



U.S. Department of Transportation
National Highway Traffic Safety Administration

ODI RESUME

OFFICE OF DEFECTS INVESTIGATION



Investigation: EA21003
Prompted By: PE19003 and PE19004
Date Opened: 12/22/2021 **Date Closed:** 02/05/2024
Investigator: Michael Lee **Reviewer:** Peter Kivett
Approver: Tanya Topka
Subject: Engine Fires

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Kia America, Inc.
Affected Manufacturers: Hyundai Motor America
Products: 2011-2014 KIA SORENTO, 2013-2014 HYUNDAI SANTA FE SPORT, 2011-2013 KIA SPORTAGE, 2011-2018 KIA OPTIMA HYBRID, 2015-2016 HYUNDAI VELOSTER, 2017 HYUNDAI TUCSON, 2017-2018 KIA OPTIMA PHEV, 2011-2017 HYUNDAI SONATA HYBRID, 2012-2015 KIA FORTE, 2011-2014 KIA OPTIMA, 2013 HYUNDAI ELANTRA, 2012-2015 KIA FORTE KOUP, 2012 HYUNDAI SANTA FE, 2011-2014 HYUNDAI SONATA, 2012-2015 KIA RIO, 2012-2016 KIA SOUL
Population: 3,000,000 (Estimated)

Problem Description: Engine fires due to engine failures

FAILURE REPORT SUMMARY

	ODI	Manufacturer	EWR D&I	Other	Total	EWR Field Reports
All Incidents:	144	1,810	14	0	1,968	CONF
Crashes/Fires:	0	0	0	0	0	0
Injury Incidents:	6	77	14	0	97	0
Number of Injuries:	7	101	24	0	132	0
Fatality Incidents:	0	0	0	0	0	0
Number of Fatalities:	0	0	0	0	0	0

Description of Other:

ACTION/SUMMARY INFORMATION

Action: This (EA) Engineering Analysis is closed with 23V877.

Summary:

On March 29, 2019, the Office of Defects Investigation (ODI) opened two Preliminary Evaluations (PE19-003 on Hyundai and PE19-004 on Kia) to broadly investigate incidents of non-crash fires (regardless of origin or

operational status of the vehicle) on various model year Hyundai and Kia vehicles. During the PE investigations, Hyundai and Kia issued several recalls to address vehicle fires, including those due to engine failures involving various engine types. The remedies for the engine failure recalls typically involve engine inspection (to detect existing damage), and if necessary, engine replacement. Additionally, both manufacturers have been installing an engine control software modification known as Knock Sensor Detection Software (KSDS) which is intended to detect impending engine failure, alert the driver, and limit engine power (to lessen likelihood of engine failure). KSDS is being installed under recalls and non-safety field actions, and both companies have extended limited engine warranties (see recall files).

On December 22, 2021, ODI upgraded PE19-003 and PE19-004 to this Engineering Analysis (EA21-003, covering both Hyundai and Kia) to evaluate the scope of the prior recalls related to engine failures/fires and the efficacy of the recall remedies for the recalls, as well as the long-term viability of related programs and non-safety field actions being conducted by Hyundai and Kia. The former issue involved approximately 550,000 MY 2013 Hyundai Elantra, MY 2011 Kia Sorento, and MY 2012-2015 Kia Rio. The latter issue involved approximately 2.5 million recalled vehicles, which have been identified as displaying potential remedy concerns: Hyundai recalls 15V-568, 17V-226, 20V-746, and 21V-727; and Kia recalls 17V-224, 19V-120, 20V-750, and 21V-844.

Regarding the recall scope issue, among all of the scope vehicles identified at EA opening, ODI found only the MY 2011 Kia Sorento vehicles equipped with both the Theta II 2.4L 4-cylinder Multi-Point Injection (MPI) and the Lambda II 3.5L 6-cylinder MPI engines experienced relatively high rates of reported fires. In December 2023, Kia issued recall 23V-877 that will cover about 80,000 MY 2011 Kia Sorento vehicles equipped with the Theta II 2.4L MPI engines. The remedy will involve an inspection, and if necessary, a replacement of the engine, as well as the installation of KSDS. It should be noted that in 2021 these vehicles were included in a KSDS product improvement campaign with warranty extension. For the MY 2011 Sorento vehicles equipped with the Lambda II 3.5L engines, ODI believes that future engine failures/fires involving these vehicles will likely be due to a lax in adhering to the proper or scheduled engine maintenance (regular engine oil changes), rather than a design or manufacturing engine issue.

Regarding the issue of the efficacy of the recall remedies, ODI found the majority of the recalled Hyundai and Kia vehicles, by model, experienced lower reported fire rates after the remedies were applied. Furthermore, ODI found that for most vehicles that did not receive the recall remedies, by model, experienced relatively high fire rates. To address this problem, Hyundai informed ODI in December 2023, that it will renotify all of its owners covered by the Hyundai recalls of engine failures/fires every 8 months for the next 3 years. In December 2023, Kia stated that it will renotify the majority of its owners every 8 months for the next 3 years. Several previously recalled Kia models are excluded from the renotification due to their lower reported rates of engine fires. Overall, the renotification actions will help to increase the recall completion rates, thus reduce the frequency of engine fires in the future.

In view of the recall action being taken by Kia and renotification actions being taken by both Kia and Hyundai, ODI is closing this Engineering Analysis. Also, both companies have been released from the 2020-initiated Consent Orders (Kia since November 2022 and Hyundai since November 2023). The agency reserves the right to take additional action if warranted by future circumstances. To review the reports cited in the Closing Resume ODI Report Identification Number document, go to [NHTSA.gov](https://www.nhtsa.gov).