Frommelt Products Corporation
Loading Dock Fires Fact Sheet
February 18, 2003

Frommelt U.S. Dock-Seal Fire Facts

- Total incidents of dock seal fire damage officially recorded by Frommelt since July 2001: 81 and counting
- Range of fire damage recorded: Small scorch marks, burn holes in seals (pin size to golf ball size and larger), extensive damage to seals and facilities, and total destruction of parked trailers and trailer contents.
- Estimated value of a single trailer loaded with potato chips: $24,300
- Estimated value of a single trailer loaded with computer chips: $2 to $6 million.
- Cause of fires as identified by Frommelt: Hot-running semi-trailer rear clearance and/or identification lamps compressed against traditional foam dock seals without *fire-resistant* protection.
- Year when Frommelt identified the mechanisms by which hot-running rear clearance and/or identification lamps can lead to a foam head pad fire: 1998.
- Total U.S. dock positions at risk: Over 200,000 (conservative estimate).
- Type of dock seals at risk: Any make or model of compression-style foam dock seals without *fire-resistant* protection. (*Fires and fire damage marks recorded by Frommelt to date have occurred primarily in dock header [top] seal – although incidents of fires in side pads and head curtains have also been reported.*)
- Facilities at risk: Any industrial or commercial facility with compression-style foam dock seals without *fire-resistant* protection.
- Number of incidents needed for major dock-seal fire to occur: 1
- Industries and geographic locations at risk: All
- Companies that offer seals with needed level of protection: Frommelt

Source: Frommelt Products Corporation, February 2003

U.S. Non-Residential Property Fire Facts

- In 2001, there were 125,210 fires in non-residential structures.
- Excluding the events of 9/11/01, $2.13 billion of property damage occurred in non-residential structural fires in 2001.
- Property loss in 2001 increased by 10.3% as a result of fires in the categories of Industry, Utility and Defense. This figure *does not* include incidents handled by private fire brigades or fixed suppression systems.
- During 1977-2001 and excluding the events of 9/11/01, the average property loss per structure fire increased 56% when adjusted for inflation.
- In 2001, $930,000,000 worth of property damage occurred in storage buildings, an increase of 34% since the previous year. (*Based on fire incidents attended by public fire departments. No adjustments made for unreported fires and losses*.)
- An average of 23,000 fires in U.S. warehouse properties is reported each year, resulting in 14 deaths, 243 injuries and $531.4 million in property damage.

Sources: "National Fire Protection Association Fire Loss in the United States During 2001," September 2002 report, and Warehousing Management magazine, April 2001

Why Dock Seal Fires Occur

- In 1968, Federal Motor Vehicle Safety Standard 108 (FMVSS) requires all trailers over 80 inches wide to have three rear identification lamps and two rear clearance lamps on the top back of the trailer.
- Since the NHTSA issued its April 5, 1999 Interpretive Rule on placement of the rear identification and clearance lamps, authorities have strictly enforced FMVSS 108 regulations.
- An increasing number of tractors are equipped with larger or dual alternators to power an expanding array of on-board systems, such as TVs, VCRs, and microwaves. Larger and more alternators produce more power, which results in higher voltage and hotter-running marker lights.
- Frommelt tests show trailer marker lights left energized against a typical compressed dock seal can generate temperatures at the light in excess of 900 degrees Fahrenheit.
- Marker light temperature can exceed melting point of vinyl and rubber-based fabrics – and the auto-ignition point of polyurethane foam (typical dock seal interior component).
- Oxygen rushes into foam when truck pulls away from dock, causing decomposition gases to auto-ignite.
- Total time for dock seal to ignite: As quickly as 20 minutes.
- Fires typically burn faster on seals whose foam interiors are already damaged by marker lights.
- Most companies do not realize that dock seals pose a serious fire risk and that the problem can be prevented.
- Most dock seals are sold with optional fire retardant foam and/or fabric, which do not prevent fire.
- Most decision-makers mistakenly believe that fire-retardant materials prevent fires from occurring.

Source: Frommelt Products Corporation, February 2003

Fire-Retardant versus Fire Resistant

- Fire-retardant materials must actually begin to burn before they work.
- Fire-retardant materials will continue to burn as long as the flame source is present.
- Fire retardant means materials must be able to extinguish themselves within 10 seconds (per State of California Technical Bulletin #117).
- Foam and fabrics are typically manufactured with additives, such as hydrated aluminum or antimony oxide, to achieve fire retardant qualities. (The additives liberate water when heated.)
- Dock seal manufacturers have offered fire retardant foam and fabric for years. Yet the materials are not *fire-resistant*.
- ***Fire-resistant*** means the dock seal product prevents heat buildup from hot burning trailer marker lights that lead to extreme temperatures.

Frommelt Firefighter™ Technology

- Seal includes a triple layer of heat-dissipating and reflective reinforced foil. between the fabric layers covering the foam core.
- Foil acts as reflective barrier and insulates foam from the heat source.
- Foil's metal surface conducts heat laterally across the seal, greatly dissipating heat buildup at point of contact between a marker light and dock seal fabric.
- Marker light temperature buildup is limited to a maximum of 400 degrees Fahrenheit.
- Fire retardant foam is added as an extra measure of safety.

Source: Frommelt Products Corporation, February 2003

Conventional Trailer Marker Lights

- Identification lamps are a group of three lamps in a horizontal row that identifies the vehicle as a large vehicle.
- Lights are spaced 6 inches and no more than 12 inches from light center to light center. FMVSS-108, issued in 1968, requires identification lamps to be mounted "as close as practical to the top of the vehicle."
- In 1999, the National Highway Traffic Safety Administration (NHTSA) issued an "Interpretive Rule" clarifying the mounting requirements for identification lamps on the rear of trailers. NHTSA will require the lamps to be mounted on the upper header of trailers. No effective date for the rule was established because FMVSS-108 has always required higher mounting.

Sources: Frommelt Products Corporation, February 2003; Federal Register/Vol. 64 No. 64, April 5, 1999/Rules and Regulations; and Grote Industries, Inc.

LED Trailer Marker Lights

- Total current draw of an average trailer equipped with LED lights is 85% less than one using conventional lighting.
- As of 1999, approximately 10% of the trailers on U.S. roadways had been equipped with LED marker lights. This number is estimated to be between 10 and 25% today.
- The majority of trailers on the road will have standard marker lights in the foreseeable future.

Sources: Fleet Owner, Nov. 1, 2002; Land Line Magazine, February, 1999; and Frommelt Products Corporation, February 2003

Manufacturer Marker Light Warnings

- "To avoid heat buildup, leave a gap between trailer lights and docks, so air can circulate to cool the lamps."
- "Dirt on lenses increases the heat."
- "Never leave markers/clearance and hazard lights on when parked against a dock."

- “Melted lenses are sure signs that the vehicle was parked against the dock while the lights were on.”
- (Melted lenses on the back of the trailer…) “are probably due to extended contact of the lights with the insulating material provided by loading dock seals.”
- “CAUTION: Lighting products generate heat! Care should be taken to avoid contact with flammable materials.”

Sources: Land Line Magazine, February, 1999; Grote Industries, Inc.; and Truck-Lite Co., Inc.