



WHITE PAPER

MIXING PERFORMANCE OF XEMEX® STATIC MIXER

Designed by [Re Mixers](#), Xemex is the most efficient static mixer developed to work across an array of viscosities, formulations, and mix ratios. Replacing the traditional catalog of mixers, Xemex comes as an optimized, single design that works with any application. Unlike other square or helical mixers with 16 striations, Xemex boasts 1,556 striations after three elements, allowing for maximum adhesive performance with minimum waste. Designed for the assembly line, the mixer's shorter profile provides greater dexterity in tight spaces, and greater positional accuracy in automated meter mixing. These advantages make dispensing applications easy with a reduction in waste rivaling micromixers, while also enabling systems with throughput only seen with traditional industrial mixers.

BENEFITS

- Improves adhesive strength.
- Reduces retained volume to 2.5 mL.
- Eliminates air-entrapment and bubbling issues.
- Increases operator dexterity and positional accuracy.

FEATURES

- Designed for standard bell-style connections.
- Optimized to work across common mix ratios 1:1, 2:1, 4:1, 10:1.
- Balanced to mix a wider variety of formulations.
- Developed for manual and automated applications where performance and positional accuracy matter.

To confirm whether Xemex static mixers measure up to commercially available mixers, we performed experiments with two-part formulations from 3M, Dow, and ResinLab comparing mix performance with traditional mixers from top suppliers.



3M SCOTCH-WELD DP190 GRAY

Experimental:

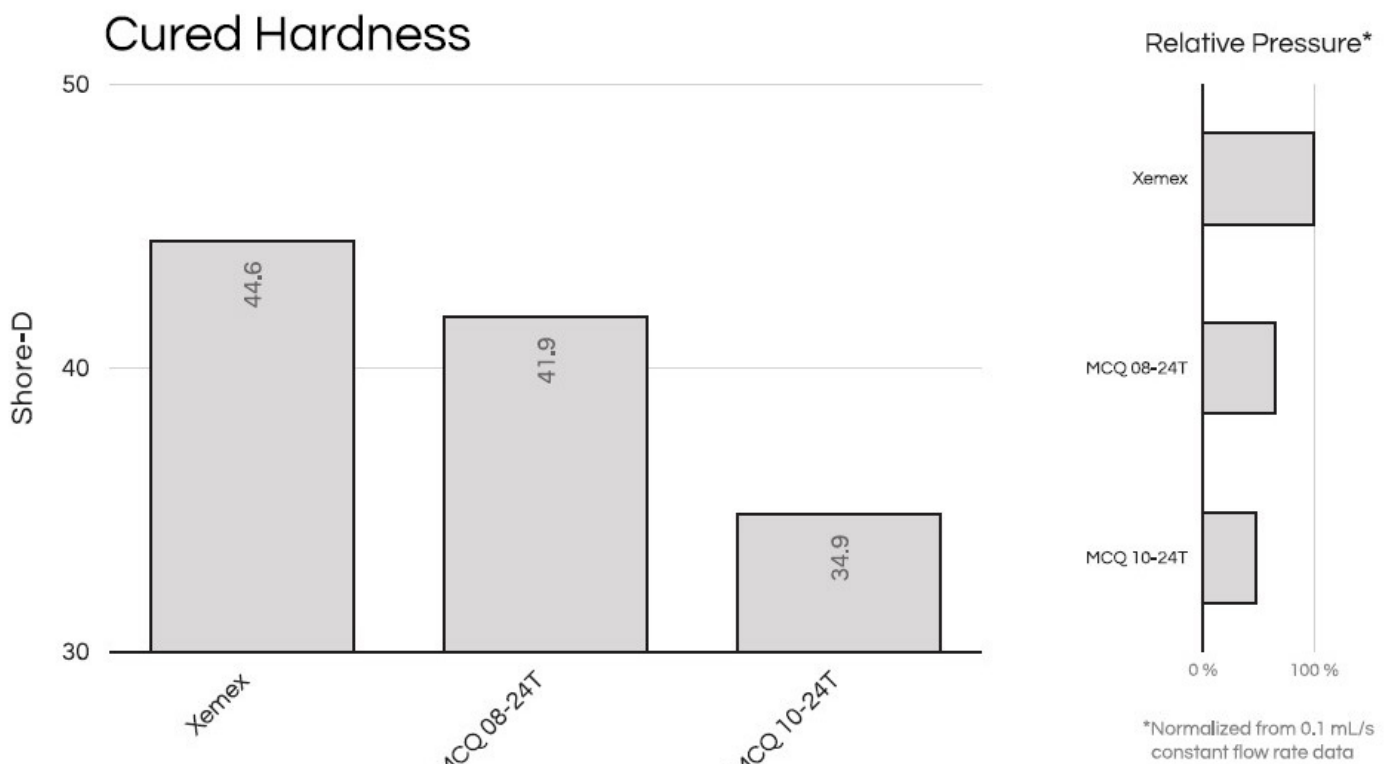
The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 40 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

Mixing Performance:

The hardness data suggests that Xemex yielded the best mixing performance for [3M™ Scotch-Weld® DP190 Gray adhesive](#). With a retained volume of only 2.5 mL, Xemex outperformed mixers with 24 elements, which have retained volumes in the order of 5 to 10 mL. These results suggest that Xemex is a strong candidate for applications using DP190 Gray.

Back Pressure:

From this data, one should expect back pressures with Xemex to be higher than MCQ 08-24T and MCQ 10-24T at equivalent flow rates.



3M SCOTCH-WELD DP270 BLACK

Experimental:

The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 48 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

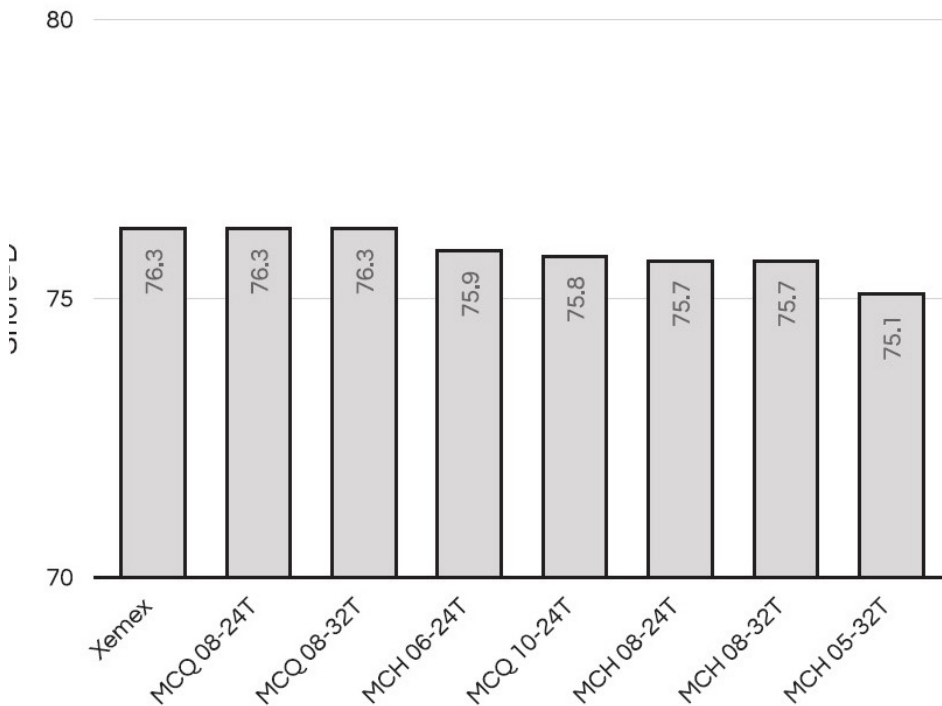
Mixing Performance:

The hardness data suggests that Xemex provided excellent mixing performance for [3M™ Scotch-Weld® DP270-Black](#). With a retained volume of only 2.5 mL, Xemex matched both square and helical 32 and 24 element mixers, which have retained volumes in the order of 5 to 20 mL, while outperforming the 5 mm helical of a similar retained volume. These results suggest that Xemex is a strong candidate for applications using DP270.

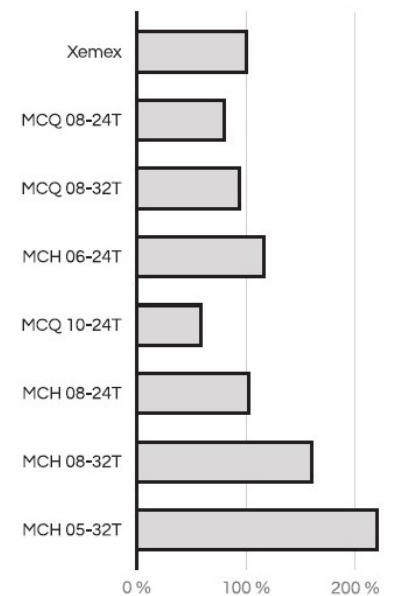
Back Pressure:

From this data, one should expect back pressures with Xemex to be comparable to MCQ 08-32T or MCH 08-24T and lower than MCH 06-24T and MCH 08-32T at equivalent flow rates.

Cured Hardness



Relative Pressure*



*Normalized from 1.0 mL/s constant flow rate data

3M SCOTCH-WELD LSB60

Experimental:

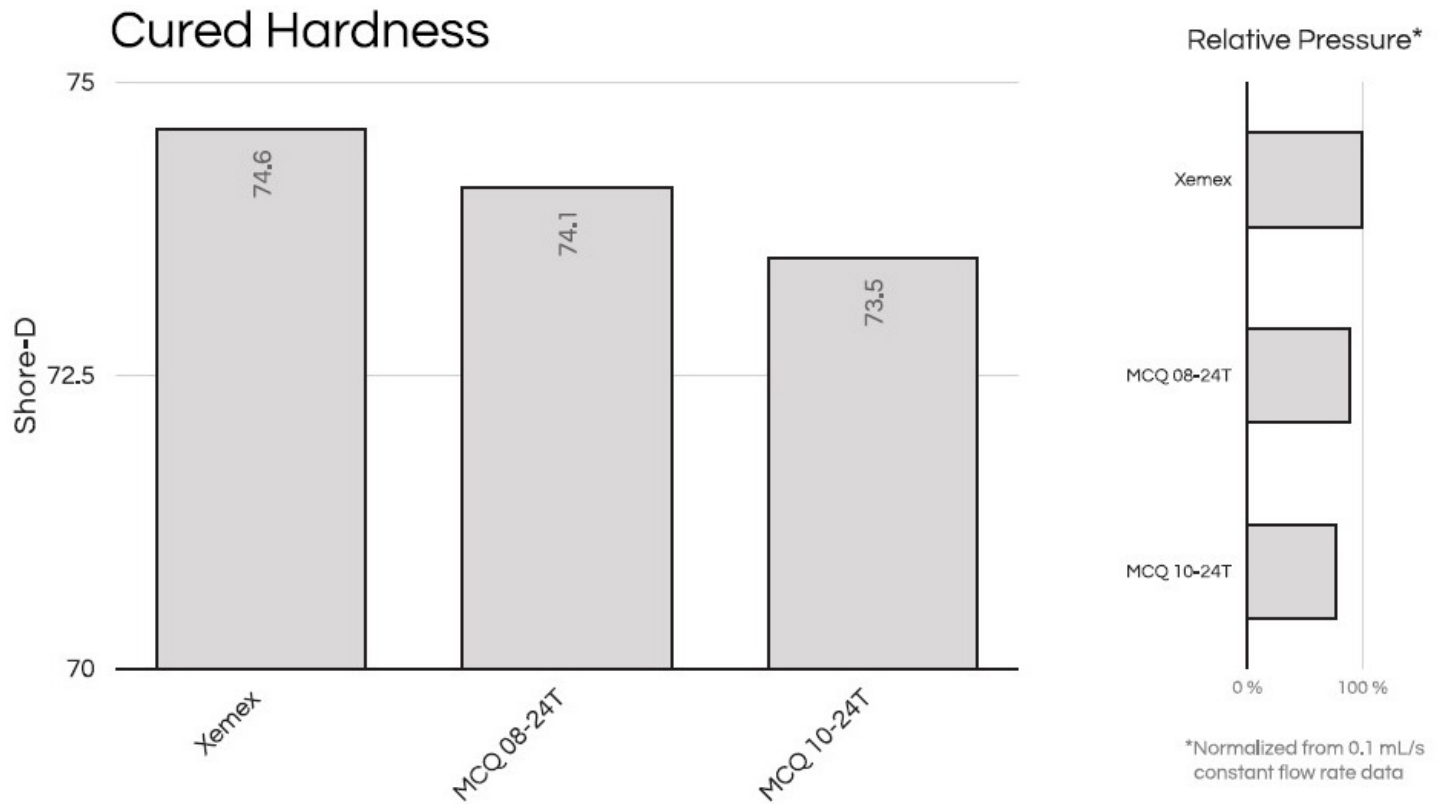
The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 48 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

Mixing Performance:

The hardness data suggests that Xemex yielded the best mixing performance for 3M™ Scotch-Weld® LSB60 adhesive. With a retained volume of only 2.5 mL, Xemex outperformed mixers with 24 elements, which have retained volumes in the order of 5 to 10 mL. These results suggest that Xemex is a strong candidate for applications using LSB60.

Back Pressure:

From this data, one should expect back pressures with Xemex to be comparable to MCQ 08-32T or MCH 08-24T and lower than MCH 06-24T at equivalent flow rates.





DOW DOWSIL™ 3-4241

Experimental:

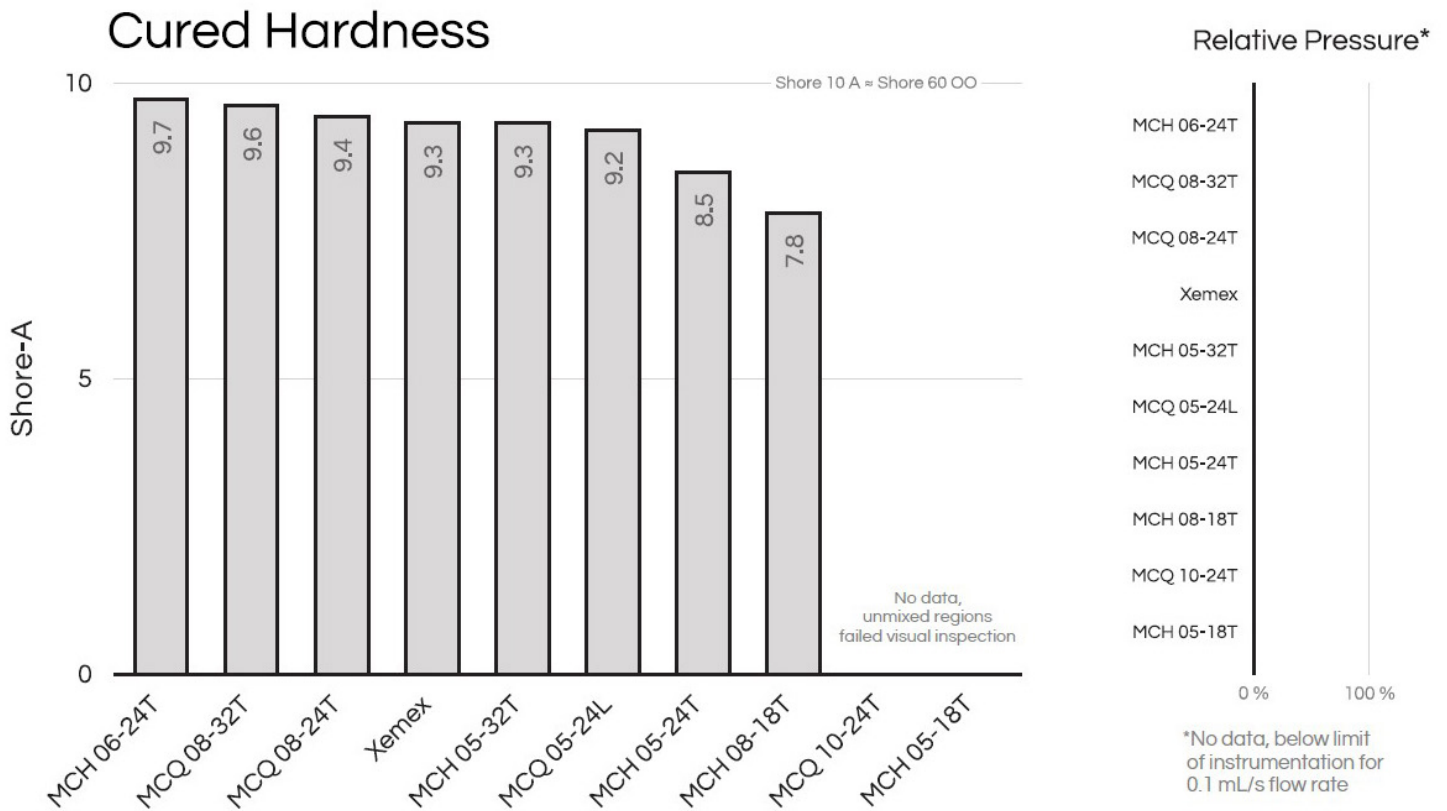
The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 7 days, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

Mixing Performance:

The hardness data suggests that Xemex yielded acceptable mixing performance for [DOWSIL™ 3-4241 Dielectric Tough Gel](#). Xemex matched or outperformed all 5 mm MCH mixers tested, which have similar retained volumes. Xemex performed comparably to 8 mm square mixers, which retain 2 to 3 times more adhesive compared to Xemex. These results suggest that Xemex is a suitable candidate to replace both helical and square mixers in applications using this DOWSIL™ 3-4241.

Back Pressure:

Due to the low viscosity of DOWSIL™ 3-4241, the pressure was below the limits of the measurement system. However, from all past experiments, it would be expected that Xemex would have a lower pressure than the 5 mm helical mixers (e.g. MCH 05-24T), and roughly the same as the 8 mm helical (e.g. MCH 08-24T).





RESINLAB AR4305HP CREAM

Experimental:

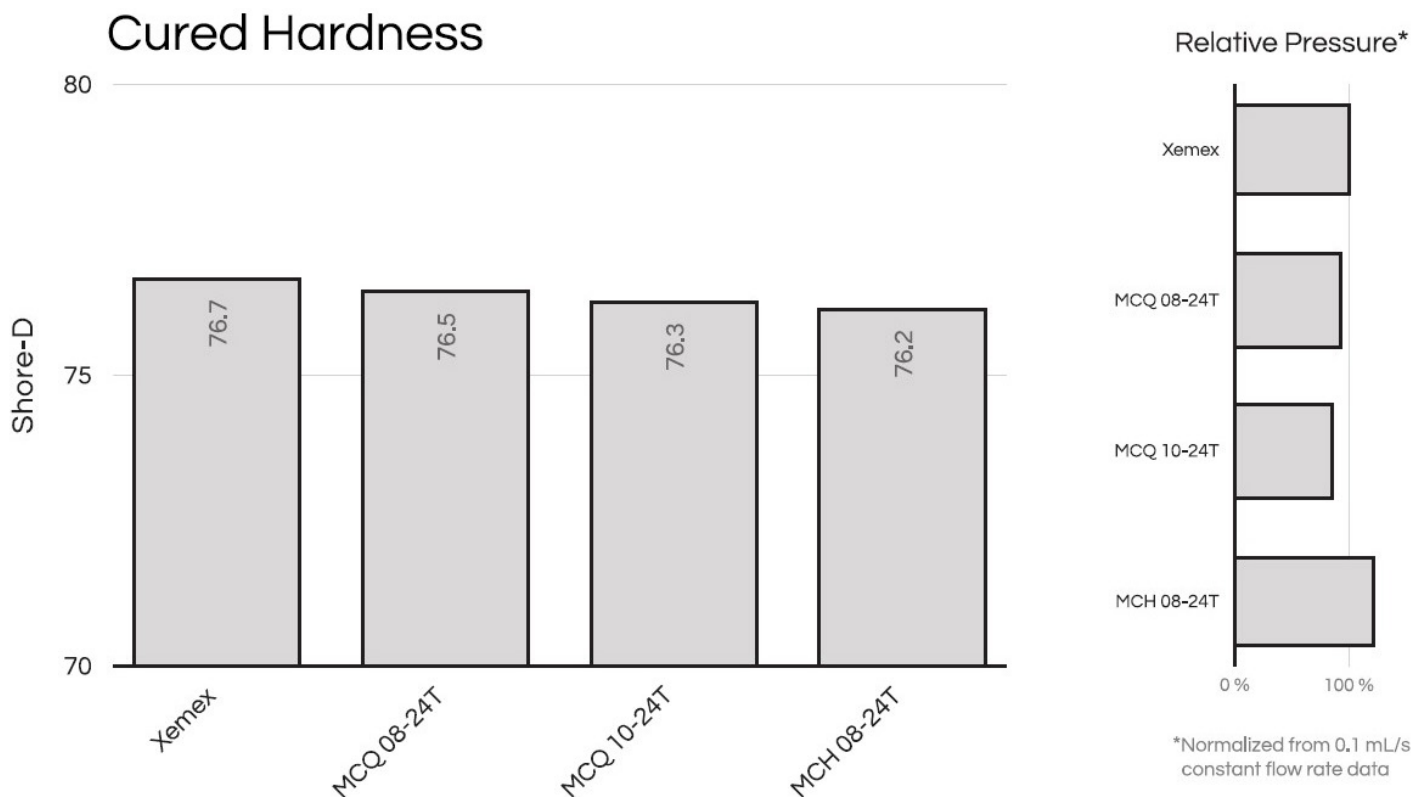
The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 29 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

Mixing Performance:

The hardness data suggests that Xemex yielded the best mixing performance for [ResinLab® AR4305HP adhesive](#). With a retained volume of only 2.5 mL, Xemex outperformed mixers with 24 elements, which have retained volumes in the order of 5 to 10 mL. These results suggest that Xemex is a strong candidate to replace both helical and square mixers in applications using AR4305HP.

Back Pressure:

From the data, one should expect back pressures with Xemex to be marginally higher than a MCQ 08-24T but slightly less than a MCH 08-24T at equivalent flow rates.



RESINLAB EP11HT GRAY

Experimental:

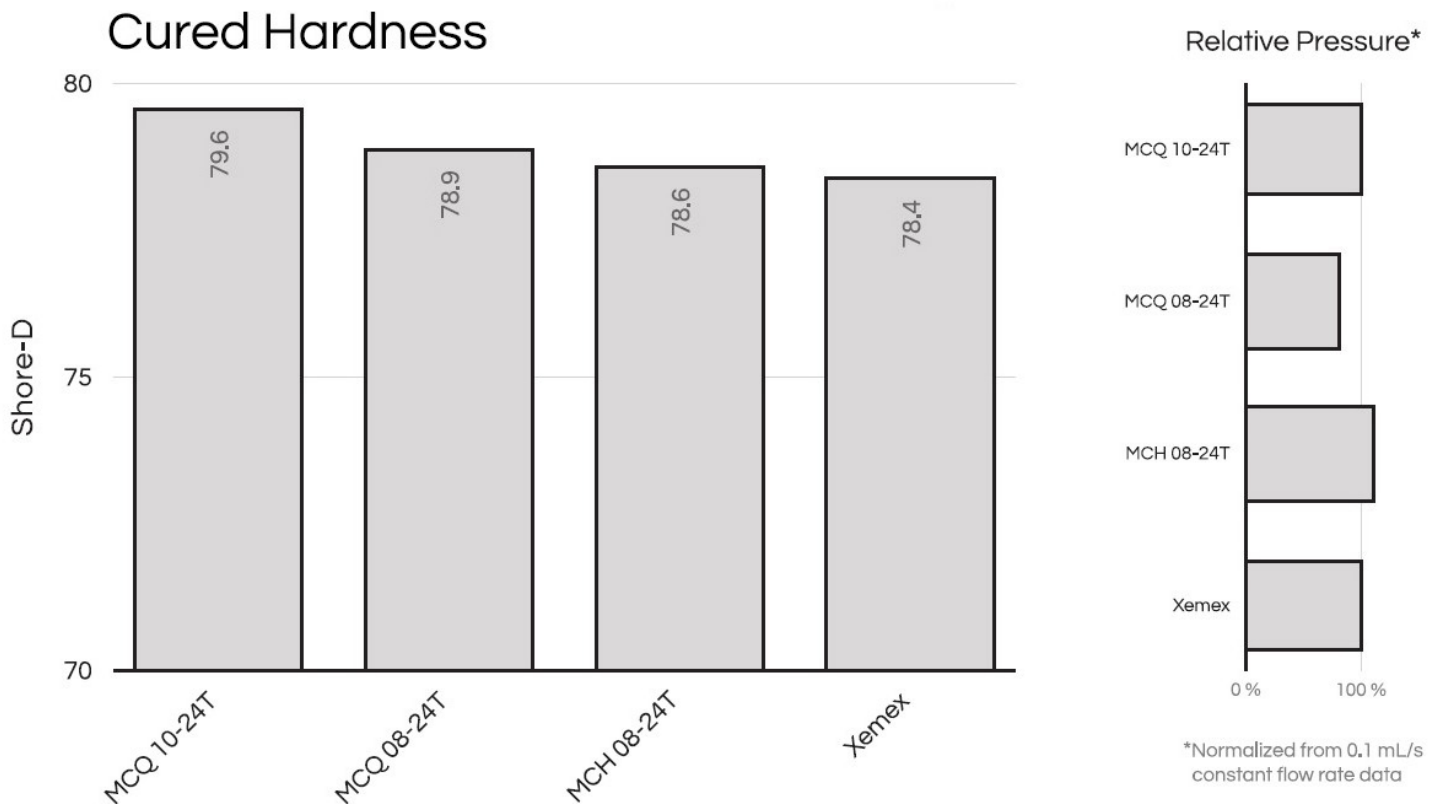
The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 48 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

Mixing Performance:

The hardness data suggests Xemex provides similar mixing performance for [ResinLab® EP11HT](#). With a retained volume of only 2.5 mL, Xemex closely matches the mix quality of other mixers with 24 elements, which have retained volumes in the order of 5 to 10 mL. These results suggest that Xemex is a candidate to replace both helical and square mixers in applications using EP11HT.

Back Pressure:

From this data, one should expect back pressures with Xemex to be comparable to MCQ 08-32T or MCH 08- 24T and lower than MCH 06-24T at equivalent flow rates.



RESINLAB EP1200 BLACK

Experimental:

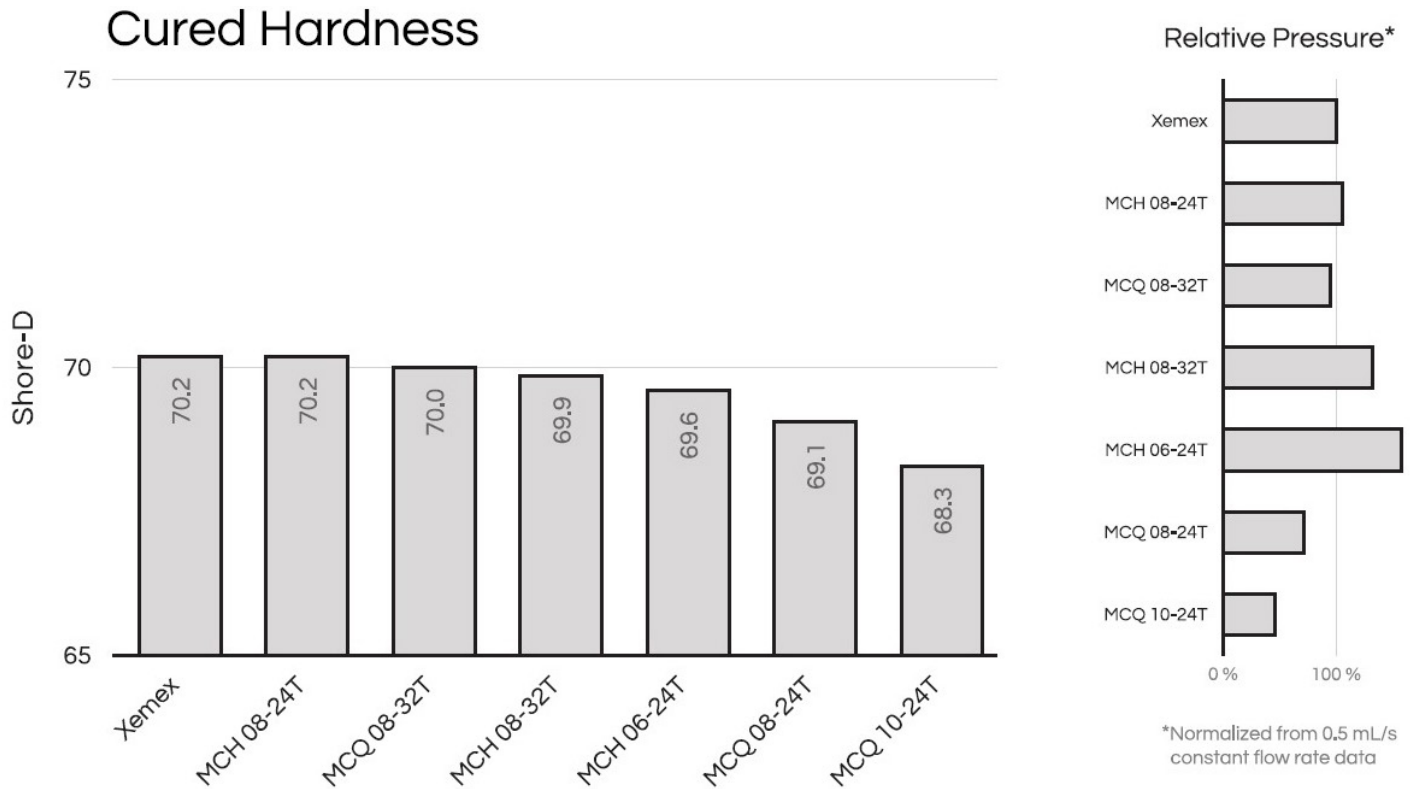
The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 66 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

Mixing Performance:

The hardness data suggests that Xemex yielded good mixing performance for [ResinLab® EP1200 Black](#). With a retained volume of only 2.5 mL, Xemex matched or outperformed mixers with 24 and 32 elements, which have retained volumes in the order of 5 to 10 mL. These results suggest that Xemex is a good candidate to replace both helical and square mixers in applications using EP1200.

Back Pressure:

From this data, one should expect back pressures with Xemex to be comparable to MCQ 08-32T or MCH 08- 24T but lower than MCH 06-24T at equivalent flow rates.



RESINLAB EP1290 GRAY

Experimental:

The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 72 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

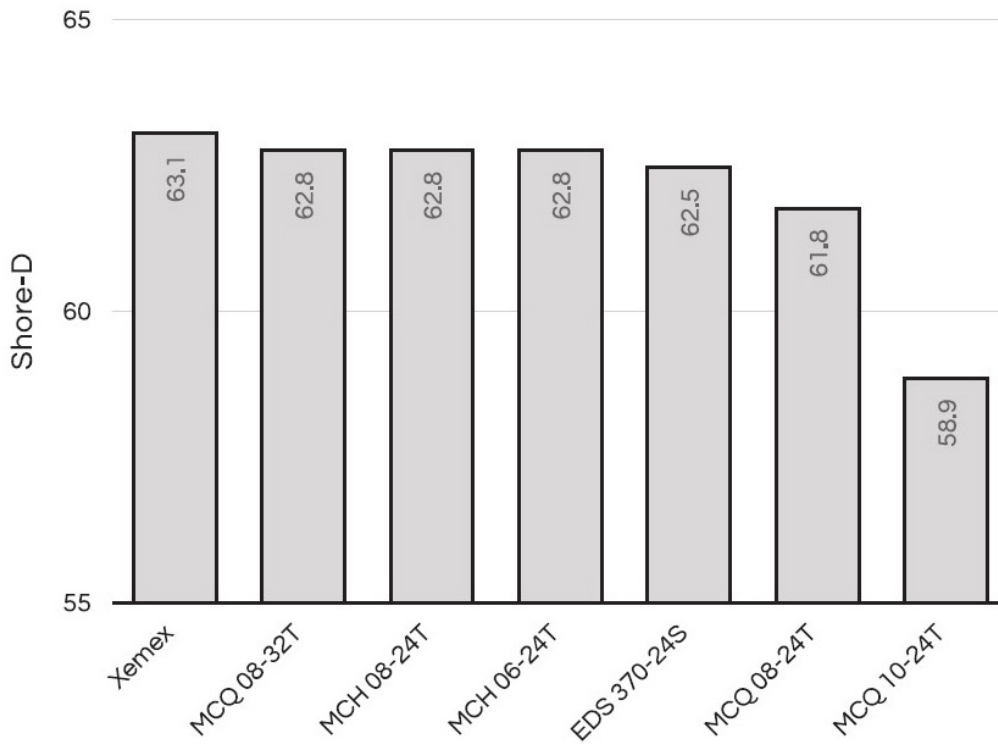
Mixing Performance:

The hardness data suggests that Xemex yielded the best mixing performance for [ResinLab® EP1290 Gray adhesive](#). With a retained volume of only 2.5 mL, Xemex outperformed mixers with 24 and 32 elements, which have retained volumes in the order of 5 to 10 mL. These results suggest that Xemex is a strong candidate to replace both helical and square mixers in applications using EP1290.

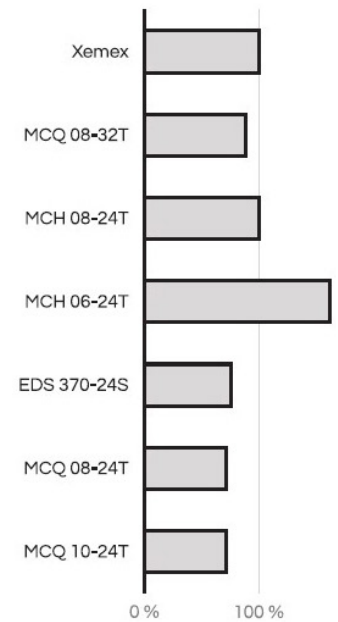
Back Pressure:

From this data, one should expect back pressures with Xemex to be comparable to MCQ 08-32T or MCH 08-24T and lower than MCH 06-24T at equivalent flow rates.

Cured Hardness



Relative Pressure*



*Normalized from 0.1 mL/s constant flow rate data

RESINLAB UR3010 BLACK

Experimental:

The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 24 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

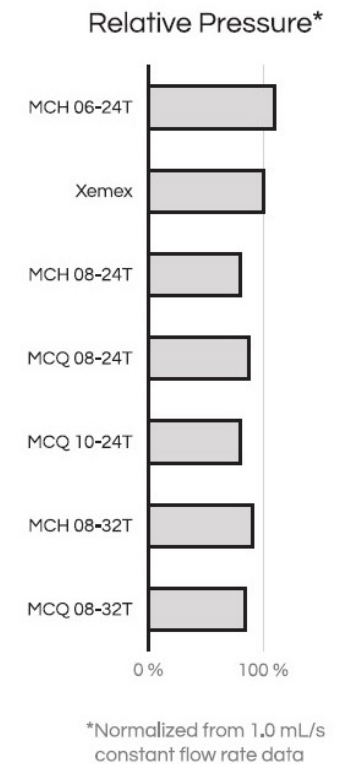
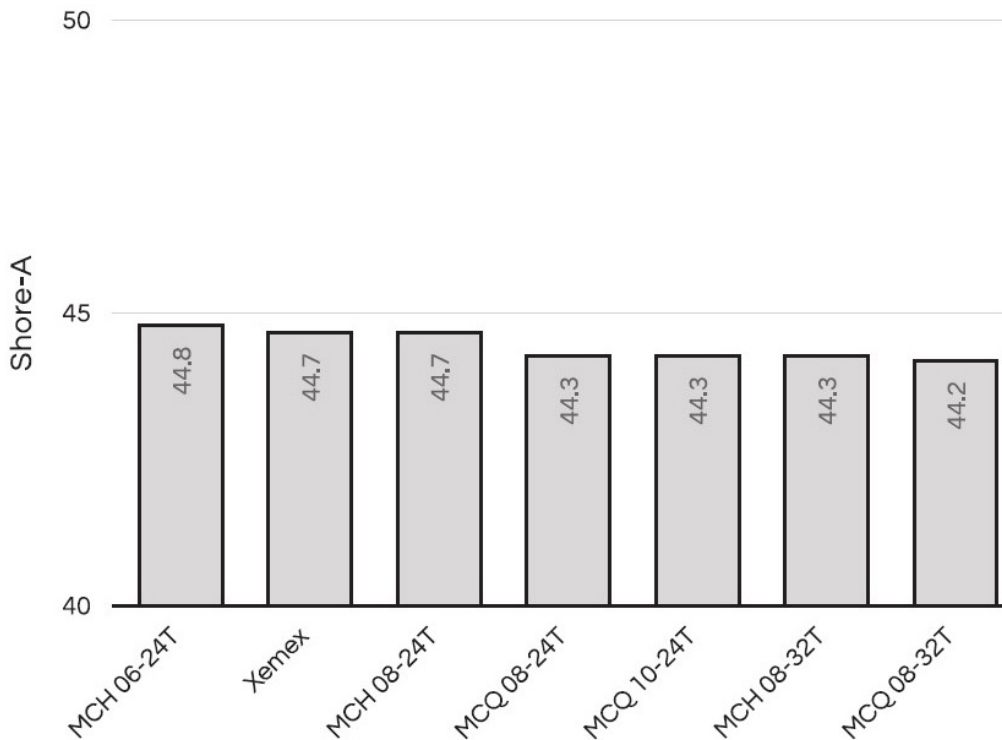
Mixing Performance:

The hardness data suggests that Xemex yielded good mixing performance for [ResinLab® UR3010 Black](#). With a retained volume of only 2.5 mL, Xemex outperformed mixers with 24 and 32 elements, which have retained volumes in the order of 5 to 10 mL. These results suggest that Xemex is a strong candidate to replace both helical and square mixers in applications using UR3010.

Back Pressure:

From this data, one should expect back pressures with Xemex to be slightly higher than MCQ 08-32T or MCH 08-24T but lower than MCH 06-24T at equivalent flow rates.

Cured Hardness



RESINLAB UR3001HP2 BLACK

Experimental:

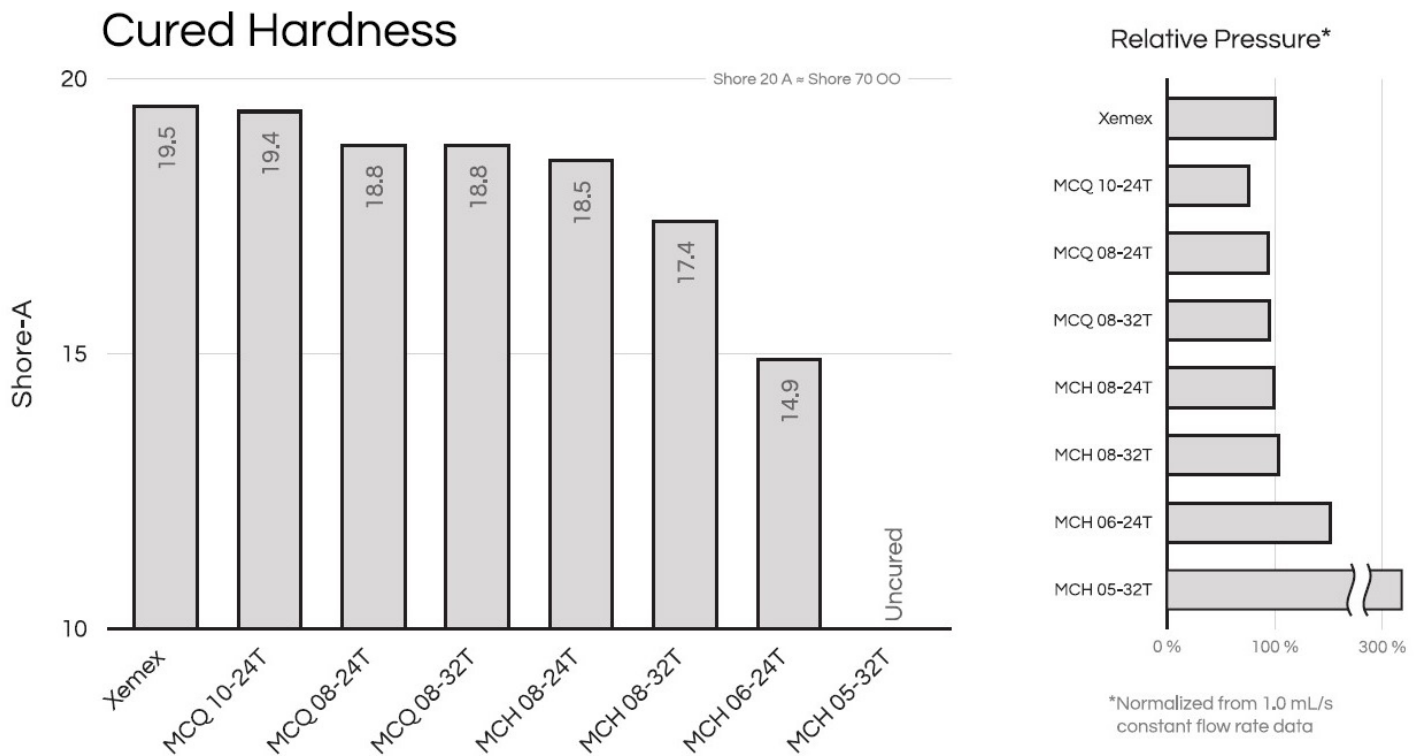
The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 66 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

Mixing Performance:

The hardness data suggests that Xemex yielded excellent mixing performance for [ResinLab® UR3001HP2 Black](#). With a retained volume of only 2.5 mL, Xemex outperformed mixers with 24 and 32 elements, which have retained volumes in the order of 5 to 10 mL. These results suggest that Xemex is a strong candidate to replace both helical and square mixers in applications using UR3001HP2.

Back Pressure:

From this data, one should expect back pressures with Xemex to be comparable to MCQ 08-32T or MCH 08- 24T but lower than MCH 06-24T at equivalent flow rates.



RESINLAB UR6001 BLACK

Experimental:

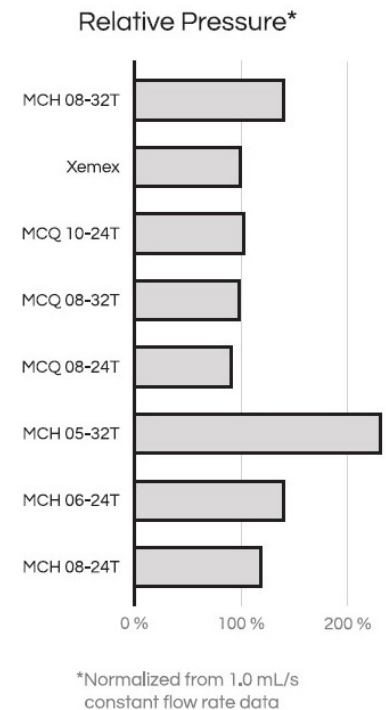
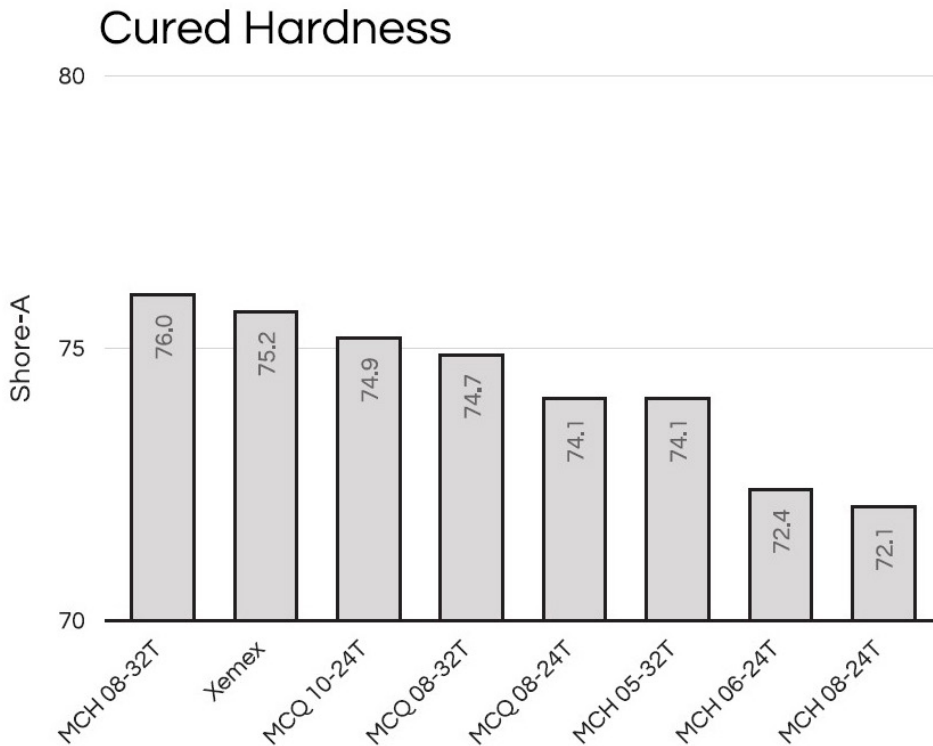
The two-part formulation was dispensed using Re Mixer’s automated cartridge dispenser, having preset flow rate and purge routines. After curing at room temperature for 90 hours, hardness was determined through a single-blind collection using Rex Gauge’s RX-DD Series Durometer, and in accordance with ASTM D2240.

Mixing Performance:

The hardness data suggests that Xemex yielded good mixing performance for ResinLab® UR6001 Black. With a retained volume of only 2.5 mL, Xemex was comparable, if not better, than mixers with 24 and 32 elements, which have retained volumes in the order of 5 to 10 mL. These results suggest that Xemex is a candidate to replace both helical and square mixers in applications using UR6001.

Back Pressure:

From this data, one should expect back pressures with Xemex to be similar to MCQ 08-32T or MCH 08-24T but lower than MCH 06-24T or MCH 08-32T at equivalent flow rates.



The Xemex static mixer's unique design allows for comparable or enhanced mixing performance to traditional mixers for a wide variety of two-part materials, making it a good choice for manufacturers looking to optimize their meter mixing process.

Proper design and selection of static mixers is crucial for optimal performance and efficiency. Ellsworth Adhesives Glue Doctors® are uniquely equipped with over 800 years of combined experience in product and application selection to help make the process simple. Get in touch with the team to help find the right choice for your application needs with Xemex.

Ask the Glue Doctor®

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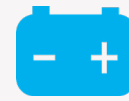
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Furniture



Medical



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Electronics



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Industry



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Lighting



Transportation