Edward Arrington at (213) 485-1694.

Sincerely,



Edward Arrington, S. E., ENV SP  
Engineer of Design  
Wastewater Conveyance  
Engineering Division

Cc: Victor Karayan, Bureau of Contract Administration  
Shailesh "Sunny" Patel, Structural Engineering Division  
Shirish Mistry, Structural Engineering Division

