

ISBN 978-0-626-33863-8

**SANS 22514-8:2016**

Edition 1

**ISO 22514-8:2014**

Edition 1

## **SOUTH AFRICAN NATIONAL STANDARD**

**Statistical methods in process  
management — Capability and performance**

**Part 8: Machine performance of a multi-state  
production process**

This national standard is the identical implementation of ISO 22514-8:2014, and is adopted with the permission of the International Organization for Standardization.

**WARNING**

**This document references other  
documents normatively.**

---

Published by SABS Standards Division  
1 Dr Lategan Road Groenkloof ☒ Private Bag X191 Pretoria 0001  
Tel: +27 12 428 7911 Fax: +27 12 344 1568

[www.sabs.co.za](http://www.sabs.co.za)

© SABS

**SABS**

---

**SANS 22514-8:2016**

Edition 1

**ISO 22514-8:2014**

Edition 1

**Table of changes**

<b>Change No.</b>	<b>Date</b>	<b>Scope</b>

**National foreword**

This South African standard was approved by National Committee SABS/TC 169, *Applications of statistical methods*, in accordance with procedures of the SABS Standards Division, in compliance with annex 3 of the WTO/TBT agreement.

This document was approved for publication in November 2016.

**Compliance with this document cannot confer immunity from legal obligations.**

INTERNATIONAL  
STANDARD

ISO  
22514-8

First edition  
2014-06-01

---

---

**Statistical methods in process  
management — Capability and  
performance —**

Part 8:  
**Machine performance of a multi-state  
production process**

*Méthodes statistiques dans la gestion de processus — Aptitude et  
performance —*

*Partie 8: Aptitude machine d'un procédé de production multimodal*



Reference number  
ISO 22514-8:2014(E)

© ISO 2014

**ISO 22514-8:2014(E)**



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2014

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>2</b>
<b>3 Terms and definitions</b> .....	<b>2</b>
<b>4 Symbols and abbreviations</b> .....	<b>5</b>
<b>5 Preliminary technical analysis of the process</b> .....	<b>6</b>
5.1 General.....	6
5.2 Identification of intrinsic factors.....	6
5.3 Determination of process-specific states.....	7
<b>6 Preliminary verifications before calculating the machine performance indices</b> .....	<b>7</b>
6.1 Measurement system.....	7
6.2 Definition of the sampling plan for estimating global intrinsic dispersion.....	8
<b>7 Estimation of global intrinsic dispersion and calculation of machine performance indices</b> .....	<b>8</b>
7.1 General.....	8
7.2 Verification on the absence of outliers in the set of made measurement results.....	9
7.3 Determination of the widths of local intrinsic dispersions.....	10
7.4 Determination of the locations of local intrinsic dispersions.....	11
7.5 Global intrinsic dispersion: type and estimation.....	12
7.6 Calculation of capability indices $P_m$ and $P_{mk}$ .....	14
7.7 Acceptance thresholds for the machine performance indices.....	15
<b>Annex A (informative) States qualifying a processing process</b> .....	<b>16</b>
<b>Annex B (normative) Statistical tests</b> .....	<b>32</b>
<b>Bibliography</b> .....	<b>37</b>