



**Magnesium Elektron**

SERVICE & INNOVATION IN MAGNESIUM



## **Magnesium in Aircraft Seats SAE Update**

### **International Aircraft Materials Fire Test Working Group**

February 2015 Meeting  
Huntington Beach, CA

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Paul Lyon – Programmes Technology Manager



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# Forward-Looking Statements

This presentation contains forward-looking statements. Examples of such forward-looking statements include, but are not limited to: (i) statements regarding Luxfer Group's results of operations and financial condition, (ii) statements of plans, objectives or goals of the Group or its management, including those related to financing, products or services, (iii) statements of future economic performance and (iv) statements of assumptions underlying such statements. Words such as "believes", "anticipates", "expects", "intends", "forecasts" and "plans" and similar expressions are intended to identify forward-looking statements but are not the exclusive means of identifying such statements. By their very nature, forward-looking statements involve inherent risks and uncertainties, both general and specific, and risks exist that the predictions, forecasts, projections and other forward-looking statements will not be achieved. The Group cautions that a number of important factors could cause actual results to differ materially from the plans, objectives, expectations, estimates and intentions expressed in such forward-looking statements. These factors include, but are not limited to: (i) future revenues being lower than expected; (ii) increasing competitive pressures in the industry; (iii) general economic conditions or conditions affecting demand for the services offered by us in the markets in which we operate, both domestically and internationally, being less favourable than expected; (iv) the significant amount of indebtedness we have incurred and may incur and the obligations to service such indebtedness and to comply with the covenants imposed thereby; (v) contractual restrictions on the ability of Luxfer Holdings PLC (Luxfer Group) to receive dividends or loans from certain of its subsidiaries; (vi) fluctuations in the price of raw materials and utilities; (vii) currency fluctuations and hedging risks; and (viii) worldwide economic and business conditions and conditions in the industries in which we operate. The Group cautions that the foregoing list of important factors is not exhaustive. These factors are more fully discussed in the sections "Forward-Looking Statements" and "Risk Factors" in our annual report on Form 20-F dated March 31, 2014 filed with the U.S. Securities and Exchange Commission. When relying on forward-looking statements to make decisions with respect to the Group, investors and others should carefully consider the foregoing factors and other uncertainties and events. Such forward-looking statements speak only as of the date on which they are made, and the Group does not undertake any obligation to update or revise any of them, whether as a result of new information, future events or otherwise.



# Specification Issues

- TSO127
- AS8049B



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# Specification Update

TSO 127b

- Seat Appliance Standard
- Deviation required

Issued 06/14

- FAA Oil Burner Test
- AIR6160
- ARP6256

- Method of Testing included in Fire Test Handbook - Done 10/14
- Technical case for removal of Magnesium ban – Issued 05/14
- Engineering & Designing with Magnesium - Issued 12/14

AS8049C

- Aircraft Seat Standard
- AS8049B prohibits Magnesium



# SAE AS8049



## SAE AS8049 - Aircraft Seat Standard

### Para 3.3.3 “Magnesium alloys shall not be used.”

- ⊕ AIR6160 technical case for Mg alloy ban removal - published May 2014
- ⊕ AS8049C Para 3.3.3 re-worded to allow magnesium in seat structure
- ⊕ AS8049C revision balloted Dec 12, 2014 SAE Aircraft Seat Committee
- ⊕ 75% approval results, ballot passes, but 146 comments to address
- ⊕ Re-ballot (limited ballot) end March for May meeting discussion
- ⊕ AS8049C issues mid 2015.





# SAE AS8049



## SAE AS8049 - Aircraft Seat Standard

### Para 3.3.3 “Magnesium alloys shall not be used.”

- ⊕ AIR6160 technical case for Mg alloy ban removal - published May 2014
- ⊕ AS8049C Para 3.3.3 re-worded to allow
- ⊕ AS8049C revision balloted Dec 12, 2014
- ⊕ 75% approval results, ballot passes, but I
- ⊕ Re-ballot (limited ballot) end March for M
- ⊕ AS8049 magnesium ban removed.



# Regulations Update

TSO 127b

- Seat Appliance Standard 06/14
- Deviation requirements

## Agreed re-wording:

*Magnesium alloys ~~shall not be used~~ may be used in aircraft seat construction provided they are tested to and meet the flammability performance requirements in FAA Fire Safety Branch document: Aircraft Materials Fire Test Handbook – DOT/FAA/AR-00/12 , Chapter 25 - Oil Burner Flammability Test for Magnesium Alloy Seat Structure*

- FAA Oil Burner Test
- AIR6160
- ARP6256

- Method of Testing
- Technical case for
- Engineering & Design

AS8049C

- Aircraft Seat Standard
- Magnesium Section complete and removes ban
- Ballot to finalise
- **Publication expected Mid/Late 2015**



# Magnesium in Aircraft Seats

## Certification :

- Can magnesium containing seats be certified?
- Special Conditions needed for installation.
- But, Special Conditions are limited to Type Certification (TC) for one aircraft type.
- TSO is 'appliance approval' applicable to all qualifying aircraft.
- TSO can be obtained with deviation request.
- FAA focused flammability testing on 5 parts but others will be considered.





# FAA & SAE Summary

Thank you for your kind attention

