

**EXCELLENT  
IN ACTION.**  
ELEVATING OUR GAME



**An Approach to Alternative Adhesives**  
Greg Montello, Product Chemistry Manager

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**History of adhesive alternatives**

In 1995, New Balance began moving away from using solvent-based adhesives to attach uppers, soles, linings and other components during production with the introduction of reactive hot-melt systems.



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**History of adhesive alternatives**

- Use of alternatives required extensive testing and, in some cases, redesigns to improve manufacturing efficiencies and meet product performance objectives.
- In our U.S. factories, we have virtually eliminated conventional solvent use in compliance with air quality regulations limiting VOCs and with OSHA exposure standards.



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### History of adhesive alternatives

- Outside the U.S., we are transitioning away from solvent-based adhesives, transferring our experience with hot-melt systems in our domestic factories to our contract manufacturers, and encouraging the use of water-based adhesives.



LET'S MAKE EXCELLENT HAPPEN

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### Adhesives In Manufacturing

Adhesives have replaced most means of mechanical fastening in athletic shoes because they provide:

- great latitude in design,
- are durable under a variety of environmental conditions,
- and maintain integrity throughout numerous repetitions of multiple stresses (bending, flexing, compressing, etc.).

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### Adhesives In Manufacturing

They are also useful for a wide variety of shoe materials, including leather, rubber, synthetic and bio-based textiles, synthetic leather (polyester with a polyurethane coating), and polyurethane and EVA foams.



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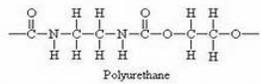
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### Adhesives In Manufacturing

A polymer (usually either polyurethane or polychloroprene, also known as neoprene) is dissolved in a solvent (e.g., methyl ethyl ketone), which can then be brushed on the materials to be joined.



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### Adhesives In Manufacturing

- The solvent evaporates as it is a volatile compound, and the two surfaces are joined (sometimes with heat) to create a high-strength bond.
- Unless controlled, the volatile solvents are a hazard in the workplace and to the environment.
- Solvents may also be used as cleaners, in primers to facilitate better bonding, and in hardeners for adhesives.



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### Adhesives In Manufacturing

- New Balance has been actively working towards alternatives such as water-based and hotmelt adhesives in a move to minimize any potential impact to the environment and workers.



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### Adhesives In Manufacturing

- Water-based and HMMC (hot-melt moisture cure) cements have other advantages for quality and process ease.



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### Adhesives In Manufacturing

- Unlike water-based or solvent-based adhesives, hot melt adhesives do not require drying. Hot melts begin bonding almost immediately after application, as they cool down to their solidification point. This fast solidification is ideal for use on manufacturing lines – sole adhesion requires rapid bond formation.



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### Adhesives In Manufacturing

- As contract manufacturers learn how to use alternative adhesives, NB is changing our specifications to mandate the use of these alternatives, tracking shipments of alternative and solvent-based adhesives from chemical suppliers to our contract manufacturers, and matching these shipments against the expected ratio of water-based/hot-melt systems to solvent-based adhesives given the types of products that we order with our contract factories.



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### Adhesives In Manufacturing

<http://www.youtube.com/watch?v=OmZCovkbpAY&NR=1&feature=endscreen>



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### Restricted Substance Program

Introduced into the NB Supplier Evaluation Criteria in 2006

Objective:

- Minimize the amount of hazardous substances in products that affect the:
  - Production Worker
  - Consumer
  - Environment
- Prohibit or restrict the use of substances in the RSL Manual
- Encourage NB Suppliers to take a proactive approach to RSL management
- Protect the brand
- Partner with Suppliers who are **willing** and **able** to consistently meet RSL requirements
- [www.newbalance.com/restrictedsubstanceprogram](http://www.newbalance.com/restrictedsubstanceprogram)



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### Introduction to the AFIRM Supplier Toolkit



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### Who is AFIRM?

- Apparel & Footwear International RSL Management Group
- Established in July 2004
- AFIRM Mission: To reduce the use and impact of harmful substances in the apparel and footwear supply chain



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### Current Members

- adidas-Group
- BESTSELLER
- Carhartt
- ESPRIT
- Gap, Inc.
- Gymboree
- H&M
- Hugo Boss
- J.CREW
- Levi Strauss & Co.
- New Balance
- Nike
- Pentland
- PUMA
- s.Oliver
- Warnaco
- Wolverine World Wide
- VF Corporation



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### What Exactly is the Toolkit?



- Collection of resources to help the global apparel/footwear supply chain understand and reduce the use and impact of harmful substances



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### AFIRM Toolkit History

- First version published October 2008
- Supplier Feedback:
  - Seemed geared toward brands
  - More technical information and examples requested
  - Request for AFIRM combined RSL to meet all brand requirements



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### New 2011 AFIRM Supplier Toolkit

- Published November 2011
- Responds to Supplier Feedback
  - Geared toward suppliers
  - More detailed information on more chemicals
  - Improved formatting and internal links
- Available in Chinese & Vietnamese
  - More languages planned in 2013



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### New 2011 AFIRM Supplier Toolkit

- Key Additions
  - RSL Failures with corrective action examples in simple format
  - Detailed Chemical Guidance Document with full Index
- **Resources available for all levels of technical expertise**



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