

May 18, 2015

**DEFECT INFORMATION REPORT**

**TK HOLDINGS INC.**

**PSDI, PSDI-4, and PSDI-4K DRIVER AIR BAG INFLATORS**

1. **Manufacturer's name:**

TK Holdings Inc. ("Takata").

2. **Items of equipment potentially affected:**

All PSDI, PSDI-4, and PSDI-4K air bag inflators installed in frontal driver air bag modules in vehicles in the United States. This Report contemplates a national recall of the subject inflators. The subject inflators include all years of production, from start of production to end of production.

In accordance with the proposed staging of the remedy program described in section 7 below, the scope of the recall contemplated by this Report includes vehicles containing the subject inflators that were previously recalled and remedied by the affected vehicle manufacturers, including under recall numbers 08V-593, 09V-259, 10V-041, 11V-260, 14V-351, 14V-343, 14V-344, 14V-348, 14V-817, 14V-802, and 15V-153.

The inflators covered by this determination have been installed as original equipment or remedy parts in vehicles sold or registered in the United States and manufactured by the following five vehicle manufacturers (listed alphabetically):

American Honda Motor Co.  
1919 Torrance Blvd.  
Torrance, CA 90501-2746  
Phone: 310-783-2000

BMW of North America  
P.O. Box 1227  
Woodcliff Lake, NJ 07677-7731  
Phone: 201-307-4000

Chrysler Group LLC  
800 Chrysler Drive  
Auburn Hills, MI 48326-2757  
Phone: 1-800-853-1403

Ford Motor Company  
330 Town Center Drive  
Dearborn, MI 48126-2738  
Phone: 1-866-436-7332

Mazda North American Operations  
46976 Magellan Drive  
Wixom, MI 48393  
Phone: 248-295-7859

**3. Total number of items of equipment potentially affected:**

Takata estimates that a combined total of approximately 17.6 million subject inflators have been installed in vehicles in the United States as both original equipment and remedy parts. Of that number, Takata estimates that approximately 4.7 million are PSDI inflators and approximately 12.9 million are PSDI-4 and PSDI-4K inflators. Included within these estimates are approximately 9.7 million inflators that were subject to previous recalls or safety campaigns.

**4. Approximate percentage of items of equipment estimated to actually contain the defect:**

The number of field incidents known to Takata involving ruptures of PSDI subject inflators in the United States is fifty-nine (59). Fifty-four (54) of those field incidents occurred in vehicles that were subject to previous recalls. The number of field incidents known to Takata involving ruptures of PSDI-4 and PSDI-4K subject inflators in the United States is four (4). For comparison purposes, Takata estimates that there have been approximately 258,500 total field deployments of PSDI subject inflators and approximately 516,000 total field deployments of PSDI-4 and PSDI-4K subject inflators in the United States. Those estimates are based on the numbers of subject inflators described in section 3, estimates of the average age of the subject inflators in the field (11 years for PSDI and 8 years for PSDI-4 and PSDI-4K), and an estimate (used by NHTSA in its data analyses) that an average of 0.5 percent of frontal air bags deploy in the field each year. In addition, as described below, since September 2014, Takata has conducted ballistic testing of a selected population of subject inflators returned by vehicle manufacturers, including a disproportionate number of subject inflators returned from areas of high absolute humidity; that ballistic testing to date has resulted in no (zero) ruptures of PSDI subject inflators tested and has resulted in nine (9) ruptures (approximately 0.0722 percent) of PSDI-4 and PSDI-4K subject inflators tested, all from high absolute humidity States.

**5. Description of the defect:**

As a result of the developments and circumstances described below and in section 4 above, Takata has determined that a defect related to motor vehicle safety may arise in some of the subject inflators.

The batwing-shaped propellant wafers in some of the subject inflators may experience an alteration over time, which could potentially lead to over-aggressive combustion in the event of an air bag deployment. Depending on the circumstances, this potential condition could create excessive internal pressure when the air bag is deployed, which could result in the body of the inflator rupturing upon deployment. Based upon Takata's investigation to date, the potential for such ruptures may occur in some of the subject inflators after several years of exposure to persistent conditions of high absolute humidity. In addition, this potential for rupturing may also depend on other factors, including manufacturing variability.

In the event of an inflator rupture, metal fragments could pass through the air bag cushion material, which may result in injury or death to vehicle occupants.

**6. Chronological summary of events leading to this determination:**

May 2003 – A PSDI-4 inflator ruptured in a BMW vehicle in Switzerland. After Takata was notified, the investigation determined that the 17-month-old inflator ruptured due to an overloading of propellant in the assembly of the inflator at issue. Takata introduced additional quality control measures designed to avoid such overloading.

May 2004 – A PSDI inflator manufactured in October 2001 ruptured in a Honda vehicle in Alabama. Takata was first notified of the event a year later in May 2005 and received only photographs for analysis. Takata tentatively concluded that the incident may have involved a potentially compromised tape seal on this inflator or possibly an overloading of propellant in the inflator at issue.

2007–2011 – After Takata was notified in late 2007 of a rupture of a PSDI inflator in a Honda vehicle, Takata promptly began an investigation. Following that investigation, in October 2008, Takata recommended that Honda conduct a safety recall to replace certain PSDI inflators, and Honda did so. Based on further investigation and additional information developed by Takata, Honda expanded its initial recall on several occasions to cover all vehicles containing PSDI inflators manufactured prior to December 1, 2001.

2010–Present – Beginning in 2010 and at different periods thereafter, in connection with its investigation into reports of inflator ruptures, Takata has consulted with the Fraunhofer Institute for Chemical Technology (“Fraunhofer ICT”) to provide an independent research investigation of the root cause of the inflator ruptures. Fraunhofer ICT conducts research for government and industry and its core competencies include

energetic materials and energetic systems. Fraunhofer ICT is considered the leading research organization within the pyrotechnic gas generator and airbag system industry.

September 2013 – Takata became aware of a rupture of a PSDI driver inflator in a Honda vehicle in Florida that was not covered by the prior Honda recalls. Takata immediately commenced an additional investigation.

December 2013 – April 2015 – Takata was informed of eight additional incidents in which PSDI and PSDI-4 driver inflators not covered by the prior Honda recalls had ruptured. These eight additional field incidents occurred in the following States: Florida (6), California (1), and North Carolina (1).

June 11, 2014 – Takata sent a letter to NHTSA stating that, consistent with the fact that Takata's highest priority is safety, and in light of the Company's desire to address potential safety concerns promptly and thoroughly, Takata would support NHTSA's request for regional field actions to replace PSDI and PSDI-4 inflators manufactured between January 1, 2004 and June 30, 2007, that were installed in vehicles sold in or registered in Puerto Rico, Florida, Hawaii, and the U.S. Virgin Islands, based on the high levels of absolute humidity in those areas. (Those regional field actions also covered certain passenger inflators.) The five vehicle manufacturers that had installed these driver inflators promptly agreed to conduct the requested regional field actions and to send the replaced inflators to Takata for testing.

June 11, 2014 – Based on six field ruptures of Takata inflators (three driver inflators and three passenger inflators), NHTSA opened a defect investigation, PE14-016. On March 2, 2015, that investigation was upgraded to EA15-001.

September 2014 – May 2015 – As part of its continuing investigation, Takata has conducted extensive testing of inflators returned by the vehicle manufacturers. This testing has included (but has not been limited to) ballistic tests, live dissections, propellant analysis for moisture, chemical analysis, air and helium leak testing, and CT scanning. As of May 1, 2015, Takata has ballistically tested 174 PSDI inflators and 12,464 PSDI-4 and PSDI-4K inflators. None (zero) of the PSDI inflators ruptured during this testing, and nine (9) of the PSDI-4 and PSDI-4K inflators ruptured during this testing, yielding a rupture rate for the PSDI-4 and PSDI-4K inflators of 0.0722 percent. Six (6) of the ruptured inflators were returned from Florida, two (2) from Puerto Rico, and one (1) from non-coastal Georgia.

Although the Company's testing and investigation is ongoing, with the aid of the independent research performed by Fraunhofer ICT, Takata has reached some preliminary conclusions. It appears that the inflator ruptures have a multi-factor root cause that includes the slow-acting effects of a persistent and long term exposure to climates with high temperatures and high absolute humidity. Exposure over a period of several years to persistent levels of high absolute humidity outside the inflator, combined with the effects of thermal cycling, may lead to moisture intrusion in some inflators by

means of diffusion or permeation. Fraunhofer ICT has identified the possibility in these climates for moisture intrusion into the inflator over time and a process by which the moisture may slowly increase the porosity of the propellant within the inflator. Fraunhofer ICT's analysis also indicates that the design of the inflator and the grain (shape) of the propellant can affect the likelihood that the porosity change will occur. In addition, the analysis to date suggests that the potential for this long-term phenomenon to occur was not within the scope of the testing specifications prescribed by the vehicle manufacturers to Takata for the validation and production of the subject inflators as original equipment.

The results of the Fraunhofer ICT research and the Takata testing to date are consistent with the location and age of the inflators that have ruptured in the field and in Takata's testing.

May 2015 – Based upon the results of its investigation and the preliminary conclusions identified above, as well as NHTSA's insistence that action be taken to mitigate the risk posed to safety by these inflators, Takata decided to submit this Defect Information Report.

**7. Description of the remedy program:**

Consistent with the Consent Order issued by NHTSA on or about May 18, 2015, Takata shall cooperate with NHTSA in all future regulatory actions and proceedings pursuant to NHTSA's authority under the National Traffic and Motor Vehicle Safety Act, or any regulations thereunder, including 49 U.S.C. § 30120(c)(3), regarding the organization and prioritization of replacement air bag inflators.

At the present time, Takata continues to produce a small number of PSDI-4 inflators for use as remedy parts. Takata intends to cease production of the subject inflators, including for use as remedy parts.

Consistent with the above, including Takata's discussions with NHTSA, Takata's preliminary recommendation for the remedy program for the subject inflators is to use a phased customer notification and remedy approach. Under this approach, Takata plans to work with the manufacturers of the vehicles in which the subject inflators were installed to implement appropriate recalls to replace the subject inflators in four stages over time, as outlined here:

- First, vehicles sold in or ever registered in any part of Florida, Puerto Rico, the U.S. Virgin Islands, Hawaii, the Outlying U.S. Territories, Texas, Louisiana, Georgia, South Carolina, Alabama, Mississippi, California, Oklahoma, North Carolina, Virginia, Arkansas, Kentucky, Tennessee, Illinois, Delaware, Maryland, and Missouri, and containing subject inflators manufactured between the start of production and December 31, 2007;

- Second, vehicles sold in or ever registered in any part of Florida, Puerto Rico, the U.S. Virgin Islands, Hawaii, the Outlying U.S. Territories, Texas, Louisiana, Georgia, South Carolina, Alabama, Mississippi, California, Oklahoma, North Carolina, Virginia, Arkansas, Kentucky, Tennessee, Illinois, Delaware, Maryland, and Missouri, and containing subject inflators manufactured between the start of production and December 31, 2011;
- Third, vehicles sold in or ever registered in any other States not listed above and containing subject inflators manufactured between the start of production and December 31, 2007; and
- Fourth, any remaining vehicles not listed above that contain the subject inflators, including subject inflators previously installed as remedy parts.