

May 18, 2015

**DEFECT INFORMATION REPORT**

**TK HOLDINGS INC.**

**SPI PASSENGER AIR BAG INFLATORS**

**1. Manufacturer's name:**

TK Holdings Inc. ("Takata").

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

All SPI air bag inflators manufactured by Takata between April 2000 (start of production) and the end of inflator production for vehicle Model Year 2008 that were installed as original equipment in frontal passenger air bag modules in vehicles sold in the United States. This Report contemplates a nationwide recall of the subject inflators.

The scope of the recall contemplated by this Report includes vehicles that were previously recalled under prior recalls, including recall numbers 13V-133, 13V-136, 14V-361, 14V-312, 14V-399, 14V-340, 14V-343, 14V-350, 14V-421, 14V-471, 14V-655, 14V-701, 14V-752, 14V-763, 14V-770, 14V-787, and 15V-226. The inflators described in this Report may have previously been covered under two Defect Information Reports filed by Takata: 13E-017 and 14E-073.

Takata continues to conduct engineering analyses of SPI inflators produced after the end of production for Model Year 2008.

The inflators covered by this determination were installed in vehicles manufactured by the following vehicle manufacturers (listed alphabetically):

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

Daimler Trucks North America LLC  
4747 N. Channel Avenue  
Portland, OR 97217-3849  
Phone: (503) 745-8000

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

General Motors LLC  
3001 Van Dyke Road  
Warren, MI 48090-9020  
Phone: (313) 556-5000

Mitsubishi Motors North America, Inc.  
6400 Katella Avenue  
Cypress CA 90630  
Phone: (714) 372-6000

Nissan North America, Inc.  
One Nissan Way  
Franklin, TN 37068  
Phone: (615) 725-1000

Subaru of America, Inc.  
P.O. Box 6000  
Cherry Hill, NJ 08034-6000  
Phone: (856) 488-8500

Toyota Motor Engineering & Manufacturing  
19001 South Western Ave.  
Torrance, CA 90501  
Phone: (800) 331-4331

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

Takata manufactured approximately 7.7 million SPI inflators for the North American market during the date range covered by this Report. Of that number, Takata estimates that approximately 2.8 million were subject to previous recalls and safety campaigns. Although Takata knows how many subject inflators it sold to each of the vehicle manufacturers identified above during the relevant period, it does not know precisely how many of those inflators were installed in vehicles that were sold in or registered in the United States. More precise information can be supplied by the vehicle manufacturers.

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

The number of field incidents known to Takata involving ruptures of the subject inflators in the United States is eight (8). Of those field incidents, four (4) involved inflators that were subject to previous recalls. For comparison purposes, Takata estimates that there have been approximately 202,125 total field deployments of SPI subject inflators in the United States. That estimate is based on the number of subject inflators described in section 3, an estimate of the average age of the subject inflators in the field (10.5 years), and an estimate that an average of 0.25 percent of passenger 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 fifty-six (56) ruptures (approximately 0.9 percent) of the subject inflators tested.

**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 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, Takata's test results and investigation indicate that this potential for rupturing may also depend on other factors, including vehicle design factors and manufacturing variability.

Takata is also aware of a potential issue associated with the inflator body internal tape seals on some SPI inflators. During its investigation, Takata observed a small number of tape seal leaks in SPI inflators manufactured prior to 2007. These leaks were discovered during leak testing in 2014, as part of the Takata returned-inflator evaluation program. Leaks have been found in SPI inflators returned from several of the vehicle manufacturers listed in section 2. Such a leak can increase the potential for moisture to reach the main propellant wafers, possibly in areas outside of the highest absolute humidity States.

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 2009–March 2010 – Four SPI inflators ruptured in auto recycling centers in Japan.

October 2011 – Takata was first notified of a reported field rupture involving an SPI inflator in a Toyota vehicle in Japan.

October or November 2011 – Takata was notified of a rupture of a PSPI passenger inflator in a model year 2001 Honda Civic vehicle located in Puerto Rico. Takata promptly began an investigation.

2010–Present – Beginning in 2010 and at different periods thereafter, in connection with its investigation, 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.

August 2012 – November 2012 – Takata was informed of three additional field rupture incidents in the United States, two in Puerto Rico and one in Maryland (the Maryland vehicle had previously been operated in Florida for eight years). These incidents all occurred in Toyota Corolla vehicles and involved PSPI-L inflators.

April 2013 – Based on its investigation, Takata submitted a defect information report (“DIR”), identified by NHTSA as 13E-017, which covered certain passenger inflators containing propellant wafers manufactured at Takata’s Moses Lake, Washington plant during the period from April 13, 2000 through September 11, 2002, and certain air bag inflators manufactured at Takata’s Monclova, Mexico plant during the period from October 4, 2001 through October 31, 2002. Promptly thereafter, the five manufacturers of vehicles in which those inflators had been installed submitted corresponding DIRs and recalled those vehicles: 13V-130 (Mazda); 13V-132 (Honda); 13V-133 (Toyota); 13V-136 (Nissan); and 13V-172 (BMW).

June 2014 – Takata notified the vehicle manufacturers that some of its traceability records were incomplete (*i.e.*, Takata could not identify with absolute certainty the propellant lots from which the propellant wafers in a specific inflator were taken), and that it was possible for propellant wafers to have been stored at its Monclova plant for up to three months before being used in an inflator. Based on those findings, and to assure that all potentially affected inflators were covered, Takata recommended that all PSPI, PSPI-L, and SPI inflators built through the end of 2002 should be recalled. Based on that recommendation, the five vehicle manufacturers identified above decided to expand their 2013 recalls: 14V-312 (Toyota); 14V-349 (Honda); 14V-361 (Nissan); 14V-362 (Mazda); and 14V-428 (BMW). In addition, based on the expanded date range for the covered inflators, Fuji Heavy Industries (Subaru) submitted a similar DIR covering a

relatively small number of vehicles (14V-399). Subaru was not affected by the original date range in 13E-017.

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 PSPI, PSPI-L, and SPI passenger inflators manufactured between the start of production in April 2000 and July 31, 2004 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 driver inflators.) The 10 vehicle manufacturers that had installed these passenger inflators in their vehicles 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.

April 2014 – April 2015 – Takata was informed of seven additional incidents in which passenger inflators not covered by the prior recalls had ruptured. Three of these involved SPI inflators installed in Nissan Sentra vehicles. Two of these incidents occurred in Florida and the remaining incident occurred in Louisiana.

October – December 2014 – At the request of NHTSA, Toyota, Honda, and Nissan submitted DIRs covering vehicles with the passenger inflators covered by the regional field actions identified above that had been sold in or registered in a wider geographical area, including Puerto Rico, Hawaii, the U.S. Virgin Islands, Guam, Saipan, American Samoa, Florida and adjacent counties in southern Georgia, as well as the coastal areas of Alabama, Louisiana, Mississippi and Texas. On November 17, 2014, Takata submitted DIR 14E-073. Subsequently, in December 2014, several other vehicle manufacturers submitted DIRs with respect to regional recalls covering vehicles with the identified inflators that had been sold in or registered in those areas.

September 2014 – May 2015 – As part of its continuing investigation, Takata has conducted extensive testing of inflators returned by the vehicle manufacturers. This testing includes (but is not 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 5,911 SPI passenger inflators. Of those inflators, 56 ruptured during this testing, yielding a rupture rate of 0.9 percent. All of these test ruptures involved inflators returned from the States identified in the prior paragraph, except two (one returned from Oregon and one from Pennsylvania) that were subject to previous recalls.

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, as can manufacturing variability. The results of the Fraunhofer ICT research to date are consistent with the geographic location and age of the inflators that have ruptured in the field and in Takata's testing. Takata's testing also indicates that the design of the vehicle and the design of the air bag module are associated with differences in outcomes.

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 for the validation and production of the subject inflators as original equipment.

In addition, as part of its investigation, Takata conducted air leak tests and helium leak tests on certain inflators. Leak testing started in November 2014 as part of Takata's returned-inflator evaluation program. Through May 1, 2015, Takata has identified a high leak rate in 28 out of 1027 SPI inflators tested. The cause of these leaks is still under investigation, but it appears to be due, in part, to an adhesion failure of the tape seal that occurs after long-term environmental exposure. No leaks have been observed in any inflators manufactured after 2004.

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. In particular, in an abundance of caution and to address practical considerations relating to the administration of the remedy program for the United States, Takata agreed to extend the scope of the present Report through inflator production for Model Year 2008 at the insistence of NHTSA.

**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.

**May 18, 2015**

At this time and 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, based on the order of production with the oldest inflators being remedied first.