

---

---

**Space systems — Assessment of  
survivability of unmanned spacecraft  
against space debris and meteoroid  
impacts to ensure successful post-  
mission disposal**

*Systèmes spatiaux — Évaluation de la capacité de survie des véhicules  
spatiaux non habités face aux débris spatiaux et aux impacts de  
météoroïdes pour garantir une élimination efficace d'après-mission*





**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>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Abbreviated terms</b> .....	<b>3</b>
<b>5 Impact survivability assessment requirements</b> .....	<b>3</b>
<b>6 Impact survivability assessment procedure</b> .....	<b>3</b>
6.1 General .....	3
6.2 Definition of survivability requirement .....	3
6.3 Impact risk analysis .....	3
<b>7 Procedure for performing a simple impact risk analysis</b> .....	<b>4</b>
7.1 General .....	4
7.2 Spacecraft operating parameters and architecture design .....	5
7.3 Identification of critical components and surfaces .....	5
7.4 Ballistic limits .....	5
7.5 Failure probability analysis .....	5
7.6 Completion of analysis .....	6
<b>8 Procedure for performing a detailed impact risk analysis</b> .....	<b>6</b>
8.1 General .....	6
8.2 Spacecraft operating parameters and architecture design .....	6
8.3 Identification of critical components .....	6
8.4 Ballistic limits .....	7
8.5 Failure probability analysis .....	8
8.6 Iteration of analysis .....	8
<b>Annex A (informative) Supplementary information on the simple impact risk analysis procedure</b> .....	<b>10</b>
<b>Annex B (informative) Ballistic limit equations</b> .....	<b>12</b>
<b>Annex C (informative) Background information on hypervelocity impact testing and modelling</b> ..	<b>14</b>
<b>Annex D (informative) Method to calculate impact-induced Probability of No Failure</b> .....	<b>16</b>
<b>Annex E (informative) Options for improving impact survivability</b> .....	<b>17</b>
<b>Bibliography</b> .....	<b>19</b>