



ALEXIUM

# May 2019 Investor Roadshow

Dr Bob Brookins, CEO

Jason Lewis, CFO



# Investment Proposition

## Substantial growth opportunities in large specialty chemicals markets

- Target flame retardant (FR) markets worth USD 860 million per annum<sup>1</sup>
- Target phase change material (PCM) markets worth USD 60 million per annum<sup>2</sup>

## IP-driven technology to address specific market needs

- Targeting high margin verticals with solutions built for customers
- Platform technologies enable growth across a broad range of applications and markets

## Scalable business model facilitating growth

- Product manufacturing is outsourced to enable a flexible production capability and supply chain
- Minimal change in overhead is needed to support the Company's growth

## Experienced Board and Executive team with deep specialty chemicals commercialization experience

1. Source: Markets and Markets' Report on the Flame Retardant Market: Trends & Forecasts to 2019  
2. Source: Global Advanced Phase Change Material (PCM) Market Analysis & Trends (Industry Forecast to 2025) Accuray Research

# Market Applications of Alexium Technology



	Product Line	Value Proposition	Applicable Markets
	<b>Alexiflam® FR</b>	Patented flame retardant providing a durable finish with a soft fabric hand for synthetic-rich fabrics	Apparel, mattress
	<b>Alexiflam® NF</b>	Patent pending product providing exceptional flame retardation with durable finish for cotton and cotton-blends	Apparel, mattress, wood

	Product Line	Value Proposition	Applicable Markets
	<b>Alexicool® AL</b> <b>Alexicool® AC</b>	High cooling capacity with soft fabric hand for textiles	Mattress, top of bed, apparel
	<b>Alexicool® FM</b>	High cooling capacity with extended cooling for foam products	Mattress, top of bed, transportation



# Alexiflam<sup>®</sup> FR

Application to nylon/cotton (NyCo) for military uniforms



## Key Alexiflam<sup>®</sup> FR benefits



Effective FR performance on 50/50 NyCo



Patented chemistry developed by Alexium



Production viable FR NyCo has been a market gap for decades



Successes in FR NyCo are a paradigm shift in the market

## General Description of Military Evaluation

Review Data Relative to Target Specifications

Wear Trial for Field Evaluation

Evaluation of Wear Trial Data

# Alexiflam® FR

## Market opportunities in military uniforms



	FR-ACU Program Opportunity	General ACU Program Opportunity
<b>Segment of Military</b>	High-risk personnel (e.g., Special Ops)	All branches
<b>Approximate Number of Personnel</b>	~130K <sup>1</sup>	~2.2M <sup>2</sup>
<b>Estimated pounds of fabric (p.a.)</b>	2.1M	35.2M
<b>Key FR Requirements</b>	Pyroman	General FR
<b>Motivation for Adoption by the Military</b>	Seeking a next-generation fabric that address critical flaws of the incumbent	Call to industry to provide basic flame retardant protection for all military personnel
<b>Current Status</b>	Recently passed Pyroman® testing and now completing data package for final evaluation	Development agreement signed with Pine Belt Processing. Finalizing production process with Pine Belt
<b>Next Steps</b>	Complete data package in preparation for specifications review	Provide FR-treated uniforms for Limited User Evaluation (i.e., wear trial)

<sup>1</sup> Based on US Special Forces. <sup>2</sup> Based on size of US military

# Alexiflam<sup>®</sup> NF

## Flame-treatment for cotton-rich materials

Alexium recognized that established FR cotton technologies are simply too complicated and require too much nuance.

***Alexiflam<sup>®</sup> NF was developed to address this gap with a disruptive technology.***

### Benefits of Alexiflam<sup>®</sup> NF

- ✓ Simplified process
- ✓ Durable finish (50+ laundering cycles)
- ✓ Effective flame retardancy
- ✓ Essentially formaldehyde free
- ✓ Environmentally friendly process
- ✓ Enable new product applications/markets



# Alexiflam® NF

## Key market opportunities



### FR workwear & FR uniforms



- **Market:** apparel
- **Value of Alexiflam® NF:** Enable new fabric compositions and designs
- **Global Market Size (FR Basis):** >\$100M
- **April 2019: MOU signed with ICL for global distribution**
  - Alexium retaining rights to sell into defined markets currently under development by Alexium
  - ICL to be granted sole global marketing and sales rights, the terms of which are subject to the final agreement



### FR sock for bedding



- **Market:** foam mattress
- **Value of Alexiflam® NF:** Potential reduced cost of mattress sock by ~50% relative to market standard
- **Global Market Size (FR Basis):** ~\$10M

### FR treatment for fleece



- **Market:** apparel
- **Value of Alexiflam® NF:** Environmentally friendly solution to microparticle release from current standard
- **Global Market Size (FR Basis):** >\$100M

# Alexicool® Technology

## Phase-Change Material (PCM) products for thermal regulation



### Key Achievements

- Q3 FY2019: Supply agreement signed with a multibillion-dollar North American mattress manufacturer
  - Preferred supplier of PCM products for textile applications to bedding products
- Development of analytical method for assessing cooling effects of PCM on textiles
- Expansion of Alexicool® products into broad range of mattress components
- Expansion of Alexicool® products into higher volume mattress tiers
- Launched new Alexicool® product AC
- **Launching a wide range of new mattress products in CY 2019**
- **Further contracts expected following increased brand recognition**

### Platforms for Growth and Achieving Profitability

#### Customer Engagement

- Joint developments with customer for commercialization efforts
- Growing customer base across diverse market segments

#### Product Development

- Proprietary products for market differentiation
- Fifteen commercial products as at Q3 2019

#### Production & Supply Chain Knowledge

- Facile commercialization of PCM-product scale

#### Thermal Measurement Tools

- Seven analytical tools to guide product design & quality control



# Alexicool® Technology

## Next steps and future targets



### Lead with Innovation and Analytical Rigor

R&D goals are driven by customer engagement

R&D pipeline to enable multiple generations of product innovations

Product innovations have been prototyped to drive 3+ years of customer products



### Further Expansion in Mattress and Top-of-Bed Products

Work with customers to drive market expansion through innovations in...

- Enhanced cooling
- Cost-effectiveness
- Environmentally friendly



### Translate Successes in Mattress Industry to Other Markets

While current focus is on mattress and top-of-bed markets, IP and technical know-how has clear translations to other markets

- Apparel
- Transportation

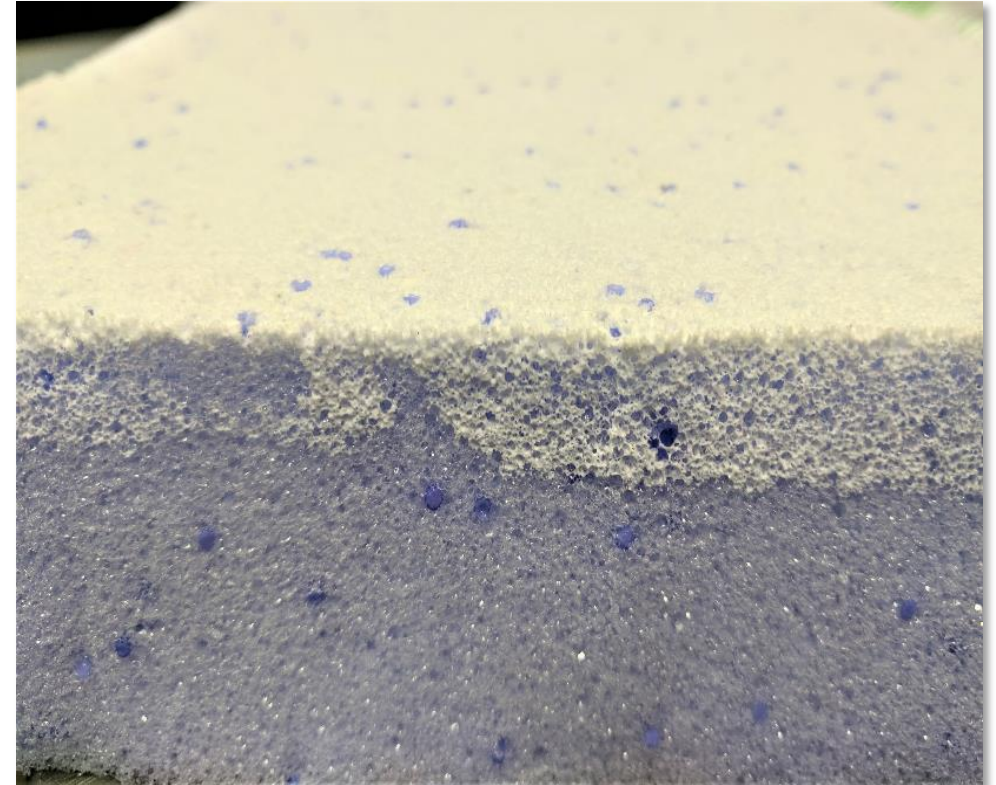
# Alexicool® FM

The application of Alexicool technology to foam based bedding

Alexium launched a new Alexicool® FM product line in calendar Quarter 1, 2019

## Why focus on Alexicool® FM?

- ✓ Identical market gaps in the foam market as textile
- ✓ PCM applications to foam are the largest market share of PCM applications in mattress and top-of-bed markets
- ✓ Leverage existing customers in these markets



# Alexicool® FM

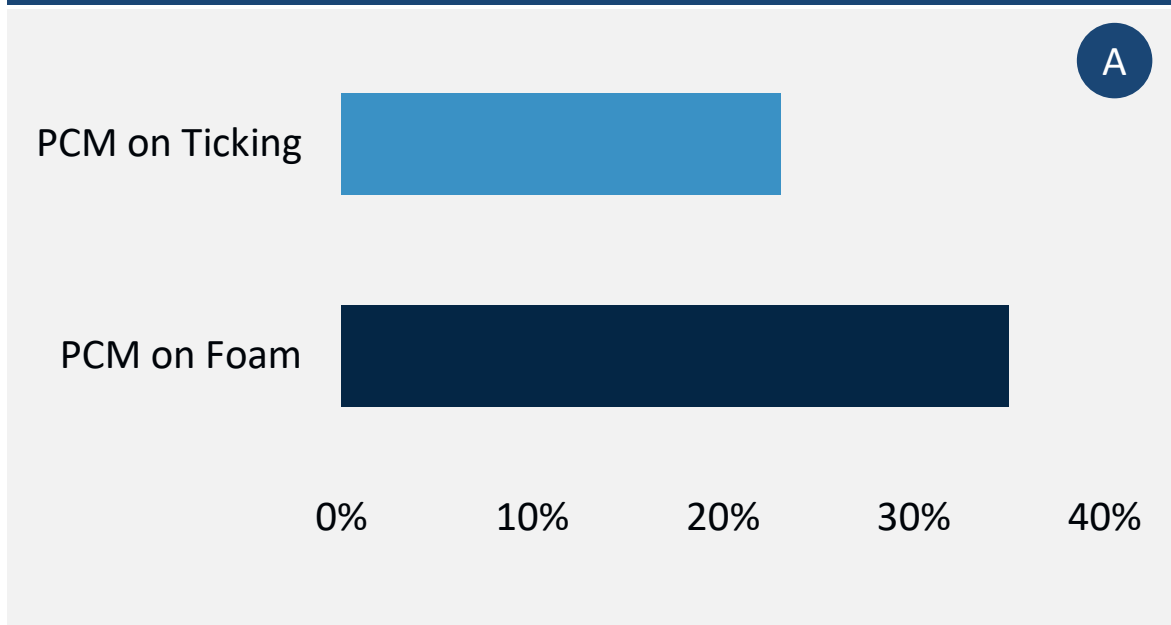
## Market opportunity



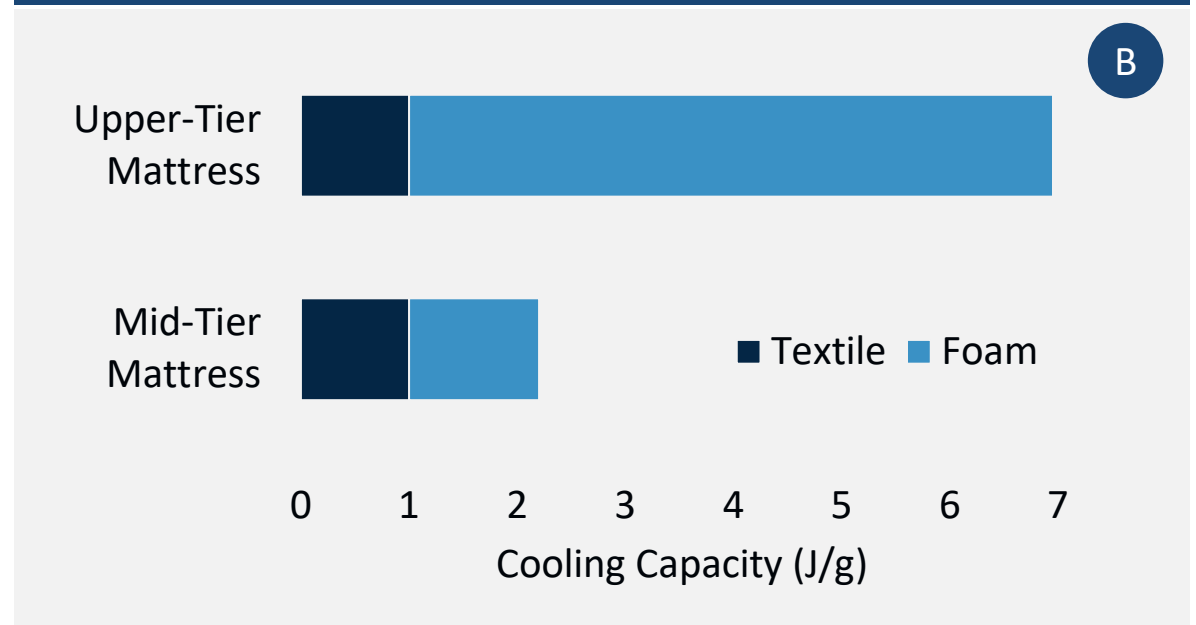
**Our analysis has shown that the market size for PCM on foam is significantly larger than PCM on ticking:**

- A** PCM on foam is in 50+% more mattresses than PCM on ticking
- B** Significantly greater quantities of PCM are applied to foam

**% of premium mattresses with PCM-treated components**



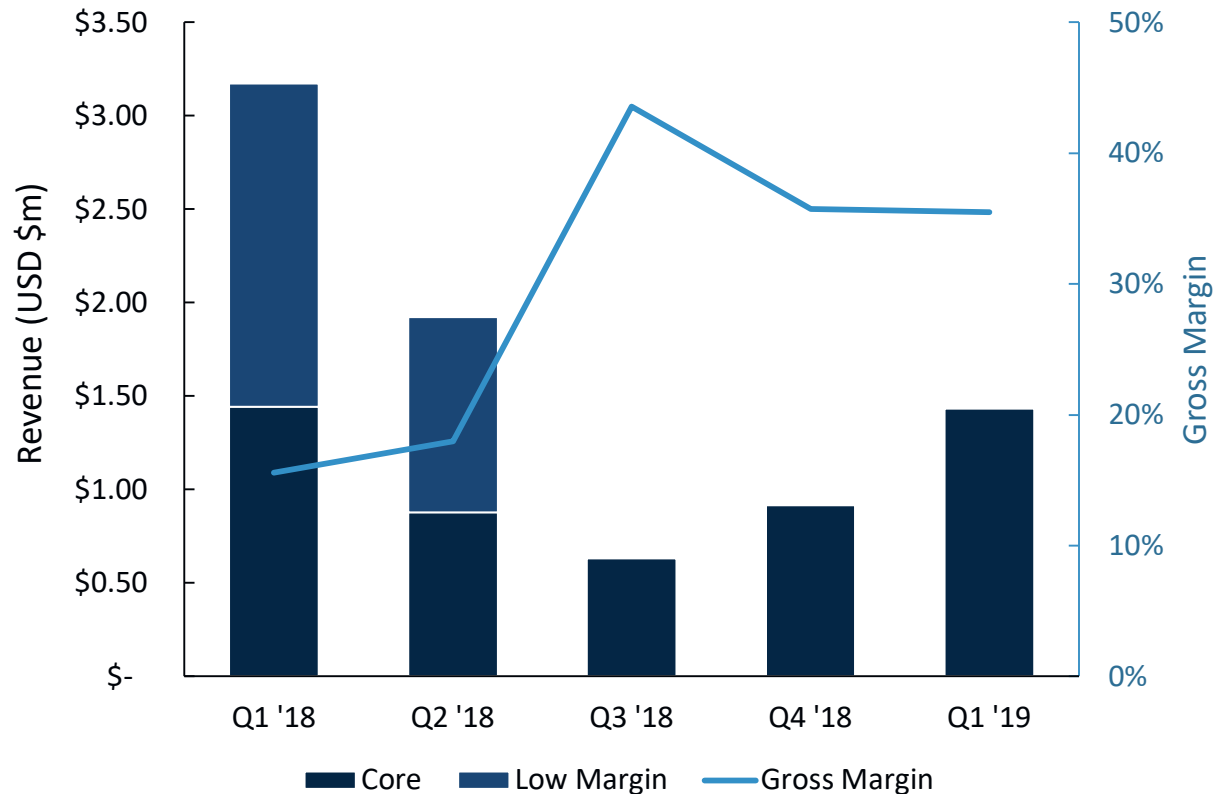
**Relative Amount of PCM on Bedding Components**



# Revenue and Gross Margin Trend

Driving growth from core business, sustainable margin increase

Revenue and Gross Margin



## Focusing on core Competencies showing results

- Completed removal of low margin sales in H2
- Shipments to PCM customers continues to rise each quarter with new product introduction
  - Creating partnerships with large industry players
  - Signed MoU with **ICL** – giving ICL global marketing and sales rights for Alexiflam NF
  - Signed Development Agreement with **Pine Belt Processing** – to use Alexium’s flame-retardant chemistry on US military uniforms
  - Signed Supply Agreement with **North American mattress manufacturer** to use Alexium’s PCM technology on its products
- Evaluating multiple commercialization strategies

# Alexium's Strategic Priorities to Drive Profitability





# Outlook



Alexium has recently signed development and distribution deals across key product categories and is well positioned to scale growth via additional partnerships with industry leaders



**Profitability:** Alexium anticipates reaching positive monthly EBITDA on an ongoing basis by the fourth quarter of this calendar year



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Appendix



# Company Overview



## Who We Are

- Alexium International is a **speciality chemicals innovator** headquartered in Greer, South Carolina, USA
- **Cost effective, patented products** for both textile and non-textile markets
- Focus on **high-performance, environmentally friendly, non-hazardous Flame Retardants (FR) and Phase Change Materials (PCM)**
- **High-Touch customer relationships** with customer industry experienced salesforce
- **De-risking commercialization** by scaling growth with distribution partners in global markets
- Global chemical markets for FR and PCM total **US\$9.0B** and **US\$1.1B per year** respectively

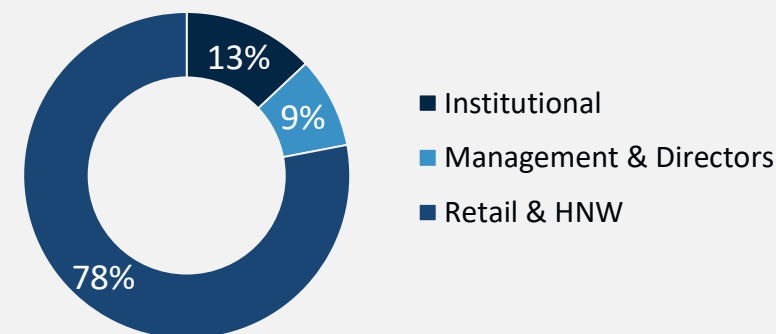
## Board of Directors

<b>Bob Brookins</b>	Managing Director & CEO
<b>Rosheen Garnon</b>	Non-Executive Chairman
<b>Stephen Cheney</b>	Non-Executive Director
<b>Claire Poll</b>	Non-Executive Director

## Capital Structure<sup>1</sup>

<b>ASX Code</b>	AJX
<b>Current Share Price</b>	\$0.15
• <b>52 Week High</b>	\$0.20
• <b>52 Week Low</b>	\$0.10
<b>Shares on Issue</b>	~345m
<b>Market Capitalization</b>	~\$50m

## Investor Mix<sup>2</sup>



<sup>1</sup> Source: IRESS as at 16 April 2019. <sup>2</sup> As at 10 January 2019

# Executive Management



## Robert Brookins – Chief Executive Officer and Managing Director

Robert (Bob) Brookins, Ph.D., M.A.E. B.A. B.Sc. is the Chief Executive Officer. Dr. Brookins has experience in organic synthesis, materials chemistry, and chem/bio decontamination. He received his Ph.D. from the University of Florida in the areas of synthesis and characterization of conjugated poly-electrolytes and polymers with an emphasis on developing new polymerization methods. Upon completion of his Ph.D., he worked at the US Air Force Research Laboratory at Tyndall AFB, FL where he developed decontamination methods for chemical and biological threats and developed novel synthetic routes for reactive and functional surfaces.

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## Jason Lewis – Chief Financial Officer

Over the past 22 years, Jason Lewis has worked with ArrMaz, a global specialty chemical company in mining, fertilizer, phosphate, asphalt and oil and gas industries. For the past six years, Lewis has held the position of Vice President of Finance. He joined the company in a senior accounting role with cross-departmental work for sales, marketing and operations groups for seven years. Lewis has a strong track record of value creation by way of revenue growth through pricing, long-term customer contracts, cost optimization through analysis tools, negotiation of services, department restructuring, debt management and working capital reduction through controls and process improvements. He also has strong international experience including greenfield start-ups.

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## Allen Reihman – Chief Commercial Officer

Prior to joining Alexium, Allen Reihman worked for nine years at Invista, the world's largest integrated fiber, resin, and intermediates company. As Director of New Business Development, Reihman was the entrepreneur for the successful commercialization of new specialty polymers. He led all phases of this innovation program, including product development, manufacturing, intellectual property, pricing strategies, branding, business planning, and strategic alliances. Additionally, Reihman served as Director of Commercial Development for five global specialty chemical businesses at Invista where he led growth initiatives, valuation and decision analysis, market research, and strategy development. Previously, Reihman worked for seven years at Eastman Chemical where he held a range of commercial leadership roles in corporate development, global P&L general management, innovation, and market development.

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# Alexiflam® NF

## Application to fleece garments

**Due to high surface area of fleece fabrics, combustion due to “surface flash” is a critical concern; for flame retardant effects, synthetic fleece made from polyester is widely used**

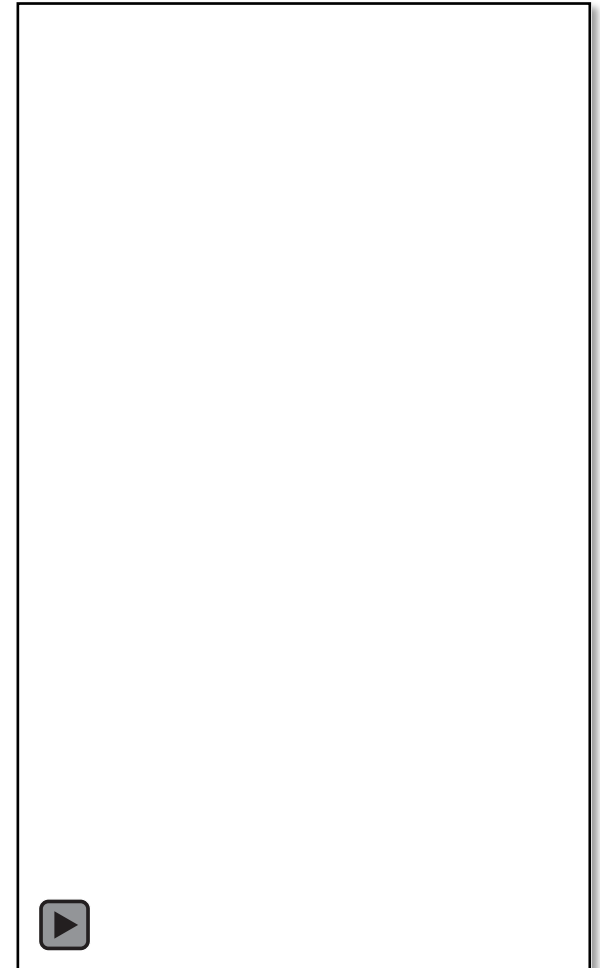
- Environmentalists have established that a single polyester-based fleece jacket sheds as many as 250,000 synthetic fibers when laundered
- Released fibers persist in the environment and transport toxic organic chemicals into the environment

***Alexiflam® NF is an excellent option for passing this standard***

- Effective application without wash step
- Durable treatment
- **Effective at 1+% add on**

Due to the high surface area of a cotton-fleece nap, the fabric will burn with a “surface flash” when exposed to an ignition source for even short periods of time (1+ seconds). *This flammability of raised-surface apparel is tested according to 16 CFR Part 1610.*

**Established FR cotton technologies have not been successful in this application.**





# Alexicool® Technology

## Customer relationship/education



### Identifying key decision makers and influencers and creating offerings to drive customer confidence and loyalty

✓ New branding and logo, establishing our Alexicool® technology identity in the bedding marketplace

✓ A microsite, better thought of as a “digital introduction” to the product line and its various applications for bedding and multiple components of foam and hybrid mattresses

✓ Digital, interactive presentation, presenting an “app-like experience” to enhance the customer-to-BDE experience, a virtual tour of both a foam and hybrid mattress shows off our capabilities and application possibilities





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