



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

Memorandum

Subject: **TEST REQUEST:** Wheel cracking/separation in
Model Year (MY) 2005 through 2007 Nissan 350Z (EA07-005)
Sent via fax transmission

Date: **MAY 17 2007**

From: Kathleen C. DeMeter, Director
Office of Defects Investigation

Reply to
Attn. of:

NVS-213aan
EA07-005

To: Michael Monk, Director
Vehicle Research and Test Center

This memorandum requests the Vehicle Research and Test Center (VRTC) to conduct testing as described below.

BACKGROUND:

The Office of Defects Investigation (ODI) is currently investigating allegations of wheel separation due to spoke fracture in model year (MY) 2005 through 2007 Nissan 350Z vehicles (EA07-005). ODI opened PE06-050 based on two consumer complaints reporting incidents of wheel separation while driving due to spoke fracture. During PE06-050, ODI determined that both incidents of wheel separation involved Nissan wheels that were subjected to an aftermarket "re-chroming" process. Nissan has indicated that such processes can weaken wheels and make them more susceptible to damage and failure and has issued Technical Service Bulletins warning dealers that re-chroming wheels would void the warranty. Warranty claims and consumer complaint data submitted by Nissan during PE06-050 also showed some experience with spoke cracking in original equipment (OE) Nissan alloy wheels. Nissan attributes OE wheel cracking to abusive driving (e.g., impact damage) and the use of low profile tires with the subject rims.

OBJECTIVE:

The objectives of this testing are to: (1) assess the frequency of spoke cracking in both OE alloy wheels and in wheels subject to aftermarket re-chroming through owner surveys; (2) determine the conditions necessary to crack a spoke in an OE wheel; (3) assess the risk of wheel separation in an OE wheel with one or more cracked spokes; and (4) analyze field return wheels to assess the effects of re-chroming on wheel metallurgy and material properties.

RECOMMENDED APPROACH:

1. Conduct a survey of MY 2005 through 2007 Nissan 350Z vehicles registered in Ohio. Survey data should include wheel usage distribution (numbers and percentages of OE wheel

options and aftermarket “re-chromed” wheels) and associated problem experience (primarily relating to cracked spokes).

2. Analyze field return specimens of OE and “re-chromed” wheels and consult with metallurgist, as needed, to review wheel fabrication and chroming processes and effects on wheel strength.
3. Conduct durability testing of exemplar wheels on a subject vehicle over a course simulating rough roads and abusive driving conditions to assess the conditions that may result in a cracked spoke.
4. Measure normal operating stresses and residual stresses on wheels. Develop load tests to duplicate these stress levels.
5. Conduct any other testing, survey or other analyses as necessary to accomplish the test objectives.

TEST VEHICLE(S):

In coordination with ODI, the Vehicle Research Test Center shall obtain complaint vehicles required for testing.

ADDITIONAL INFORMATION:

The project engineer is Andrea Noel (202-493-0210) who will discuss the details of the testing with your engineers. We would like to have VRTC’s proposal of the procedure prior to test startup.

FINAL REPORT:

It is requested that the test work and draft report be completed as scheduling allows in coordination with ODI.

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