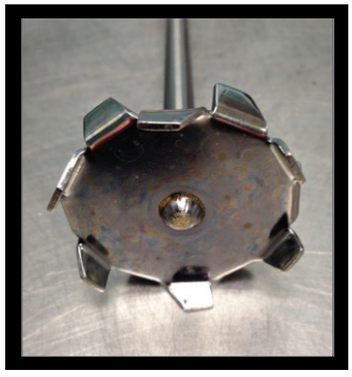
Teflon™ Cure for Uncured Polyurethane Mixers: A Case Study

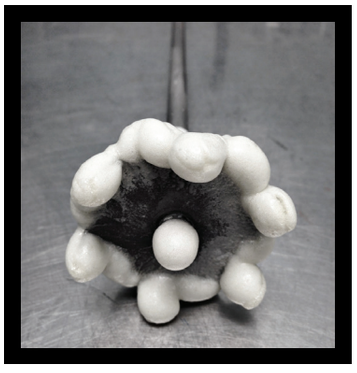
Teflon™ coating solution to prevent polyurethane build-up and allow mixers to stay in production longer.

Challenge

Steel mixing blades used for polyurethane can result in a number of lengthy, time consuming, and labor-intensive cleaning processes to remove hardened foam build-up that collects on the blades. After repeated use, even new mixing blades experience residual build-up of foam that cannot be completely cleaned with solvent. Foam continues to build on the lips of blades, reducing their ability to effectively mix foam recipes within the time required before the ingredients begin to react. This level of foam build-up on the blades can only be removed using a media blasting process. Based on years of polyurethane processing experience, the use of any blasting process for cleaning mixing blades also significantly reduces service life compared to that of newly purchased mixing blades. Ultimately, productivity goes down and cost goes up as blades are routinely removed from service for grit-blast cleaning. Chemours was challenged to come up with a coating solution that would prevent the polyurethane build-up and allow mixers to stay in production longer. Additionally, the coating was expected to make the cleaning process simpler and more cost and time efficient.



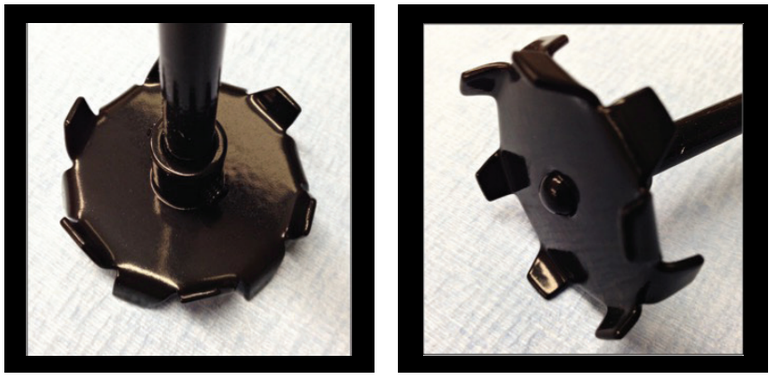
Uncoated mixing blades before use



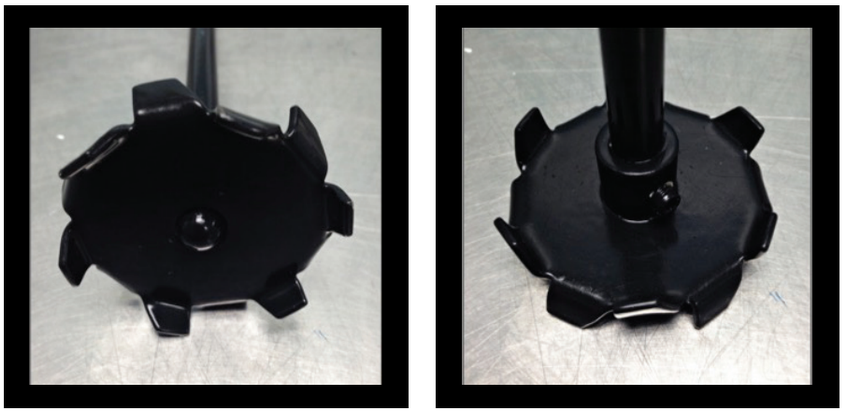
Uncoated mixing blades after use

Solution

Chemours examined the problems around polyurethane mixing and came up with a solution that addresses all problems. The chrome mixing blades were coated with a performance specific finish. From January of 2016 to May of 2017, the coated mixing blades have been in service and data collection on their performance has been positive across the board. Cured urethane peels off the coated mixing blade. They can be rinsed with a solvent, saving time and money. This coating system has demonstrated itself to be resistant to all types of solvents including methylene chloride, naphtha, and acetone.



Coated mixing blades before use



Coated mixing blades wiped with acetone after use

Results

Chemours' coated mixing blades have been used regularly. As of August 2017, a coated mixing blade has been used on over 100 mixes and is still performing perfectly. They have done as much as 13 mixes in a single day, an exceptional amount of exposure in a 24-hour period. Blades are cleaned after each mix by dipping into a plastic beaker of metheylene chloride and wiped with paper towels. The solvent does not affect the release properties of the coating. Dried urethane is picked off coated mixing blades. Wiping with an acetone solvent completely restores the coated finish. Blades will stand up to more mixing without requiring blast cleaning or becoming completely useless and requiring replacement. Productivity goes up; waste and cost have gone down.

Intech Services | 211 Lake Drive, Suite J | Newark, DE 19702
302-366-8530 | www.intechservices.com