

---

---

**Road vehicles — Refrigerant systems  
used in mobile air conditioning systems  
(MAC) — Safety requirements**

*Véhicules routiers — Systèmes réfrigérants utilisés dans les systèmes  
d'air conditionné embarqués (MAC) — Exigences de sécurité*





**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing 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

Foreword .....	iv
Introduction .....	v
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>1</b>
<b>3 Terms and definitions .....</b>	<b>2</b>
<b>4 Safety targets .....</b>	<b>7</b>
<b>4.1 General .....</b>	<b>7</b>
<b>4.2 Risk assessment .....</b>	<b>8</b>
<b>4.3 Relevant inputs and scenarios for the risk assessment .....</b>	<b>9</b>
<b>5 System level requirements .....</b>	<b>11</b>
<b>5.1 Refrigerant system .....</b>	<b>11</b>
<b>5.2 Pressure and temperature ranges .....</b>	<b>12</b>
<b>5.3 System layout .....</b>	<b>12</b>
<b>5.4 Pressure and temperature limitation strategies .....</b>	<b>12</b>
<b>6 Component level requirements .....</b>	<b>12</b>
<b>6.1 General requirements .....</b>	<b>12</b>
<b>6.2 Piping and connecting technology .....</b>	<b>13</b>
<b>6.3 Compressor .....</b>	<b>14</b>
<b>6.4 Evaporator .....</b>	<b>15</b>
<b>6.5 Condenser/gas cooler .....</b>	<b>15</b>
<b>6.6 Receiver and accumulator .....</b>	<b>15</b>
<b>6.7 Service ports .....</b>	<b>15</b>
<b>6.8 Control devices .....</b>	<b>15</b>
<b>7 Design requirements for service and manufacturing .....</b>	<b>15</b>
<b>Annex A (normative) Relevant input values for the risk assessment of refrigerants R-134a, R-1234yf and R-744 .....</b>	<b>16</b>
<b>Annex B (normative) Pressure and temperature reference data .....</b>	<b>19</b>
<b>Bibliography .....</b>	<b>21</b>