

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.
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AEROSPACE INFORMATION REPORT

AIR 811

DISPOSITION OF WHEELS WHICH HAVE BEEN OVERHEATED

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Revised

INTRODUCTION

The development and use of brakes with high temperature capabilities has resulted in instances of tire and wheel failures which were attributed to excessive brake heat. These instances have led to the establishment of more stringent wheel requirements and the addition of heat shields, safety devices, and auxiliary cooling devices.

This Aerospace Information Report has been prepared to supplement existing procedures, and to assist those who are concerned with the removal, inspection, and disposition of magnesium and aluminum wheels which have been overheated.

1. MAGNESIUM AND ALUMINUM WHEEL MATERIALS - The effect of temperature and heating time on the mechanical properties of a material is a unique function of the material being used. It is, therefore, necessary that the wheel manufacturer supply the user with information on the temperature and dimensional limits for the wheel.
2. REMOVING WHEELS FROM THE AIRCRAFT FOR INSPECTION
 - 2.1 Temperature Limitation - If evidence exists, or if it is suspected, that the wheel has been heated to temperatures in excess of the limit established by the wheel manufacturer, the wheel(s) should be removed from service for inspection.
 - 2.2 Evidence of Excessive Temperatures
 - 2.2.1 When a pressure release device functions.
 - 2.2.2 When a tire shows evidence of having been subjected to excessive temperature on the side walls outside of the wheel flanges.
 - 2.2.3 When the paint on the wheel has become discolored and/or blistered in areas and in a manner described by the wheel manufacturer.
 - 2.2.4 When the brake has been severely overheated.
3. GENERAL NOTES
 - 3.1 Item 2.2.1 is not indicative of the actual temperature which may have been experienced by the wheel. The brake can continue to raise the wheel temperature after the air has been released.
 - 3.2 As temperature increases the resistance to creep and permanent yielding decreases. It is therefore possible that a wheel can be permanently deformed by a combination of aircraft weight and heat.

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