

Mineral insulating oils — Oxidation stability test method based on differential scanning calorimetry (DSC)

ICS 29.040.10

National foreword

This Published Document was published by BSI. It is the UK implementation of IEC/TR 62036:2007.

The UK participation in its preparation was entrusted to Technical Committee GEL/10, Fluids for electrotechnical applications.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 May 2007

© BSI 2007

ISBN 978 0 580 50685 7

Amendments issued since publication

Amd. No.	Date	Comments

TECHNICAL REPORT

IEC TR 62036

First edition
2007-04

Mineral insulating oils – Oxidation stability test method based on differential scanning calorimetry (DSC)



Reference number
IEC/TR 62036:2007

CONTENTS

INTRODUCTION.....	3
1 Scope.....	4
2 General remarks.....	4
3 Effect of temperature on oxidation induction time	4
3.1 Isothermal	4
3.2 Temperature-programmed runs	5
4 Effect of sample size on oxidation induction time.....	5
4.1 Inhibited oil	5
4.2 Uninhibited oil	5
5 Other factors effecting oxidation induction time	6
6 Reliability of method	6
7 Different instruments	6
8 Interpretation of curves.....	7
9 Conclusion	7
Bibliography.....	11
Table 1 – Oxidation induction time of oil samples at different temperature programmes.....	8
Table 2 – Oxidation induction time of oil samples at different sample weight.....	8
Table 3 – Repeatability of oxidation induction time by PDSC	8
Table 4 – Reproducibility of oxidation induction time by PDSC.....	9
Table 5a – DSC Results analyzed at different laboratories – Uninhibited oil.....	10
Table 5b – DSC Results analyzed at different laboratories – Inhibited oil.....	10

INTRODUCTION

The existing methods to assess oxidation stability of mineral insulating oil are very time consuming. A faster method is necessary for effective quality control and status monitoring. Differential scanning calorimetry (DSC) as a technique has been used for monitoring grease and lubricants oxidation stability. The use of DSC for evaluation of oil oxidation stability was originally suggested to IEC, TC 10 following publication of a literature review of DSC oxidation tests performed on petroleum products (10/367/INF April 1996). During IEC's TC 10 meeting in Geneva, 1998, it was decided to set up a working group for development of a standard based on DSC for rapid evaluation of mineral insulating oil oxidation stability.