

NEW JERSEY DEPARTMENT OF COMMUNITY AFFAIRS
DIVISION OF FIRE SAFETY
OFFICE OF THE STATE FIRE MARSHAL



SAFETY ALERT

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SAFETY ALERT 12-1

Potential Failure of Self-Contained Breathing Apparatus Facepiece Lenses Issued July, 2012

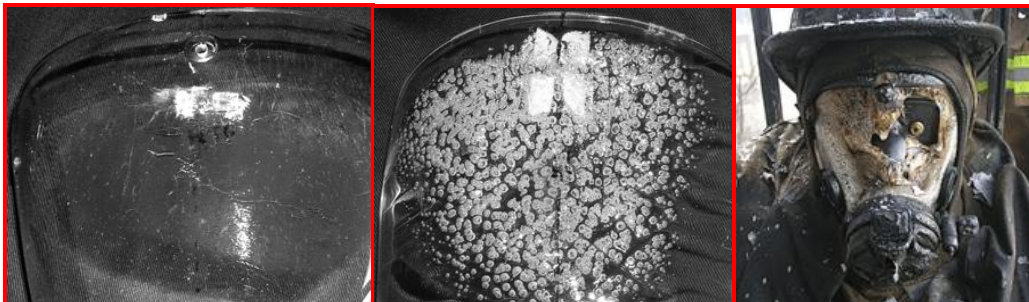
One of the most critical components of a firefighter's personal protective equipment (PPE) is the Self-Contained Breathing Apparatus (SCBA). This equipment, combined with the turn-out gear ensemble allows firefighters to enter hazardous atmospheres in order to perform routine fire suppression and rescue duties. It is important for all firefighters to understand that this equipment has limitations and is not designed to withstand extreme temperatures for extended periods of time. This is especially true for polycarbonate SCBA facepiece lenses. There have been several cases where facepiece lenses have melted after exposure to high temperatures and resulted in injuries and deaths of firefighters.

In November 2011 the National Institute of Standards and Technology (NIST) issued Technical Note 1724; Fire Exposures of Fire Fighter Self-Contained Breathing Apparatus Facepiece Lenses. This study detailed experiments that were conducted in Chicago in live burn scenarios. Eight facepieces were tested in six different experiments, with three facepiece lenses showing evidence of thermal degradation from the exposure. Maximum exterior lens temperatures were as high as 300 °C (572 °F) in these cases. It must be remembered that modern furnishings found in today's buildings generate high temperatures that can exceed 1500 °F which is far in excess of the temperatures facepieces were exposed to in the NIST experiments.

In July 2012 the National Fire Protection Association (NFPA) issued a safety alert titled: SCBA Facepiece Lenses May Undergo Thermal Degradation When Exposed To Intense Heat. This alert warned of the potential for failure of SCBA facepieces when subjected to high heat conditions.

The NJ Division of Fire Safety recommends that:

- Firefighters become aware of the limitations of their PPE, and in particular SCBA facepieces.
- Fire Departments inspect SCBA facepiece lenses and if any are found to show evidence of exposure to intense heat and thermal degradation, they should be removed from service and repaired or replaced based upon manufacturer's instructions.
- Fire Department Training Officers review and reinforce respiratory protection policies and procedures with firefighters that focus upon the importance of respiratory protection, thermal potential of structures and their furnishings, situational awareness of deteriorating conditions, and the potential for PPE failure and actions to take if such failure occurs.
- Firefighters review the NIST study found at: http://www.nist.gov/customcf/get_pdf.cfm?pub_id=909917 and the NFPA alert found at: http://www.nfpa.org/assets/files//PDF/CodesStandards/SCBA_Alert_070212.pdf



Photos showing examples of crazing (left), bubbling (center), and deformation from softening and bubbling (right) of facepiece lenses.

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