Flame Retardant Specialty Chemicals & Reactive Surface Treatment Technology
Company Overview

- Alexium International is a speciality chemicals developer based in Greer, South Carolina, USA, with its headquarters in Perth
- Listed on the ASX (ASX: AJX), US (OTC QX: AXXIY) & Frankfurt stock exchange (E7T.F)
- Development of flame retardant (FR) chemicals in 2011 – a specialty chemicals company
- Focused on **novel, safe and environmentally friendly** FR formulations
- Halogen-free solutions – offering **cost and performance advantages**
- Growing FR sales in commercial and defense sectors
- Operating in a **US$7Bn** market which has a forecasted compound annual growth rate of ~5.7% until 2019
- Winner of the WBT 2009 “**World Best Technology**” Award for our Reactive Surface Treatment (“RST”), a **unique patented award winning technology** that can change the surface properties and performance of many every day materials
- RST applications include adding functions to heat sensitive materials and chem/bio protection
Corporate Overview

Key Statistics (29 May 2015)

- **ASX Code**: AJX
- **Closing Share Price**: AU$0.64
- **52 Week High**: AU$0.83
- **52 Week Low**: AU$0.12
- **Shares on Issue**: ~261m
- **Market Capitalisation (undiluted)**: ~$169.65m
- **Cash (May 2015)**: ~$12m
- **Cash Burn per month**: ~$250k

### Shareholder Structure

- **64%**: Directors, Management & Founders
- **20%**: Institutions (International & Domestic)
- **16%**: HNW & Retail

### 12-month Share Price Performance

[Graph showing share price performance]
Fire Retardant Market

Key Stats

- 40 million tonnes of FR chemicals sold annually with an estimated market value of $7 billion in 2014
- Expected compound annual growth rate (CAGR) of 5.7%, rising to $10 billion by 2019
- Organophosphorus flame retardants have the highest rate of annual growth of 7.5%
- Europe and North America account for 46.7% of the world’s FR chemical consumption
- FR used in textiles, flooring and furnishings, automotive, transportation, building and construction, electronics, wires and cables industries
- Flooring and furnishings and textiles currently serviced by Alexium are worth $2.5 billion growing to $3.4 billion in 2019 worldwide

Market Drivers

- Increasing amounts of goods being manufactured require FR treatments
- Stringent fire safety regulations causing companies to look for more effective performance in FR
- Increased focus on environmentally friendly solutions
- Evidence of toxicity and bio accumulation in halogenated compounds and carcinogens
- New legislation in Europe & USA restricting/eliminating the use of several brominated/halogenated compounds
- Asia represents an equally large opportunity as import bans are placed on incumbent products

Alexium's Compelling Advantage

Meets textile industry’s and regulators’ urgent demand for “green” FR chemistry that passes new strict environmental regulations.

Award Winning Technology (WBT 2009, Frost & Sullivan Award, TechConnect Innovation Award)

Cost and performance advantage over existing textile solutions

Lightweight, durable and can be laundered

Major focus on sales - expanding sales on Alexiflam™, Alexiflam-NF™, Alexiflam-SYN™ and Custom FR blends for fabrics

Alexium is shifting emphasis on sales/product/customer/logistics support, but is also quickly maturing new products from a healthy product pipeline

Validation by strong and growing DoD relationship + commercial pipeline

Alexium has routinely shown itself to be unequalled in the marketplace
Technology Leading to Product Launches

- Expanding Patent Portfolio
- Novel Eco-Friendly Chemistry
- Clear Market Demand (Military/Commercial)
- Alexium Product Launches
- Clearly Differentiated Technology
- Commercial Partnerships
- Exceptional Value Proposition

Product Brands:
- CLEANSHELL®
- CLEANSHELL® CB
- ALEXIFLAM®
- NYCOLON®
- NUVALON®
- ASCALON®
- OMNITRON®
- BACTRON®
Product Applications

**Alexiflam™**
- Polyester, cotton, nylon
- High synthetic content
- Global market: +1 billion yards

**Alexiflam-NF ™**
- Wool blends & high natural fiber blends
- Global market: +10 million yards

**Alexiflam-SYN™**
- 100% nylon, 100% polyester, 100% acrylic
- Multi-million yard global market
Currently engaged with +20 customers in pre-production, production & scale-up

Potential 2015 revenue from current customers more than US$10m

2015 Snapshot

Defense Sector
- Successfully downslected for the Natick Green Initiative, additional grant funding expected 2Q 2015
- Working directly with major prime contractor to the U.S. Army to develop and launch next-generation FR Army Combat Uniform (FRACU)

US Transportation Sector
- Produced samples for a total of 6 clients which pass all FR specifications
- Proceeded to full-scale commercial trials for 5 of those clients
- Revenue generation already commenced for 1 of the clients

US Home Furnishings Sector
- Produced samples for 8 clients
- Proceeded to full-scale commercial trials for 6 of those clients
- Revenue generation commenced for 1 of client

US Outdoor Fabrics Sector
- Produced samples for two of the largest suppliers to this market
- Developed sales and marketing agreement with one of those customers
- Substantial progress made in establishing manufacturing and supply-chain presence in Asia

Alexium will provide further information regarding revenue potential, specifically related to the European transportation and US defense sectors, as it becomes available.
New Contracts and Sales Snapshot

These industries have been searching for eco-friendly flame retardant solutions now that halogenated chemistries are being withdrawn from the market.

- Initial revenues for trial production runs have been received from three of these customers.
- Other environmentally-friendly FR treatments do not offer the durability of Alexium’s treatments.

Engaged with 6 customers in the bedding industry.

These opportunities represent a total potential annual sales volume of US$14 Million with scope to expand.

- Initial revenues for trial production runs received from 3 customers.
- 1 customer has led to reoccurring revenue to fulfill customer orders – announced annual indicative revenue $1-$1.5m.
- Another customer recently requested a large-scale trial run prior to a full commercial launch. Once results of the trial confirmed, account expected to generate $3 to $10M annually in revenues to Alexium.
- The value proposition of this fabric is that this a non-leeching, non-migrating formulation that passes the tough California TB 117-2013.

Engaged with 5 customers in the decorative fabrics for upholstered furniture.

These opportunities represent a total potential annual sales volume of US$10 Million with scope to expand.
New Contracts and Sales Snapshot

Engaged with 8 customers in the transportation upholstery market.

- Initial revenues for trial production runs has been received from four of these customers
- These customers cover multiple submarkets of the transportation industry: public transportation fabrics, automotive bodycloth, and airplane fabrics

These opportunities represent a total potential annual sales volume of **US$10 Million**, with scope to expand

Engaged with 1 customer in the European luxury transportation market

- Received purchase order from a new client – immediately begin working with this client to scale-up our chemistries for a commercial production trial
- Customer is a manufacturer of high quality textiles for the European luxury automotive sector and has demonstrated commitment to environmentally friendly solutions for its products

This opportunity represent a total potential annual sales volume of **US$10 – US$15 Million**
Sales & Distribution Partnership - iTextiles

- Sales and Marketing Agreement signed for FR chemistries in Europe and Asia
- Two senior sales executive appointed to service a potential six additional European clients in the near term
- Roll-out accelerated in order to meet customer demand due to successful marketing initiatives at TechTextil in Frankfurt.
- Initial sales opportunities in the automotive, work-wear and military fabrics sectors with 15 – 20 Million dollars revenue anticipated within the first 12-18 months
Distributors:
• Essex/EuroFlam – U.K. based FR commission finisher specializing in home textiles, furnishings, and institutional/contract fabrics; customer and commercial partner for Alexium’s FR products in the U.K.

Toll Manufacturers:
• Marlin – toll chemical manufacturer for production of Nycolon™, Nuvalon™, and Polytron™
• InChem – toll chemical manufacturer of Ascalon™

Alexium is currently negotiating a one-year exclusive license for its Alexiflam TM
A Growing Intellectual Property Portfolio

- Over 20 patents in 9 different countries
- 3 Patent applications regarding FR Chemical treatments, and flame retardant emulsions
- Overlapping and complimentary patent library – constant effort put into expanding the company’s lock on relevant IP
- Trade secrets
- Trademarks & branding
New Grants and Collaborations

Alexium and ICL to co-develop flame retardant chemicals and treatment packages.

- $250,000 grant from the South Carolina/Israel Collaborative Industry R&D Program
- Bi-national initiative for industrial R&D projects between companies from South Carolina and Israel
- ICL is a leading global fertilizer and specialty chemicals company, the world’s leading producer of elemental bromine and a major player in the FR industry
- ICL is majority owned by Israel Corp, one of Israel's largest holding companies and one of the top ten companies listed on the Tel Aviv Stock Exchange (TASE: ILCO)
- ICL: 12,000 employees worldwide, 2012 sales US$6.5 billion, over 70% of its consolidated revenues derived from worldwide operations

Shows further validation of Alexium’s novel treatments and provides global partner to accelerate sales in new geographic locations.
Government Support

Working with Natick Soldier Research, Development and Engineering Center on treating military uniforms.

- Received $50,000 grant to develop durable, eco-friendly Fire Retardant Army Combat Uniform (FRACU) for Natick
- Natick have requested new samples for vest and uniform fabrics, which we are currently developing.

Visits from Senator Lindsey Graham (South Carolina) and Congressman Gowdy (South Carolina).

- Senator Graham sits on the Budget Committee and the Committee on Armed Services
- Congressman Gowdy sits on the Oversight and Government Reform committee, and on the National Security subcommittee

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Regulatory Relationships

Awareness of our products and capabilities demonstrated with key US Federal Government Agencies in Washington, D.C.
Board of Directors

**Gavin Rezos – Executive Chairman**
- Extensive international investment banking experience
- Held CEO positions in companies in Australia, the UK, US & Singapore
- Non Executive Director of Iluka Resources

**Nick Clark – CEO & Executive Director**
- Degree in Economics and Law with a postgraduate MBA and PhD in Management
- Qualified Lawyer in NSW and with the NY State Bar Assoc. CPA with AICPA
- Over 8 years of board level experience and representation

**Craig Smith Gander – Non Executive Director and Remuneration Committee**
- Graduate Royal Military College Duntroon, 10 years military service
- Former Director Investor Banking CIBC World Markets
- Experienced company director, entrepreneur

**Craig Metz – Non Executive Director and Remuneration Committee**
- Partner at Nelson, Mullins, Riley and Scarborough LLP with over 20 years experience in legislative and regulatory affairs
- Served as Chief of Staff to the late Congressman Floyd Spence (R-SC)
- Held staff positions in the United States Senate and House of Representatives
- Appointed to senior positions in the Executive Branch of the Federal Government

**Brigadier General Stephen Cheney – Non-Executive Director and Remuneration Committee**
- Former Inspector General of the Marine Corps and Commanding General of Parris Island Marine Base
- Former Deputy Executive Secretary to U.S. Defense Secretary Dick Cheney under President George H.W. Bush
- Sits on Secretary of State John Kerry’s Foreign Affairs Policy Board
Senior Management Team

**Nick Clark – Chief Executive Officer**
- Degree in Economics and Law with a postgraduate MBA
- Qualified Lawyer in NSW and with the NY State Bar Assoc. CPA with AICPA
- Long history in M&A, global stock markets and public company financings
- Over 15 years experience in Senior and Executive management

**Dr. Dirk van Hyning – President**
- Dr. Hyning received his PhD in Chemical Engineering from the University of Illinois
- Over 14 years of experience in product development, production, and commercial roll-out

**Dr. Bob Brookins – Vice President of Research & Development**
- Dr. Brookins received his PhD in Chemistry from the University of Florida
- Background in organic synthesis, materials chemistry and chemical and biological defense

**Jon Heard – Vice President Sales**
- 25+ years experience in the textile and home furnishing sector
- Vast experience in leading and developing sales teams
- Vast network of contacts at the executive level with companies in the home furnishing/mattresses industry

**Aaron Krech – Vice President of Corporate Services**
- Business degree from the Darla Moore School of Business at the University of South Carolina
- Previous experience in corporate treasury analysis and risk management at Blue Cross and Blue Shield
Alexium Locations

Corporate Office:
148 Milestone Way
Greenville, SC

Production Facility:
8 Distribution Court
Greer, SC
Appendix
Growth from FR Chemicals Business

Tropical FR Treatments
- Nylon Fabrics
- Nylon Fabric Blends
- Polyester Fabric Blends
- Custom Blends

FR Additives
- Polymer Additives
- Paint

Surface Treatments
- Repellency Treatments

Microwave Processing
- Defense (CB)
- Heat Sensitive Materials
- Paint

Growth

Microwave Products (RST)
Chemical & Biological Repellency (Military):
- Cleanshell® CB chemistries designed to offer enhanced CWA protection.
- Demonstrated more than 25X repellency improvement on Chemical Warfare Agent (CWA) simulants versus traditional fluorocarbon treatments.
- Independent testing by US Air Force certified laboratory confirmed increased protection to CB live agent; > 1000X slower penetration of chemical warfare agent.

Repellency Treatments:
- Demonstrated Cleanshell® C6 repellency treatment as viable alternative to conventional C8 chemistry (being phased out as environmental regulations tighten);
- Niche applications; Repellency markets are generally a commodity business & entrenched.

Microwave Processing / Shrink Wrap Coatings:
- Functionalizing difficult to treat (inert) materials, such as UHMWPE;
- Functionalizing heat sensitive fibers/materials;
- Microwave heat curing (rubber-based materials).
Alexiflam™
FR Chemicals for Polyester, Cotton and Nylon

Topical FR Treatment of 100% Polyester, 100% Cotton, Poly-Cotton Blends and Nylon Blends

Used in bedding, upholstery and decorative fabrics applications

Contract applications as well: hospitality, hospitals, etc.

- Global market represents over 1 billion yards of fabric per year

Pad or backcoating application

Polyester is the most-used synthetic fiber in the world
Alexiflam™ for High Synthetic Content

Topical FR Treatment of Nylon Blends

• Target Markets:
  • Standard military uniforms (est. >25Mil yards/yr. – U.S. DoD)
  • Industrial workwear applications (est. >25Mil yards/yr.)
• Competes with high-cost aramid-blends
• Strong interest from textile and chemical industry
Alexiflam-NF™

Topical FR Treatment of Wool Blends and Natural Fiber Blends

- Effective on high natural fibers, including wool and cotton
- Strong interest from transportation industry
- Can also be used in contract fabrics and upholstery applications
- Flame retardant wool industry represents more than ten million yards of fabric per year
- Low weight add-on maintains inherent fabric properties while providing flammability protection
- Non-leaching, non-migrating, wash durable (up to 15 cleaning cycles)
Alexiflam-SYN™ for High Synthetic Content

100% Acrylic
- Outdoor fabrics market – awnings, tents, marine fabrics
- Multi-million yard, global market

100% Polyester
- Suitable for many applications: furnishings, upholstery, curtains and contract fabrics
- Treatment reduces fabric costs (by treating conventional polyester fibers)
  - Competes with fabrics made of FR polyester fibers, such as Trevira®
- Multi-million yard, global market
Custom Blends – FR Package

Topical FR Treatments – Customized

• No Wash-off, Semi-durable Treatment on Fabric Blends for Furniture and Upholstery Applications
• Padded and back-coated furnishings, fabrics and technical textiles
  • Additive to Existing Back-coating Products
  • Stand-alone Back-coating Chemistry
  • Products Launching and Pricing Being Established
Flame Retardant Specialty Chemicals & Reactive Surface Treatment Technology

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