

**SUBJECT: Avon Protection's Position on Modal Acoustic Emission Cylinder Life Extension**

Avon Protection was contacted by NIOSH on March 15th, 2018 and NIOSH inquired as to Avon Protections position as it relates to the recent approvals given to the use of Modal Acoustic Emissions (MAE) for certifying cylinders for use beyond 15 years. As of April 2nd, 2018, Avon Protection is not aware of any customers having utilized this method for cylinder life extension. Avon Protection does not warranty any cylinders beyond 15 years. Avon Protection relies on our cylinder providers, Luxfer and Worthington, to provide us with guidance on MAE, as these companies are experts with regard to the design and limitations of their gas cylinders. Please find Luxfer's documented position on MAE below. As of April 2nd, 2018 Worthington Gas Cylinders has not provided a written position.

Avon Protection is aware that the initial qualification of MAE was conducted at the request of the US Navy, as the US Navy has an estimated 20,000 SCBA and even more cylinders. Let it be known, that these cylinders are rarely, if ever, actually used in firefighting. With the exception of stating that they were used in fire service for 15 years, data has not been made publicly available regarding the specific exposures, conditions, and loads that existed for used cylinders provided for MAE qualification. As a result, Avon Protection is unconvinced that all possible temperatures, chemical byproducts related interior structural firefighting, the impact related to routine RIT and other drills have been fully explored. Avon Protection reserves the right to limit the life of Avon labeled cylinders to 15 years for firefighting operations even in the event they meet the requirements MAE extension. Although, at this time, we do not feel the market has enough information to support nor reject cylinder life extensions provided following successful MAE testing. It should also be noted that the sole source currently offering MAE service in the market is not an Avon authorized service center and does not have access to Avon original equipment parts. As a result, utilizing such a source is an explicit violation of Avon's NIOSH approved User Instructions and voids warranty, NFPA Certification, and NIOSH Certification of both a cylinder and any SCBA it is used in conjunction with. As a result Avon cannot accept liability for cylinders used beyond 30 years.

Please feel free to contact Avon Protection with any questions you may have.

Luxfer Gas Cylinders States:

On April 21, 2017, the U.S. Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) announced that it had "issued a special permit to authorize the extension of the 15-year service of certain carbon fiber reinforced aluminum-lined cylinders (DOT-CFFC) that are used in self-contained breathing apparatuses by firefighters and first responders." The PHMSA website states that under this new Special Permit 16320, issued to Digital Wave Corporation, "cylinder life can be extended an additional 15 years through the use of Modal Acoustic Emissions (MAE) testing . . . in five-year increments. . . ."

ADVANCE WITH CONFIDENCE

Luxfer Gas Cylinders, the world's largest manufacturer of carbon composite cylinders used in self-contained breathing apparatuses (SCBA), has not been involved with this new life-extension program. Luxfer 15-year SCBA cylinders are designed and approved in the U.S. (Special Permit 10915) and Canada for a 15-year service life, and Luxfer accordingly issues a 15-year warranty for the full service life of each cylinder it manufactures. Since 1995, Luxfer has made more than 10 million carbon composite SCBA cylinders, which have an exceptional safety record. Over the years, Luxfer has conducted a significant amount of testing over and above standard requirements to ensure that Luxfer cylinders can stand up to demanding firefighting environments for a 15-year period. . . . Luxfer cannot accept responsibility or liability for use of Luxfer-manufactured cylinders beyond the 15-year service life for which they were designed, nor does the Luxfer cylinder warranty extend beyond 15 years.