



AEROSPACE INFORMATION REPORT

AIR1404™

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DC Resistivity vs RF Impedance of EMI Gaskets

FOREWORD

Changes in this reaffirm are format/editorial only.

1. SCOPE:

This AIR discusses the DC resistivity property of EMI gaskets.

2. INTRODUCTION:

Periodically there have been misunderstandings by people in the electronic industry concerning what makes a good EMI gasket. Specifically, DC resistivity requirements are often mentioned incorrectly. This AIR discusses the significance of DC resistance.

3. RESISTANCE REQUIREMENTS:

3.1 Discussion:

A low DC resistance is essential in order to have a properly functioning EMI gasket. However, the purpose of this information report is to point out that a low RF impedance is also essential to have a properly functioning EMI gasket. The low DC resistance does not necessarily have any relationship to this low RF impedance. Thus, in determining the effectiveness of an EMI gasket, the impedance at the frequencies of use needs to be evaluated.

3.2 Experimental Observations:

Following are several simple laboratory observations that have been performed that illustrate the above conclusion:

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- 3.2.1 A .32 cm x .32 cm copper strip was used as a gasket between two flat surfaces and provided a reference shielding insertion loss. Small sections along the length of the strip were removed creating negligible change in the DC resistivity. However, the RF impedance increased by as much as 20dB. The shielding insertion loss decreased by a similar amount.
- 3.2.2 A mesh gasket was used around the periphery of a cover. The gasket provided a low DC resistance. Yet there was a considerable level of leakage. It was found that the 60 cm length of gasket had a .16 cm gap where the ends joined. Even though the gasket was effective over the area it covered, the opening essentially cancelled most of the effectiveness of the gasket. The extension of this point is that a low DC resistance is not sufficient assurance that the RF impedance will be low.
- 3.2.3 A conclusion found in an article "Flat Gasket Materials" by Bakker and Cohen in Electronic Packaging and Production, March 1967 states; in "comparing the curve of resistivity vs pressure with the overall system attenuation results, it becomes apparent that there is no correlation possible".

PREPARED BY SAE COMMITTEE AE-4, ELECTROMAGNETIC COMPATIBILITY