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Comparison between the revised Annex II to REACH (as it will apply as of 1 December 2010), the relevant part of the UN GHS and the original Annex II to REACH (as it has applied since 1 June 2007).

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
GUIDANCE ON THE PREPARATION OF SAFETY DATA SHEETS (SDS)	REQUIREMENTS FOR THE COMPILATION OF SAFETY DATA SHEETS	GUIDE TO THE COMPILATION OF SAFETY DATA SHEETS
A4.1 Introduction	PART A 0.1. Introduction	
<p>A4.1.1 This annex provides guidance on the preparation of an SDS under the requirements of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). SDS's are an important element of hazard communication in the GHS, as explained in Chapter 1.5. Use of this guidance document should support compliance with competent authority (CA) requirements and should allow the SDS to be prepared in accordance with the GHS.</p>	<p>0.1.1. This Annex sets out the requirements that the supplier shall fulfil for the compilation of a safety data sheet that is provided for a substance or a mixture in accordance with Article 31.</p> <p>0.1.2. The information provided in the safety data sheet shall be consistent with the information in the chemical safety report, where one is required. Where a chemical safety report has been completed, the relevant exposure scenario(s) shall be placed in an annex to the safety data sheet.</p>	<p>This Annex sets out the requirements for a Safety Data Sheet that is provided for a substance or a preparation in accordance with Article 31. The Safety Data Sheet provides a mechanism for transmitting appropriate safety information on classified substances and preparations, including information from the relevant Chemical Safety Report(s) down the supply chain to the immediate downstream user(s). The information provided in the Safety Data Sheet shall be consistent with the information in the Chemical Safety Report, where one is required. Where a Chemical Safety Report has been performed, the relevant exposure scenario(s) shall be placed into an annex of the Safety Data Sheet, to make reference to them under the relevant headings of the Safety Data Sheet easier.</p>
A4.1.2 The use of this guidance		

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<p>A4.1.3 document is dependent on importing countries requirements for SDS. It is hoped that the application of the GHS worldwide will eventually lead to a fully harmonized situation.</p> <p>Unless otherwise stated, all chapters, sections and tables referred to in this annex can be found in the main text of the GHS.</p>		
<p>A4.2 General guidance for compiling an SDS</p>	<p>0.2. General requirements for compiling a safety data sheet</p>	
<p>A4.2.1 <i>Scope and application</i></p>		
<p>Safety Data Sheets (SDS) should be produced for all substances and mixtures which meet the harmonized criteria for physical, health or environmental hazards under the GHS and for all mixtures which contain ingredients that meet the criteria for carcinogenic, toxic to reproduction or target organ toxicity in concentrations exceeding the cut-off limits for SDS specified by the criteria for mixtures (see Table 1.5.1 in Chapter 1.5). The competent authority (CA) may also require</p>		

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<p>SDS for mixtures not meeting the criteria for classification as hazardous but which contain hazardous ingredients in certain concentrations (see Chapter 3.2). The CA may also require SDS for substances or mixtures that meet the criteria for classification as hazardous for non-GHS classes/end-points. An SDS is a well-accepted and effective method for the provision of information, and may be used to convey information for substances or mixtures that do not meet or are not included in the GHS classification criteria.</p>		
<p>A4.2.2 General guidance</p>		
<p>A4.2.2.1 The writer of the SDS needs to keep in mind that an SDS must inform its audience of the hazards of a substance or a mixture and provide information on the safe storage, handling and disposal of the substance or a mixture. An SDS contains information on the potential health effects of exposure and how to work safely with the substance or mixture. It also</p>	<p>0.2.1. The safety data sheet shall enable users to take the necessary measures relating to protection of human health and safety at the workplace, and protection of the environment. The writer of the safety data sheet shall take into account that a safety data sheet must inform its audience of the hazards of a substance or a mixture and provide information on the safe storage, handling and disposal of the substance or the</p>	<p>The purpose of this Annex is to ensure consistency and accuracy in the content of each of the mandatory headings listed in Article 31, so that the resulting Safety Data Sheets will enable users to take the necessary measures relating to protection of human health and safety at the workplace,</p>

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<p>contains hazard information derived from physicochemical properties or environmental effects, on the use, storage, handling and emergency response measures related to that substance or mixture. The purpose of this guidance is to ensure consistency and accuracy in the content of each of the mandatory headings required under GHS, so that the resulting safety data sheets will enable users to take the necessary measures relating to protection of health and safety at the workplace, and the protection of the environment. The information in the SDS shall be written in a clear and concise manner. The SDS shall be prepared by a competent person who shall take into account the specific needs of the user audience, as far as it is known. Persons placing substances and mixtures on the market shall ensure that refresher courses and training on the preparation of SDS be regularly attended by the competent persons.</p>	<p>mixture.</p> <p>0.2.2. The information provided by safety data sheets shall also meet the requirements set out in Directive 98/24/EC. In particular, the safety data sheet shall enable employers to determine whether any hazardous chemical agents are present in the workplace, and to assess any risk to the health and safety of workers arising from their use.</p> <p>0.2.3. The information in the safety data sheet shall be written in a clear and concise manner. The safety data sheet shall be prepared by a competent person who shall take into account the specific needs and knowledge of the user audience, as far as they are known. Suppliers of substances and mixtures shall ensure that such competent persons have received appropriate training, including refresher training.</p>	<p>and protection of the environment.</p> <p>The information provided by Safety Data Sheets shall also meet the requirements set out in Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work. In particular, the Safety Data Sheet shall enable the employer to determine whether any hazardous chemical agents are present in the workplace, and to assess any risk to the health and safety of workers arising from their use.</p> <p>The information in the Safety Data Sheet shall be written in a clear and concise manner. The Safety Data Sheet shall be prepared by a competent person who shall take into account the specific needs of the user audience, as far as it is known. Persons placing substances and preparations on the market shall ensure that competent persons have received appropriate training, including refresher training.</p>

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<p>A4.2.2.2 When writing the SDS, information should be presented in a consistent and complete form, with the workplace audience firmly in mind. However, it should be considered that all or part of the SDS can be used to inform workers, employers, health and safety professionals, emergency personnel, relevant government agencies, as well as members of the community.</p>		
<p>A4.2.2.3 Language used in the SDS should be simple, clear and precise, avoiding jargon, acronyms and abbreviations. Vague and misleading expressions should not be used. Phrases such as “may be dangerous”, “no health effects”, “safe under most conditions of use”, or “harmless” are also not recommended. It may be that information on certain properties is of no significance or that it is technically impossible to provide; if so, the reasons for this must be clearly stated under each heading. If it is stated that a particular hazard</p>	<p>0.2.4. The language used in the safety data sheet shall be simple, clear and precise, avoiding jargon, acronyms and abbreviations. Statements such as “may be dangerous”, “no health effects”, “safe under most conditions of use” or “harmless” or any other statements indicating that the substance or mixture is not hazardous or any other statements that are inconsistent with the classification of that substance or mixture shall not be used.</p>	<p>If in other cases it emerges that information on certain properties is of no significance or that it is technically impossible to provide, the reasons for this shall be clearly stated under each heading. Information shall be</p>

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<p>does not exist, the safety data sheet should clearly differentiate between cases where no information is available to the classifier, and cases where negative test results are available.</p>		<p>provided for each hazardous property. If it is stated that a particular hazard does not apply, clearly differentiate between cases where no information is available to the classifier, and cases where negative test results are available.</p>
		<p>For preparations not classified as dangerous, but for which a Safety Data Sheet is required according to Article 31, proportionate information shall be provided under each heading.</p>
<p>A4.2.2.4 The date of issue of the SDS should be stated and be very apparent. The date of issue is the date the SDS version was made public. This generally occurs shortly after the SDS authoring and publishing process is completed. Revised SDS's should clearly state the date of issue as well as a version number, revision number, supersedes date or some other indication of what version is replaced.</p>	<p>0.2.5. The date of compilation of the safety data sheet shall be given on the first page. When a safety data sheet has been revised and the new, revised version is provided to recipients, the changes shall be brought to the attention of the recipient in Section 16 of the safety data sheet, unless they have been indicated elsewhere. In that case, the date of compilation identified as "Revision: (date)" as well as a version number, revision number, supersedes date or other indication of what version is replaced shall appear on the first page.</p>	<p>Give the date of issue of the Safety Data Sheet on the first page. When a safety data sheet has been revised, the changes shall be brought to the attention of the recipient and identify it as "Revision: (date)".</p>
<p>A4.2.3 SDS format</p>	<p>0.3. Safety data sheet format</p>	
<p>A4.2.3.1 The information in the SDS should be presented using the</p>		

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<p>following 16 headings in the order given below (see also 1.5.3.2.1):</p> <ol style="list-style-type: none"> 1. Identification; 2. Hazard identification; 3. Composition/information on ingredients; 4. First-aid measures; 5. Fire-fighting measures; 6. Accidental release measures; 7. Handling and storage; 8. Exposure controls/personal protection; 9. Physical and chemical properties; 10. Stability and reactivity; 11. Toxicological information; 12. Ecological information; 13. Disposal considerations; 14. Transport information; 15. Regulatory information; 16. Other information 		
<p>A4.2.3.2 An SDS is not a fixed length document. The length of the SDS should be commensurate with the hazard of the material and the information available.</p>	<p>0.3.1. A safety data sheet is not a fixed length document. The length of the safety data sheet shall be commensurate with the hazard of the substance or mixture and the information available.</p>	

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<p>A4.2.3.3 All pages of an SDS should be numbered and some indication of the end of the SDS should be given (for example: “page 1 of 3”). Alternatively, number each page and indicate whether there is a page following (e.g. “Continued on next page” or “End of SDS”).</p>	<p>0.3.2. All pages of a safety data sheet, including any annexes, shall be numbered and shall bear either an indication of the length of the safety data sheet (such as “page 1 of 3”) or an indication whether there is a page following (such as “Continued on next page” or “End of safety data sheet”).</p>	
<p>A4.2.4 SDS content</p>	<p>0.4. Safety data sheet content</p>	
<p>A4.2.4.1 General information on SDS content can be found in 1.5.3.3. More practical information is given below.</p> <p>A4.2.4.2 The minimum information outlined in section A4.3 of this annex should be included on the SDS, where applicable and available, under the relevant headings. When information is not available or lacking this should be clearly stated. The SDS should not contain any blanks.</p>	<p>The information required by this Annex shall be included in the safety data sheet, where applicable and available, in the relevant subsections set out in Part B. The safety data sheet shall not contain blank subsections.</p>	
<p>A4.2.4.3 In addition, the SDS should contain a brief summary/conclusion of the data given, making it easy even for non-experts in the field to identify all the hazards for the hazardous substance/mixture.</p>		

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A4.2.4.4 Use of abbreviations is not recommended because they may lead to confusion or decreased understanding.		
A4.2.5 Other information requirements	0.5. Other information requirements	
<p>A4.2.5.1 There are information requirements for the preparation of an SDS. The minimum information requirements are outlined in A4.3.</p> <p>A4.2.5.2 In addition to the minimum information requirements (see A4.2.4.2), the SDS may also contain “additional information”. Where a material has additional relevant and available information about its nature and/or use, that information should be included in the SDS (see A4.3.16 for further advice on additional information requirements).</p>	<p>The inclusion of additional relevant and available information in the relevant subsections may be necessary in some cases in view of the wide range of properties of substances and mixtures.</p>	<p>Additional information may be necessary in some cases in view of the wide range of properties of the substances and preparations.</p>
A4.2.6 Units	0.6. Units	
<p>Numbers and quantities should be expressed in units appropriate to the region into which the product is being supplied. In general, the</p>	<p>The units of measurement as set out in Council Directive 80/181/EEC¹ shall be used.</p>	

¹ OJ L 39, 15.2.1980, p. 40.

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International System of Units (SI) should be used.		
	0.7. Special cases	Note
	Safety data sheets shall also be required for the special cases listed in paragraph 1.3 of Annex I to Regulation (EC) No 1272/2008 for which there are labelling derogations.	Safety data sheets are also required for certain special substances and preparations (e.g. metals in massive form, alloys, compressed gases, etc.) listed in chapters 8 and 9 of Annex VI to Directive 67/548/EEC, for which there are labelling derogations.
A4.3 Information requirements for the preparation of the SDS		
This section describes the GHS information requirements for SDS's. Additional information may be required by competent authorities.		
A4.3.1 SECTION 1: Identification	1. SECTION 1: Identification of the substance/mixture and of the company/undertaking	1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING
Identify the substance or mixture and provide the name of the supplier, recommended uses and the contact detail information of the supplier including an emergency contact in this section.	This section prescribes how the substance or mixture shall be identified and how the identified relevant uses, the name of the supplier of the substance or mixture and the contact detail information of the supplier of the substance or mixture including an emergency contact shall be provided in the safety data sheet.	
A4.3.1.1 GHS Product identifier	1.1. Product identifier	1.1. Identification of the substance or preparation
	In the case of a substance, the product	

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<p>The identity of the substance or mixture (GHS product identifier) should be exactly as found on the label.</p>	<p>identifier shall be provided in accordance with Article 18(2) of Regulation (EC) No 1272/2008 and as provided on the label in the official language(s) of the Member State(s) where the substance is placed on the market, unless the Member State(s) concerned provide(s) otherwise.</p> <p>For substances subject to registration, the product identifier shall be consistent with that provided in the registration and the registration number assigned under Article 20(3) of this Regulation shall also be indicated.</p> <p>Without affecting the obligations of downstream users laid down in Article 39 of this Regulation, the part of the registration number referring to the individual registrant of a joint submission may be omitted by a supplier who is a distributor or a downstream user provided that:</p> <p>(a) this supplier assumes the responsibility to provide the full registration number upon request for enforcement purposes or, if the full registration number is not available to him, to forward the request to his supplier, in line with point (b); and</p> <p>(b) this supplier provides the full registration</p>	<p>The term used for identification shall be identical to that provided on the label as set out in Annex VI to Directive 67/548/EEC.</p> <p>For substances subject to registration, the term shall be consistent with that provided under registration and the registration number assigned under Article 20(1) of this Regulation shall also be indicated.</p>

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	<p>number to the Member State authority responsible for enforcement (hereinafter referred to as the “enforcement authority”) within 7 days upon request, received either directly from the enforcement authority or forwarded by his recipient, or, if the full registration number is not available to him, this supplier shall forward the request to his supplier within 7 days upon request and at the same time inform the enforcement authority thereof.</p> <p>In the case of a mixture, the trade name or designation shall be provided in accordance with Article 10(2.1) of Directive 1999/45/EC.</p>	
<p>If one generic SDS is used to cover several minor variants of a substance or mixture, all names and variants should be listed on the SDS or the SDS should clearly delineate the range of substances included.</p>	<p>A single safety data sheet may be provided to cover more than one substance or mixture where the information in that safety data sheet fulfils the requirements of this annex for each of those substances or mixtures.</p>	
<p>A4.3.1.2 Other means of identification</p>	<p><i>Other means of identification</i></p>	
<p>In addition, or as an alternative, to the GHS product identifier, the substance or mixture may be identified by alternative names, numbers, company product codes, or other unique identifiers. Provide other names</p>	<p>Other names or synonyms by which the substance or mixture is labelled or commonly known, such as alternative names, numbers, company product codes, or other unique identifiers may be provided.</p>	<p>Other means of identification available may also be indicated.</p>

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or synonyms by which the substance or mixture is labelled or commonly known, if applicable.		
A4.3.1.3 Recommended use of the chemical and restrictions on use	1.2. Relevant identified uses of the substance or mixture and uses advised against	1.2. Use of the substance/preparation
Provide the recommended or intended use of the substance or mixture, including a brief description of what it actually does, e.g. flame retardant, anti-oxidant, etc.	At least the identified uses relevant for the recipient(s) of the substance or mixture shall be indicated. This shall be a brief description of what the substance or mixture is intended to do, such as “flame retardant”, “anti-oxidant”.	Indicate the uses of the substance or preparation as far as they are known. Where there are many possible uses, only the most important or common uses need to be listed. This shall include a brief description of what it actually does, e.g. flame retardant, anti-oxidant, etc.
Restrictions on use should, as far as possible, be stated including non-statutory recommendations by the supplier.	The uses which the supplier advises against and why shall, where applicable, be stated. This need not be an exhaustive list.	
	Where a chemical safety report is required, the information in this subsection of the safety data sheet shall be consistent with the identified uses in the chemical safety report and the exposure scenarios from the chemical safety report set out in the annex to the safety data sheet.	Where a Chemical Safety Report is required, the Safety Data Sheet shall contain information on all the identified uses relevant to the recipient of the Safety Data Sheet. This information shall be consistent with the identified uses and exposure scenarios set out in the annex to the Safety Data Sheet.
A4.3.1.4 Supplier’s details	1.3. Details of the supplier of the safety data sheet	1.3. Company/undertaking identification
The name, full address and phone number(s) of the supplier	The supplier, whether it is the manufacturer, importer, only representative, downstream	Identify the person responsible for placing the substance or preparation on the market

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should be included on the SDS.	user or distributor, shall be identified. The full address and telephone number of the supplier shall be given as well as an e-mail address for a competent person responsible for the safety data sheet.	within the Community, whether it is the manufacturer, importer or distributor. Give the full address and telephone number of this person as well as the e-mail address of the competent person responsible for the Safety Data Sheet.
	In addition, if the supplier is not located in the Member State where the substance or mixture is placed on the market and he has nominated a responsible person for that Member State, a full address and telephone number for that responsible person shall be given.	In addition, where this person is not located in the Member State where the substance or preparation is placed on the market, give a full address and telephone number for the person responsible in that Member State, if possible.
	For registrants, the information shall be consistent with the information on the identity of the manufacturer or importer provided in the registration. Where an only representative has been appointed, details of the non-Community manufacturer or formulator may also be provided.	For registrants, the person identified shall be consistent with the information on the identity of the manufacturer or importer provided in the registration.
A4.3.1.5 <i>Emergency phone number</i>	1.4. Emergency telephone number	1.4. Emergency telephone
References to emergency information services should be included in all SDS. If any restrictions apply, such as hours of operation (e.g. Monday - Friday, 8:00 a.m. - 6:00 p.m., or 24 hours) or limits on specific types of information (e.g.,	References to emergency information services shall be provided. If an official advisory body exists in the Member State where the substance or mixture is placed on the market (this may be the body responsible for receiving information relating to health referred to in Article 45 of Regulation (EC) No 1272/2008 and Article 17 of	In addition to the above mentioned information, supply the emergency telephone number of the company and/or relevant official advisory body (this may be the body responsible for receiving information relating to health, which is referred to in Article 17 of Directive 1999/45/EC). Specify if this phone number

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<p>medical emergencies, or transportation emergencies), this should be clearly stated.</p>	<p>Directive 1999/45/EC), its telephone number shall be given and can suffice. If availability of such services is limited for any reasons, such as hours of operation, or if there are limits on specific types of information provided, this shall be clearly stated.</p>	<p>is available only during office hours.</p>
<p>A4.3.2 SECTION 2: Hazard identification</p>	<p>2. SECTION 2: Hazards identification</p>	<p>2. HAZARDS IDENTIFICATION</p>
<p>This section describes the hazards of the substance or mixture and the appropriate warning information (signal word, hazard statement(s) and precautionary statement(s)) associated with those hazards. The section should include a brief summary/conclusion of the data given as described in A4.2.4.3.</p>	<p>This section of the safety data sheet shall describe the hazards of the substance or mixture and the appropriate warning information associated with those hazards.</p>	
<p>A4.3.2.1 Classification of the substance or mixture</p>	<p>2.1. Classification of the substance or mixture</p>	
<p>A4.3.2.1.1 This sub-section indicates the hazard classification of the substance or mixture. A4.3.2.1.2 If the substance or mixture is classified in accordance with Parts 2, 3 and/or 4 of the GHS, provide the appropriate hazard class and category to indicate the hazard. For example,</p>	<p>In the case of a substance, the classification which arises from the application of the classification rules in Regulation (EC) No 1272/2008 shall be given. Where the supplier has notified information regarding the substance to the classification and labelling inventory in accordance with Article 40 of Regulation (EC) No 1272/2008, the classification given in the</p>	<p>Give here the classification of the substance or preparation which arises from application of the classification rules in Directives 67/548/EEC or 1999/45/EC. Indicate clearly and briefly the hazards the substance or preparation presents to man and the environment. The classification of the substance shall be</p>

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flammable liquid Category 1.	<p>safety data sheet shall be the same as the classification provided in that notification.</p> <p>The classification of the substance according to Council Directive 67/548/EEC shall also be given.</p> <p>In the case of a mixture, the classification which arises from the application of the classification rules in Directive 1999/45/EC shall be given. If the mixture does not meet the criteria for classification in accordance with Directive 1999/45/EC, this shall be clearly stated. Information on the substances in the mixture is provided under Subsection 3.2.</p>	<p>consistent with the classification provided to the classification and labelling inventory according to Title XI.</p> <p>Distinguish clearly between preparations which are classified as dangerous and preparations which are not classified as dangerous according to Directive 1999/45/EC.</p>
	<p>If the classification, including the hazard statements and R phrases, is not written out in full, reference shall be made to Section 16 where the full text of each classification, including each hazard statement and R phrase, shall be given.</p>	
	<p>The most important adverse physicochemical, human health and environmental effects shall be listed consistent with Sections 9 to 12 of the safety data sheet, in a way as to allow non-experts to identify the hazards of the substance or mixture.</p>	<p>Describe the most important adverse physicochemical, human health and environmental effects and symptoms relating to the uses and possible misuses of the substance or preparation that can reasonably be foreseen.</p>
A4.3.2.2 <i>GHS label elements, including precautionary statements</i>	2.2. Label elements	

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<p>A4.3.2.2.1 Based on the classification, provide the appropriate label elements: signal word(s), hazard statement(s) and precautionary statement(s).</p> <p>A4.3.2.2.2 Pictograms (or hazard symbols) may be provided as a graphical reproduction of the symbols in black and white or the name of the symbol, e.g. “flame”, “skull and crossbones”.</p>	<p>In the case of a substance, based on the classification, at least the following elements appearing on the label in accordance with Regulation (EC) No 1272/2008 shall be provided: hazard pictogram(s), signal word(s), hazard statement(s) and precautionary statement(s). A graphical reproduction of the full hazard pictogram in black and white or a graphical reproduction of the symbol only may be substituted for the colour pictogram provided in Regulation (EC) No 1272/2008.</p> <p>In the case of a mixture, based on the classification, at least the appropriate symbol(s), indication(s) of danger, risk phrase(s) and safety advice appearing on the label in accordance with Directive 1999/45/EC shall be provided. The symbol may be provided as a graphical reproduction of the symbol in black and white.</p> <p>The applicable label elements in accordance with Article 25 and Article 32(6) of Regulation (EC) No 1272/2008, in the case of a substance, or Sections A and B of Annex V of Directive 1999/45/EC, in the case of a mixture, shall be provided.</p>	<p>The information shown on the label shall be given under heading 15.</p>
<p>A4.3.2.3 Other hazards which do not result in classification</p>	<p>2.3. Other hazards</p>	
	<p>Information on whether the substance or</p>	

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<p>Provide information on other hazards which do not result in classification but may contribute to the overall hazards of the material, for example, formation of air contaminants during hardening or processing, dust explosion hazards, suffocation, freezing or environmental effects such as hazards to soil-dwelling organisms.</p>	<p>mixture meets the criteria for PBT or vPvB in accordance with Annex XIII shall be provided.</p> <p>Information shall be provided on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture, such as formation of air contaminants during hardening or processing, dustiness, dust explosion hazards, cross-sensitisation, suffocation, freezing, high potency for odour or taste, or environmental effects like hazards to soil-dwelling organisms, or photochemical ozone creation potential.</p>	<p>It may be necessary to mention other hazards, such as dustiness, cross-sensitisation, suffocation, freezing, high potency for odour or taste or environmental effects such as hazards to soil-dwelling organisms, ozone depletion, photochemical ozone creation potential, etc., which do not result in classification but which may contribute to the overall hazards of the material.</p>
<p>A4.3.3 SECTION 3: Composition/information on ingredients</p>	<p>3. SECTION 3: Composition/information on ingredients</p>	<p>3. COMPOSITION/INFORMATION ON INGREDIENTS</p>
<p>Identify the ingredient(s) of the product in this section. This includes identifying impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance. This section may also be used to provide information on complex substances. <i>NOTE: For information on ingredients, the competent authority rules for Confidential</i></p>	<p>This section of the safety data sheet shall describe the chemical identity of the ingredient(s) of the substance or mixture, including impurities and stabilising additives as set out below. Appropriate and available safety information on surface chemistry shall be indicated.</p>	

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<p><i>Business Information (CBI) take priority over the rules for product identification. When applicable, indicate that confidential information about the composition was omitted.</i></p>		
<p>A4.3.3.1 Substances</p>	<p>3.1. Substances</p>	
<p>A4.3.3.1.1 <i>Chemical identity of the substance</i> The identity of a substance is provided by its common chemical name. The chemical name can be identical to the GHS product identifier. <i>NOTE: The “common chemical name” may, for example, be the CAS name or IUPAC name, as applicable.</i></p> <p>A4.3.3.1.2 <i>Common name(s), synonym(s) of the substance</i> Common names and synonyms should be provided where appropriate.</p> <p>A4.3.3.1.3 <i>CAS number and other unique identifiers for the substance</i> The Chemical Abstract Service (CAS) registry number provides a unique chemical identification and should be provided when available. Other unique identifiers specific to a country</p>	<p>The chemical identity of the main constituent of the substance shall be provided by providing at least the product identifier or one of the other means of identification given in Subsection 1.1.</p>	

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<p>or region, such as the European Community (EC) number could be added.</p> <p>A4.3.3.1.4 <i>Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance</i></p> <p>Identify any impurities and/or stabilizing additives, which are themselves classified and which contribute to the classification of the substance.</p>	<p>The chemical identity of any impurity, stabilising additive, or individual constituent other than the main constituent, which is itself classified and which contributes to the classification of the substance shall be provided as follows:</p> <p>(a) the product identifier in accordance with Article 18(2) of Regulation (EC) No 1272/2008;</p> <p>(b) if the product identifier is not available, one of the other names (usual name, trade name, abbreviation) or identification numbers.</p> <p>Suppliers of substances may choose to list in addition all constituents including non-classified ones.</p> <p>This subsection may also be used to provide information on multi-constituent substances.</p>	
<p>A4.3.3.2 <i>Mixtures</i></p>	<p>3.2. Mixtures</p>	
<p>A4.3.3.2.1 For a mixture, provide the chemical identity, identification number (within the meaning of A4.3.3.1.3) and concentration or concentration ranges of all</p>	<p>The product identifier when available, concentration or concentration ranges and classifications shall be provided for at least all substances referred to in points 3.2.1 or 3.2.2. Suppliers of mixtures may choose to</p>	<p>The information given shall enable the recipient to identify readily the hazards of the components of the preparation. The hazards of the preparation itself shall be given under heading 2.</p>

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<p>hazardous ingredients, which are hazardous to health or the environment within the meaning of the GHS, and are present above their cut-off levels. Manufacturers or suppliers may choose to list all ingredients, including non-hazardous ingredients.</p>	<p>list in addition all substances in the mixture, including substances not meeting the criteria for classification. This information shall enable the recipient to identify readily the hazards of the substances in the mixture. The hazards of the mixture itself shall be given in Section 2.</p>	<p>3.1. It is not necessary to give the full composition (nature of the ingredients and their concentration), although a general description of the components and their concentrations can be helpful.</p>
<p>A4.3.3.2.2 The concentrations of the ingredients of a mixture should be described as:</p> <ul style="list-style-type: none"> (a) exact percentages in descending order by mass or volume; or (b) ranges of percentages in descending order by mass or volume if such ranges are acceptable to the appropriate competent national authority. 	<p>The concentrations of the substances in a mixture shall be described as either of the following:</p> <ul style="list-style-type: none"> (a) exact percentages in descending order by mass or volume, if technically possible; (b) ranges of percentages in descending order by mass or volume, if technically possible. 	
<p>A4.3.3.2.3 When using a proportion range, the health and environmental hazard effects should describe the effects of the highest concentration of each ingredient, provided that the effects of the mixture as a whole are not available. <i>NOTE: The “proportion range”</i></p>	<p>When using a range of percentages, the health and environmental hazards shall describe the effects of the highest concentration of each ingredient.</p> <p>If the effects of the mixture as a whole are available, this information shall be included under Section 2.</p>	

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<i>refers to the concentration or percentage range of the ingredient in the mixture.</i>		
	Where the use of an alternative chemical name has been allowed under Article 15 of Directive 1999/45/EC or under Article 24 of Regulation (EC) No 1272/2008, that name can be used.	3.6. If, in accordance with the provisions of Article 15 of Directive 1999/45/EC or the footnote to Section 3.3 of this Annex, the identity of certain substances is to be kept confidential, their chemical nature shall be described in order to ensure safe handling. The name used shall be the same as that which derives from the above procedures.
	3.2.1. For a mixture meeting the criteria for classification in accordance with Directive 1999/45/EC, the following substances shall be indicated, together with their concentration or concentration range in the mixture:	3.2. For a preparation classified as dangerous according to Directive 1999/45/EC, the following substances shall be indicated, together with their concentration or concentration range in the preparation:
	(a) substances presenting a health or environmental hazard within the meaning of Council Directive 67/548/EEC and substances presenting a health or environmental hazard within the meaning of Regulation (EC) No 1272/2008, provided that information complying	(a) substances presenting a health or environmental hazard within the meaning of Directive 67/548/EEC, if they are present in concentrations equal to or greater than the lowest of:

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	with the classification criteria of that Regulation has been made available to the supplier of the mixture, if those substances are present in concentrations equal to or greater than the lowest of any of the following:	
	(i) the applicable concentrations defined in the table of Article 3 (3) of Directive 1999/45/EC;	– the applicable concentrations defined in the table of Article 3(3) of Directive 1999/45/EC, or
	(ii) the specific concentration limits given in Part 3 of Annex VI to Regulation (EC) No 1272/2008; (iii) if an M-factor has been given in Part 3 of Annex VI to Regulation (EC) No 1272/2008, the generic cut-off value in Table 1.1 of Annex I to that Regulation, adjusted using the calculation set out in Section 4.1 of Annex I to that Regulation;	– the concentration limits given in Annex I to Directive 67/548/EEC, or
	(iv) the concentration limits given in Part B of Annex II to Directive 1999/45/EC;	– the concentration limits given in Part B of Annex II to Directive 1999/45/EC, or
	(v) the concentration limits given in Part B of Annex III to Directive 1999/45/EC;	– the concentration limits given in Part B of Annex III Directive 1999/45/EC, or

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	(vi) the concentration limits given in Annex V to Directive 1999/45/EC;	– the concentration limits given in Annex V to Directive 1999/45/EC, or
	(vii) the specific concentration limits provided to the classification and labelling inventory established under Regulation (EC) No 1272/2008; (viii) if an M-factor has been provided to the classification and labelling inventory established under Regulation (EC) No 1272/2008, the generic cut-off value in Table 1.1 of Annex I to that Regulation, adjusted using the calculation set out in Section 4.1 of Annex I to that Regulation.	– the concentration limits given in an agreed entry in the classification and labelling inventory established under Title XI of this Regulation;
	(b) substances for which there are Community workplace exposure limits, which are not already included under point (a);	(b) substances for which there are Community workplace exposure limits, which are not already included under point (a);
	(c) substances that are persistent, bioaccumulative and toxic or very persistent and very bioaccumulative in accordance with the criteria set out in Annex XIII, or substances included in the list established in accordance with Article 59(1) for	(c) substances that are persistent, bioaccumulative and toxic or very persistent and very bioaccumulative in accordance with the criteria set out in Annex XIII, if the concentration of an individual substance is equal to or greater than

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	<p>reasons other than the hazards referred to in point (a), if the concentration of an individual substance is equal to or greater than 0,1 %.</p>	<p>0,1 %.</p>
	<p>3.2.2. For a mixture not meeting the criteria for classification in accordance with Directive 1999/45/EC, substances present in an individual concentration equal to or greater than the following concentrations shall be indicated, together with their concentration or concentration range:</p>	<p>3.3. For a preparation not classified as dangerous according to Directive 1999/45/EC, the substances shall be indicated, together with their concentration or concentration range, if they are present in an individual concentration of either:</p>
	<p>(a) 1% by weight in non-gaseous mixtures and 0,2% by volume in gaseous mixtures for</p>	<p>(a) ≥ 1 % by weight for non-gaseous preparations and $\geq 0,2$ % by volume for gaseous preparations and</p>
	<p>(i) substances which present a health or environmental hazard within the meaning of Council Directive 67/548/EEC and substances which present a health or environmental hazard within the meaning of Regulation (EC) No 1272/2008, provided</p>	<p>– the substances present a health or environmental hazard within the meaning of Directive 67/548/EEC₁; or</p>

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	that information complying with the classification criteria of that Regulation has been made available to the supplier of the mixture; or	
	(ii) substances which are assigned Community workplace exposure limits;	– the substances are assigned Community workplace exposure limits;
		or
	(b) 0,1% by weight for substances which are persistent, bioaccumulative and toxic in accordance with the criteria set out in Annex XIII, very persistent and very bioaccumulative in accordance with the criteria set out in Annex XIII, or included in the list established in accordance with Article 59(1) for reasons other than the hazards referred to in point (a).	(b) ≥0,1 % by weight and the substances are persistent, bioaccumulative and toxic or very persistent and very bioaccumulative in accordance with the criteria set out in Annex XIII.
	3.2.3. For the substances indicated in Subsection 3.2, the classification of the substance according to Council Directive 67/548/EEC, including indication of danger, symbol	3.4. The classification (derived either from Articles 4 and 6 of Directive 67/548/EEC, from Annex I to Directive 67/548/EEC or from an agreed entry in the classification

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	<p>letter(s) and R phrases, shall be provided. The classification of the substance according to Regulation (EC) No 1272/2008, including the hazard class(es) and category code(s) as provided in Table 1.1 of Annex VI to that Regulation as well as the hazard statements which are assigned in accordance with their physical, human health and environmental hazards, shall also be provided, provided that information complying with the classification criteria of that Regulation has been made available to the supplier of the mixture. The hazard statements and R phrases do not need to be written out in full in this section; their codes shall be sufficient. In cases where they are not written out in full, reference shall be made to Section 16, where the full text of each relevant hazard statement and R phrase shall be listed. If the substance does not meet the classification criteria, the reason for indicating the substance in Subsection 3.2 shall be described, such as “non-classified vPvB substance” or “substance with a Community workplace exposure</p>	<p>and labelling inventory established under Title XI of this Regulation) of the above substances shall be given, including the symbol letters and R phrases which are assigned in accordance with their physicochemical, human health and environmental hazards. The R phrases do not need to be written out in full here: reference shall be made to heading 16, where the full text of each relevant R phrase shall be listed. If the substance does not meet the classification criteria, the reason for indicating the substance in section 3 shall be described, such as "PBT-substance" or "substance with a Community workplace exposure limit".</p>

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	limit".	
	<p>3.2.4. For the substances indicated in Subsection 3.2 the name and, if available, the registration number, as assigned under Article 20(3) of this Regulation shall be given.</p> <p>Without affecting the obligations of downstream users laid down in Article 39 of this Regulation, the part of the registration number referring to the individual registrant of a joint submission may be omitted by the supplier of the mixture provided that:</p> <p>(a) this supplier assumes the responsibility to provide the full registration number upon request for enforcement purposes, or, if the full registration number is not available to him, to forward the request to his supplier, in line with point (b); and</p> <p>(b) this supplier provides the full registration number to the Member State authority responsible for enforcement (herein after referred to as the “enforcement authority”) within 7 days upon request,</p>	<p>3.5. The name and the Registration number, assigned under Article 20(1) of this Regulation, EINECS or ELINCS number, if available, of the above substances shall be given in accordance with Directive 67/548/EEC.</p>

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	<p>received either directly from the enforcement authority or forwarded by his recipient, or, if the full registration number is not available to him, this supplier shall forward the request to his supplier within 7 days upon request and at the same time inform the enforcement authority thereof.</p> <p>The EC number, if available, shall be given in accordance with Regulation (EC) No 1272/2008. The CAS number, if available, and IUPAC name, if available, may also be given.</p>	<p>The CAS number and IUPAC name (if available) may also be helpful.</p>
	<p>For substances indicated in this subsection by means of an alternative chemical name in accordance with Article 15 of Directive 1999/45/EC or Article 24 of Regulation (EC) No 1272/2008, the registration number, EC number and other precise chemical identifiers are not necessary.</p>	<p>For substances listed by a generic name, according to Article 15 of Directive 1999/45/EC or the footnote to Section 3.3 of this Annex, a precise chemical identifier is not necessary.</p>
<p>A4.3.4 SECTION 4: First-aid measures</p>	<p>4. SECTION 4: First aid measures</p>	<p>4. FIRST AID MEASURES</p>
<p>This section describes the initial care that can be given by an untrained responder without the use of sophisticated equipment</p>	<p>This section of the safety data sheet shall describe the initial care in such a way that it can be understood and given by an untrained responder without the use of sophisticated</p>	

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<p>and without a wide selection of medications available. If medical attention is required, the instructions should state this, including its urgency. It may be useful to provide information on the immediate effects, by route of exposure, and indicate the immediate treatment, followed by possible delayed effects with specific medical surveillance required.</p>	<p>equipment and without the availability of a wide selection of medications. If medical attention is required, the instructions shall state this, including its urgency.</p>	
<p>A4.3.4.1 <i>Description of necessary first-aid measures</i></p>	<p>4.1. Description of first aid measures</p>	
<p>A4.3.4.1.1 Provide first-aid instructions by relevant routes of exposure. Use sub-headings to indicate the procedure for each route (e.g. inhalation, skin, eye and ingestion). Describe expected immediate and delayed symptoms.</p>	<p>4.1.1. First aid instructions shall be provided by relevant routes of exposure. Subdivisions shall be used to indicate the procedure for each route, such as inhalation, skin, eye and ingestion.</p>	<p>Describe the first-aid measures.</p> <p>Subdivide the information according to the different routes of exposure, i.e. inhalation, skin and eye contact and ingestion, under different subheadings.</p> <p>The information on first aid shall be brief and easy to understand by the victim, bystanders and first-aiders. The symptoms and effects shall be briefly summarised. The instructions shall indicate what is to be done on the spot in the case of an accident and whether delayed effects can be expected after exposure.</p>
<p>A4.3.4.1.2 Provide advice whether:</p>	<p>4.1.2. Advice shall be provided as to whether:</p>	

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<ul style="list-style-type: none"> (a) immediate medical attention is required and if delayed effects can be expected after exposure; (b) movement of the exposed individual from the area to fresh air is recommended; (c) removal and handling of clothing and shoes from the individual is recommended; and (d) personal protective equipment (PPE) for first-aid responders is recommended. 	<ul style="list-style-type: none"> (a) immediate medical attention is required and if delayed effects can be expected after exposure; (b) movement of the exposed individual from the area to fresh air is recommended; (c) removal and handling of clothing and shoes from the individual is recommended; and (d) personal protective equipment for first aid responders is recommended. 	<p>Specify first whether immediate medical attention is required.</p> <p>Indicate whether professional assistance by a doctor is needed or advisable.</p>
<p>A4.3.4.2 <i>Most important symptoms/effects, acute and delayed</i></p>	<p>4.2. Most important symptoms and effects, both acute and delayed</p>	
<p>Provide information on the most important symptoms/effects, acute and delayed, from exposure.</p>	<p>Briefly summarised information shall be provided on the most important symptoms and effects, both acute and delayed, from exposure.</p>	
<p>A4.3.4.3 <i>Indication of immediate medical attention and special treatment needed, if necessary</i></p>	<p>4.3. Indication of any immediate medical attention and special treatment needed</p>	
<p>Where appropriate, provide information on clinical testing and medical monitoring for delayed effects, specific details on antidotes (where they are known) and contraindications.</p>	<p>Where appropriate, information shall be provided on clinical testing and medical monitoring for delayed effects, specific details on antidotes (where they are known) and contraindications.</p>	

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	For some substances or mixtures, it may be important to emphasise that special means to provide specific and immediate treatment shall be available at the workplace.	For some substances or preparations it may be important to emphasise that special means to provide specific and immediate treatment shall be available at the workplace.
A4.3.5 SECTION 5: Fire-fighting measures	5. SECTION 5: Fire-fighting measures	5. FIRE-FIGHTING MEASURES
This section covers the requirements for fighting a fire caused by the substance or mixture, or arising in its vicinity.	This section of the safety data sheet shall describe the requirements for fighting a fire caused by the substance or mixture, or arising in its vicinity.	Refer to requirements for fighting a fire caused by the substance or preparation, or arising in its vicinity by indicating:
A4.3.5.1 Suitable extinguishing media	5.1. Extinguishing media	
Provide information on the appropriate extinguishing media. In addition, indicate whether any extinguishing media are inappropriate for a particular situation involving the substance or mixture.	Suitable extinguishing media: Information shall be provided on the appropriate extinguishing media. Unsuitable extinguishing media: Indications shall be given whether any extinguishing media are inappropriate for a particular situation involving the substance or mixture.	<ul style="list-style-type: none"> – suitable extinguishing media, – extinguishing media which shall not be used for safety reasons,
A4.3.5.2 Specific hazards arising from the chemical	5.2. Special hazards arising from the substance or mixture	
Provide advice on specific hazards that may arise from the chemical, such as hazardous combustion products that form when the substance or mixture burns. For example: (a) “may produce toxic fumes of carbon monoxide if	Information shall be provided on hazards that may arise from the substance or mixture, like hazardous combustion products that form when the substance or mixture burns, such as “may produce toxic fumes of carbon monoxide if burning” or “produces oxides of sulphur and nitrogen on combustion”.	<ul style="list-style-type: none"> – special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases,

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(b) burning”; or “produces oxides of sulphur and nitrogen on combustion”.		
A4.3.5.3 <i>Special protective actions for fire-fighters</i>	5.3. Advice for fire-fighters	
A4.3.5.3.1 Provide advice on any protective actions to be taken during fire fighting. For example, “keep containers cool with water spray”.	Advice shall be provided on any protective actions to be taken during fire-fighting, such as “keep containers cool with water spray”, and on special protective equipment for fire-fighters, such as boots, overalls, gloves, eye and face protection and breathing apparatus.	– special protective equipment for fire-fighters.
A4.3.6 SECTION 6: Accidental release measures	6. SECTION 6: Accidental release measures	6. ACCIDENTAL RELEASE MEASURES
This section recommends the appropriate response to spills, leaks, or releases in order to prevent or minimize the adverse effects on persons, property and the environment in this section. Distinguish between responses for large and small spills where the spill volume has a significant impact on the hazard. The procedures for containment	This section of the safety data sheet shall recommend the appropriate response to spills, leaks, or releases, to prevent or minimise the adverse effects on persons, property and the environment. It shall distinguish between responses to large and small spills, in cases where the spill volume has a significant impact on the hazard. If the procedures for containment and recovery indicate that different practices are required, these shall be indicated in the safety data	Depending on the substance or preparation involved, information may be needed on:

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and recovery may indicate that different practices are required.	sheet.	
A4.3.6.1 <i>Personal precautions, protective equipment and emergency procedures</i>	6.1. Personal precautions, protective equipment and emergency procedures	personal precautions such as:
A4.3.6.1.1 <i>For non-emergency personnel</i>	6.1.1. For non-emergency personnel	
Provide advice related to accidental spills and release of the substance or mixture such as:	Advice shall be provided related to accidental spills and release of the substance or mixture such as:	
<ul style="list-style-type: none"> (a) the wearing of suitable protective equipment (including personal protective equipment, see Section 8 of the SDS) to prevent any contamination of skin, eyes and personal clothing; (b) removal of ignition sources and provision of sufficient ventilation; and (c) emergency procedures such as the necessity to evacuate the danger area or to consult an expert. 	<ul style="list-style-type: none"> (a) the wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing; (b) removal of ignition sources, provision of sufficient ventilation, control of dust; and (c) emergency procedures such as the need to evacuate the danger area or to consult an expert. 	<ul style="list-style-type: none"> – removal of ignition sources, provision for sufficient ventilation/respiratory protection, control of dust, prevention of skin and eye contact,
A4.3.6.1.2 <i>For emergency responders</i>	6.1.2. For emergency responders	
Provide advice related to suitable fabric for personal protective clothing (e.g.: appropriate: Butylene; not	Advice shall be provided related to suitable fabric for personal protective clothing (such as “appropriate: Butylene”; “not	

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appropriate: PVC).	appropriate: PVC”).	
A4.3.6.2 Environmental precautions	6.2. Environmental precautions	environmental precautions such as:
Provide advice on any environmental precautions related to accidental spills and release of the substance or mixture, such as keeping away from drains, surface and ground water.	Advice shall be provided on any environmental precautions to be taken related to accidental spills and release of the substance or mixture, such as keeping away from drains, surface and ground water.	<ul style="list-style-type: none"> – keeping away from drains, surface- and ground-water and soil, possible need to alert the neighbourhood,
A4.3.6.3 Methods and materials for containment and cleaning up	6.3. Methods and material for containment and cleaning up	methods for cleaning up such as:
A4.3.6.3.1 Provide appropriate advice on how to contain and clean up a spill. Appropriate containment techniques may include: <ul style="list-style-type: none"> (a) bunding, covering of drains; and (b) capping procedures. 	6.3.1. Appropriate advice shall be provided on how to contain a spill. Appropriate containment techniques may include any of the following: <ul style="list-style-type: none"> (a) bunding, covering of drains; (b) capping procedures. 	
A4.3.6.3.2 Appropriate clean up procedures may include: <ul style="list-style-type: none"> (a) neutralization techniques; (b) decontamination techniques; (c) adsorbent materials; (d) cleaning techniques; (e) vacuuming techniques; and (f) equipment required for containment/clean up (include the use of non-sparking tools and 	6.3.2. Appropriate advice shall be provided on how to clean up a spill. Appropriate clean up procedures may include any of the following: <ul style="list-style-type: none"> (a) neutralisation techniques; (b) decontamination techniques; (c) adsorbent materials; (d) cleaning techniques; (e) vacuuming techniques; (f) equipment required for containment/clean up (include the use of non-sparking tools and equipment 	<ul style="list-style-type: none"> – use of absorbent material (e.g. sand, diatomaceous earth, acid binder, universal binder, sawdust, etc.), reduction of gases/fumes with water, dilution.

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equipment where applicable).	where applicable).	
A4.3.6.3.3 Provide any other issues relating to spills and releases. For example, including advice on inappropriate containment or clean up techniques.	6.3.3. Any other information shall be provided relating to spills and releases, including advice on inappropriate containment or clean up techniques, such as by indications like 'never use ...'.	Also consider the need for indications such as: "never use, neutralise with ...".
	<p>6.4. Reference to other sections</p> <p>If appropriate Sections 8 and 13 shall be referred to.</p>	<p>Note</p> <p>If appropriate refer to headings 8 and 13.</p>
<p>A4.3.7 SECTION 7: Handling and storage</p>	<p>7. SECTION 7: Handling and storage</p>	<p>7. HANDLING AND STORAGE</p>
<p>This section provides guidance on safe handling practices that minimize the potential hazards to people, property and the environment from the substance or mixture. Emphasize precautions that are appropriate to the intended use and to the unique properties of the substance or mixture.</p>	<p>This section of the safety data sheet shall provide advice on safe handling practices. It shall emphasise precautions that are appropriate to the identified uses referred to under Subsection 1.2 and to the unique properties of the substance or mixture.</p>	
	<p>Information in this section of the safety data sheet shall relate to the protection of human health, safety and the environment. It shall assist the employer in devising suitable working procedures and organisational</p>	<p>Note</p> <p>Information in this section shall relate to the protection of human health, safety and the environment. It shall assist the employer in devising suitable working procedures and organisational measures according to Article</p>

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	measures according to Article 5 of Directive 98/24/EC and Article 5 of Directive 2004/37/EC.	5 of Directive 98/24/EC.
	<p>Where a chemical safety report is required, the information in this section of the safety data sheet shall be consistent with the information given for the identified uses in the chemical safety report and the exposure scenarios showing control of risk from the chemical safety report set out in the annex to the safety data sheet.</p> <p>In addition to information given in this section, relevant information may also be found in Section 8.</p>	Where a chemical safety report or a registration is required, the information in this section shall be consistent with the information given, for the identified uses and exposure scenarios set out in the annex to the Safety Data Sheet.
A4.3.7.1 Precautions for safe handling	7.1. Precautions for safe handling	7.1. Handling
A4.3.7.1.1 Provide advice that:	7.1.1. Recommendations shall be specified to:	Specify precautions for safe handling including advice on technical measures such as:
(a) allows safe handling of the substance or mixture;	(a) allow safe handling of the substance or mixture, such as containment and measures to prevent fire as well as aerosol and dust generation;	<ul style="list-style-type: none"> – containment, local and general ventilation, measures to prevent aerosol and dust generation and fire, measures required to protect the environment (e.g. use of filters or scrubbers on exhaust ventilation, use in a bunded area, measures for collection and disposal of spillages, etc.) and any specific requirements or rules relating to the
(b) prevents handling of incompatible substances or mixtures; and	(b) prevent handling of incompatible substances or mixtures; and	
(c) minimizes the release of the substance or mixture to the environment.	(c) reduce the release of the substance or mixture to the environment, such as avoiding spills or keeping	

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	away from drains.	substance or preparation (e.g. procedures or equipment which are prohibited or recommended) and if possible give a brief description.
<p>A4.3.7.1.2 It is good practice to provide advice on general hygiene. For example:</p> <ul style="list-style-type: none"> (a) “eating, drinking and smoking in work areas is prohibited”; (b) “wash hands after use”; and (c) “remove contaminated clothing and protective equipment before entering eating areas”. 	<p>7.1.2. Advice on general occupational hygiene shall be provided, such as:</p> <ul style="list-style-type: none"> (a) not to eat, drink and smoke in work areas; (b) to wash hands after use; and (c) to remove contaminated clothing and protective equipment before entering eating areas. 	
<p>A4.3.7.2 <i>Conditions for safe storage, including any incompatibilities</i></p>	<p>7.2. Conditions for safe storage, including any incompatibilities</p>	<p>7.2. Storage</p>
<p>Ensure that the advice provided is consistent with the physical and chemical properties in Section 9 (Physical and chemical properties) of the SDS. If relevant, provide advice on specific storage requirements including:</p>	<p>The advice provided shall be consistent with the physical and chemical properties described in Section 9 of the safety data sheet. If relevant, advice shall be provided on specific storage requirements including:</p>	<p>Specify the conditions for safe storage such as:</p> <ul style="list-style-type: none"> – specific design for storage rooms or vessels (including retention walls and ventilation), incompatible materials, conditions of storage (temperature and humidity limit/range, light,
<p>(a) How to avoid:</p>	<p>(a) How to manage risks associated with:</p>	
<ul style="list-style-type: none"> (i) explosive atmospheres; (ii) corrosive conditions; 	<ul style="list-style-type: none"> (i) explosive atmospheres; 	

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<ul style="list-style-type: none"> (iii) flammability hazards; (iv) incompatible substances or mixtures; (v) evaporative conditions; and (vi) potential ignition sources (including electrical equipment). 	<ul style="list-style-type: none"> (ii) corrosive conditions; (iii) flammability hazards; (iv) incompatible substances or mixtures; (v) evaporative conditions; and (vi) potential ignition sources (including electrical equipment). 	<p style="text-align: center;">inert gas, etc.) special electrical equipment and prevention of static electricity.</p> <p>Give advice if relevant on quantity limits under storage conditions. In particular indicate any special requirements such as the type of material used in the packaging/containers of the substance or preparation.</p>
(b) How to control the effects of:	(b) How to control the effects of:	
<ul style="list-style-type: none"> (i) weather conditions; (ii) ambient pressure; (iii) temperature; (iv) sunlight; (v) humidity; and (vi) vibration. 	<ul style="list-style-type: none"> (i) weather conditions; (ii) ambient pressure; (iii) temperature; (iv) sunlight; (v) humidity; and (vi) vibration. 	
(c) How to maintain the integrity of the substance or mixture by the use of:	(c) How to maintain the integrity of the substance or mixture by the use of:	
<ul style="list-style-type: none"> (i) stabilizers; and (ii) anti-oxidants. 	<ul style="list-style-type: none"> (i) stabilisers; and (ii) anti-oxidants. 	
(d) Other advice including:	(d) Other advice including:	
<ul style="list-style-type: none"> (i) ventilation requirements; (ii) specific designs for storage rooms/vessels; (iii) quantity limits under storage conditions (if relevant); and (iv) packaging 	<ul style="list-style-type: none"> (i) ventilation requirements; (ii) specific designs for storage rooms or vessels (including retention walls and ventilation); (iii) quantity limits under 	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
compatibilities.	(iv) storage conditions (if relevant); and packaging compatibilities.	
	7.3. Specific end use(s)	7.3. Specific use(s)
	For substances and mixtures designed for specific end use(s), recommendations shall relate to the identified use(s) referred to in Subsection 1.2 and be detailed and operational. If an exposure scenario is attached, reference to it may be made or the information as required in Subsections 7.1 and 7.2 shall be provided. If an actor in the supply chain has carried out a chemical safety assessment for the mixture, it is sufficient that the safety data sheet and the exposure scenarios are consistent with the chemical safety report for the mixture instead of with the chemical safety reports for each substance in the mixture. If industry or sector specific guidance is available, detailed reference to it (including source and issuing date) may be made.	For end products designed for specific use(s), recommendations shall refer to the identified use(s) and be detailed and operational. If possible, reference shall be made to industry – or sector – specific approved guidance.
A4.3.8 SECTION 8: Exposure controls/personal protection.	8. SECTION 8: Exposure controls/personal protection	8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Within this guidance the term “occupational exposure limit(s)” refers to limits in the air of the workplace or biological limit values. In addition, for the		

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<p>purposes of this document “exposure control” means the full range of specific protection and prevention measures to be taken during use in order to minimize worker and environmental exposure. Engineering control measures that are needed to minimize exposure to, and risks associated with the hazards of, the substance or mixture should be included in this section.</p>	<p>This section of the safety data sheet shall describe the applicable occupational exposure limits and necessary risk management measures.</p> <p>Where a chemical safety report is required, the information in this section of the safety data sheet shall be consistent with the information given for the identified uses in the chemical safety report and the exposure scenarios showing control of risk from the chemical safety report set out in the annex to the safety data sheet.</p>	
<p>A4.3.8.1 Control parameters</p>	<p>8.1. Control parameters</p>	<p>8.1. Exposure limit values</p>
<p>A4.3.8.1.1 Where available, list the occupational exposure limits (limits in the air of the workplace or biological limit values), including notations, for a substance and for each of the ingredients of a mixture. (...) If an occupational exposure limit exists for the country or region in which the SDS is being supplied, this should be listed. The source of the occupational exposure limit should be stated on the SDS. When listing occupational exposure limits,</p>	<p>8.1.1. Where available, the following national limit values, including the legal basis of each of them, which are currently applicable in the Member State in which the safety data sheet is being provided shall be listed for the substance or for each of the substances in the mixture. When listing occupational exposure limit values, the chemical identity as specified in Section 3 shall be used.</p> <p>8.1.1.1. the national occupational exposure limit values that correspond to Community occupational exposure</p>	<p>Specify currently applicable specific control parameters including occupational exposure limit values and/or biological limit values. Values shall be given for the Member State where the substance or preparation is placed on the market.</p>

² OJ L 188, 9.8.1995, p. 14.

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<p>use the chemical identity as specified in Section 3 (Composition/Information on ingredients) of the SDS.</p>	<p>limit values in accordance with Directive 98/24/EC, including any notations as referred to in Article 2(1) of Commission Decision 95/320/EC²;</p> <p>8.1.1.2. the national occupational exposure limit values that correspond to Community limit values in accordance with Directive 2004/37/EC, including any notations as referred to in Article 2(1) of Commission Decision 95/320/EC;</p> <p>8.1.1.3. any other national occupational exposure limit values;</p>	
<p>A4.3.8.1.2 Where available, list the biological limit values, including notations, for a substance and for each of the ingredients of a mixture. Where possible, the biological limit value should be relevant to the countries or regions in which the SDS is being supplied. The source of the biological limit value should be stated on the SDS. When listing biological limit values, use the chemical identity as specified in Section 3 of the SDS.</p>	<p>8.1.1.4. the national biological limit values that correspond to Community biological limit values in accordance with Directive 98/24/EC, including any notations as referred to in Article 2(1) of Commission Decision 95/320/EC;</p> <p>8.1.1.5. any other national biological limit values.</p>	
	8.1.2. Information on currently	Give information on currently recommended

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	recommended monitoring procedures shall be provided at least for the most relevant substances.	monitoring procedures.
A4.3.8.1.1 (...) If air contaminants are formed when using the substance or mixture as intended available occupational exposure limits for these should also be listed. (...)	8.1.3. If air contaminants are formed when using the substance or mixture as intended, applicable occupational exposure limit values and/or biological limit values for these shall also be listed.	
	8.1.4. Where a chemical safety report is required or a DNEL as referred to in Section 1.4 of Annex I or a PNEC as referred to in Section 3.3 of Annex I is available, the relevant DNELs and PNECs for the substance shall be given for the exposure scenarios from the chemical safety report set out in the annex to the safety data sheet.	Where a Chemical Safety Report is required, the relevant DNELs and PNECs for the substance shall be given for the exposure scenarios set out in the annex to the Safety Data Sheet. For preparations, it is useful to provide values for those constituent substances which are required to be listed in the Safety Data Sheet according to heading 3.
A4.3.8.1.3 Where a control banding approach is recommended for providing protection in relation to specific uses then sufficient detail should be given to enable effective management of the risk. The context and limitations of the specific control banding recommendation should be made clear.	8.1.5. Where a control banding approach is used to decide on risk management measures in relation to specific uses, sufficient detail shall be given to enable effective management of the risk. The context and limitations of the specific control banding recommendation shall be made clear.	
	8.2. Exposure controls	8.2. Exposure controls

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	<p>The information required in the present subsection shall be provided, unless an exposure scenario containing that information is attached to the safety data sheet.</p>	<p>For the purposes of this document exposure control means the full range of specific risk management measures to be taken during use in order to minimise worker and environmental exposure. Where a chemical safety report is required, a summary of the risk management measures shall be given in Section 8 of the Safety Data Sheet for the identified uses set out in the Safety Data Sheet.</p>
	<p>Where the supplier has waived a test under Section 3 of Annex XI, he shall indicate the specific conditions of use relied on to justify the waiving.</p> <p>Where a substance has been registered as an isolated intermediate (on-site or transported), the supplier shall indicate that this safety data sheet is consistent with the specific conditions relied on to justify the registration in accordance with Articles 17 or 18.</p>	
<p>A4.3.8.2 <i>Appropriate engineering controls</i></p>	<p>8.2.1. Appropriate engineering controls</p>	<p>8.2.1. Occupational exposure controls</p>
<p>The description of appropriate exposure control measures should relate to the intended modes of use of the substance or mixture.</p>	<p>The description of appropriate exposure control measures shall relate to the identified use(s) of the substance or mixture as referred to in Subsection 1.2.</p>	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
<p>Sufficient information should be provided to enable a proper risk assessment to be carried out. Indicate when special engineering controls are necessary, and specify which type. Examples include:</p> <ul style="list-style-type: none"> (a) “maintain air concentrations below occupational exposure standards”, using engineering controls if necessary; (b) “use local exhaust ventilation when...”; (c) “use only in an enclosed system”; (d) “use only in spray paint booth or enclosure”; (e) “use mechanical handling to reduce human contact with materials”; or (f) “use explosive dust handling controls”. 	<p>This information shall be sufficient to enable the employer to carry out an assessment of risk to the safety and health of workers arising from the presence of the substance or mixture in accordance with Articles 4 to 6 of Directive 98/24/EC as well as in accordance with Articles 3 to 5 of Directive 2004/37/EC, where appropriate.</p>	<p>This information will be taken into account by the employer in carrying out an assessment of risk to the health and safety of workers for the substance or preparation under Article 4 of Directive 98/24/EC, which requires, in the order of priority:</p> <ul style="list-style-type: none"> – design of appropriate work processes and engineering controls, the use of adequate equipment and materials, – the application of collective protection measures at source, such as adequate ventilation and appropriate organisational measures, and – where exposure cannot be prevented by other means the use of individual protection measures, such as personal protection equipment. <p>Therefore provide suitable and adequate information on these measures to enable a proper risk assessment to be carried out under Article 4 of Directive 98/24/EC.</p>
<p>The information provided here should complement that</p>	<p>This information shall complement that already given under Section 7.</p>	<p>This information shall complement that already given under heading 7.1.</p>

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provided under Section 7 (Handling and storage) of the SDS.		
A4.3.8.3 Individual protection measures, such as personal protective equipment (PPE)	8.2.2. Individual protection measures, such as personal protective equipment	
A4.3.8.3.1 Consistent with good occupational hygiene practices, personal protective equipment (PPE) should be used in conjunction with other control measures, including engineering controls, ventilation and isolation. See also Section 5 (Fire-fighting measures) of the SDS for specific fire/chemical PPE advice.	8.2.2.1. The information on use of personal protective equipment shall be consistent with good occupational hygiene practices and in conjunction with other control measures, including engineering controls, ventilation and isolation. Where appropriate, Section 5 shall be referred to for specific fire/chemical personal protective equipment advice.	
A4.3.8.3.2 Identify the PPE needed to minimize the potential for illness or injury due to exposure from the substance or mixture, including:	8.2.2.2. Taking into account Council Directive 89/686/EEC ³ and referring to the appropriate CEN standards, detailed specifications shall be given on which equipment will provide adequate and suitable protection, including:	Where individual protection measures are needed, specify in detail which equipment will provide adequate and suitable protection. Take into account Council Directive 89/686/EEC of 21 December 1989 on the approximation of the laws of the Member States relating to personal protective equipment ¹ and make reference to the appropriate CEN standards:
(a) Eye/face protection:	(a) Eye/face protection	(c) Eye protection
specify the type of eye protection and/or face shield	The type of eye/face protection equipment	Specify the type of eye protection equipment required

³

OJ L 399, 30.12.1989, p. 18.

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required, based on the hazard of the substance or mixture and potential for contact;	required shall be specified based on the hazard of the substance or mixture and potential for contact, such as safety glasses, safety goggles, face shield.	such as: – safety glasses, safety goggles, face shield.
(b) Skin protection:	(b) Skin protection	
	(i) Hand protection The type of gloves to be worn when handling the substance or mixture shall be clearly specified based on the hazard of the substance or mixture and potential for contact and with regard to the amount and duration of dermal exposure, including: - the type of material and its thickness, - the typical or minimum breakthrough times of the glove material. If necessary any additional hand protection measures shall be indicated.	(b) Hand protection Specify clearly the type of gloves to be worn when handling the substance or preparation, including: – the type of material, – the breakthrough time of the glove material, with regard to the amount and duration of dermal exposure. If necessary indicate any additional hand protection measures.
	(ii) Other	(d) Skin protection
specify the protective equipment to be worn (e.g. type of gloves, boots, bodysuit) based on the	If it is necessary to protect a part of the body other than the hands, the type and quality of protection	If it is necessary to protect a part of the body other than the hands, specify the type and quality of protection equipment required, such

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
hazards associated with the substance or mixture and the potential for contact;	equipment required shall be specified, such as gauntlets, boots, bodysuit based on the hazards associated with the substance or mixture and the potential for contact.	as: – apron, boots and full protective suit.
	If necessary, any additional skin protection measures and specific hygiene measures shall be indicated.	If necessary, indicate any additional skin protection measures and specific hygiene measures.
(c) Respiratory protection:	(c) Respiratory protection	(a) Respiratory protection
specify appropriate types of respiratory protection based on the hazard and potential for exposure, including air-purifying respirators and the proper purifying element (cartridge or canister) or breathing apparatus; and	For gases, vapours, mist or dust, the type of protective equipment to be used shall be specified based on the hazard and potential for exposure, including air-purifying respirators, specifying the proper purifying element (cartridge or canister), the adequate particulate filters and the adequate masks, or self contained breathing apparatus.	For dangerous gases, vapours or dust, specify the type of protective equipment to be used, such as: – self contained breathing apparatus, adequate masks and filters.
(d) Thermal hazards:	(d) Thermal hazards	
when specifying protective equipment to be worn for materials that represent a thermal hazard, special consideration should be given to the construction of the	When specifying protective equipment to be worn for materials that represent a thermal hazard, special consideration shall be given to the construction of the	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
PPE.	personal protective equipment.	
A4.3.8.3.2 Special requirements may exist for gloves or other protective clothing to prevent skin, eye or lung exposure. Where relevant, this type of PPE should be clearly stated. For example, “PVC gloves” or “nitrile rubber gloves”, and thickness and breakthrough time of the glove material. Special requirements may exist for respirators.		
	8.2.3. Environmental exposure controls	8.2.2. Environmental exposure controls
	The information required by the employer to fulfil his commitments under Community environmental protection legislation shall be specified.	Specify the information required by the employer to fulfil his commitments under Community environmental protection legislation.
	Where a chemical safety report is required, a summary of the risk management measures that adequately control exposure of the environment to the substance shall be given for the exposure scenarios set out in the annex to the safety data sheet.	Where a chemical safety report is required, a summary of the risk management measures that adequately control exposure of the environment to the substance shall be given for the exposure scenarios set out in the annex to the Safety Data Sheet.
A4.3.9 SECTION : Physical and chemical properties	9. SECTION 9: Physical and chemical properties	9. PHYSICAL AND CHEMICAL PROPERTIES
A4.3.9.1 Describe the empirical data of the substance or mixture (if possible) in this section.	This section of the safety data sheet shall describe the empirical data relating to the substance or mixture, if relevant. The information in this section shall be consistent with the information provided in	To enable proper control measures to be taken, provide all relevant information on the substance or preparation, particularly the information listed under heading 9.2. The information in this section shall be

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	a registration and/or in the chemical safety report where required, and with the classification of the substance or mixture.	consistent with the information provided in a registration where one is required.
A4.3.9.2 In the case of a mixture, the entries should clearly indicate to which ingredient the data apply, unless it is valid for the whole mixture. The data included in this subsection should apply to the substance or mixture.		Note 2 For preparations, information shall normally be given on the properties of the preparation itself. However, if it is stated that a particular hazard does not apply, clearly differentiate between cases where no information is available to the classifier, and cases where negative test results are available. If it is considered necessary to give information about the properties of individual components, please indicate clearly what the data refers to.
A4.3.9.3 Clearly identify the following properties and specify appropriate units of measure and/or reference conditions where appropriate. If relevant for the interpretation of the numeric value, the method of determination should also be provided (e.g. for flash point, open-cup/closed-cup):	9.1. Information on basic physical and chemical properties The following properties shall be clearly identified including, where appropriate, a reference to the test methods used and specification of appropriate units of measurement and/or reference conditions. If relevant for the interpretation of the numerical value, the method of determination shall also be provided (for example the method for flash point, the open-cup/closed cup method):	9.1. General information
(a) Appearance (physical state, colour etc);	(a) Appearance:	Appearance
	The physical state (solid (including appropriate and available safety	Indicate the physical state (solid, liquid, gas) and the colour of the

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	information on granulometry and specific surface area if not already specified elsewhere in this safety data sheet), liquid, gas) and the colour of the substance or mixture as supplied shall be indicated;	substance or preparation as supplied.
(b) Odour;	(b) Odour:	Odour
	If odour is perceptible, a brief description of it shall be given;	If odour is perceptible, give a brief description of it.
(c) Odour threshold;	(c) Odour threshold;	
		9.2. Important health, safety and environmental information
(d) pH;	(d) pH:	pH:
	The pH shall be indicated of the substance or mixture as supplied or of an aqueous solution; in the latter case, the concentration shall be indicated;	Indicate the pH of the substance or preparation as supplied or of an aqueous solution; in the latter case, indicate the concentration.
(e) Melting point/freezing point;	(e) Melting point / freezing point;	
(f) Initial boiling point and boiling range;	(f) Initial boiling point and boiling range;	Boiling point/boiling range
(g) Flash point;	(g) Flash point;	Flash point
(h) Evaporation rate;	(h) Evaporation rate;	
(i) Flammability (solid, gas);	(i) Flammability (solid, gas);	Flammability (solid, gas)
		Explosive properties Oxidising properties
(j) Upper/lower flammability or explosive limits;	(j) Upper/lower flammability or explosive limits;	
(k) Vapour pressure;	(k) Vapour pressure;	Vapour pressure
(l) Vapour density;	(l) Vapour density;	

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(m) Relative density;	(m) Relative density;	Relative density
(n) Solubility(ies);	(n) Solubility(ies);	Solubility Water solubility
(o) Partition coefficient: n-octanol/water;	(o) Partition coefficient: n-octanol/water;	Partition coefficient: n-octanol/water
(p) Auto-ignition temperature;	(p) Auto-ignition temperature;	
(q) Decomposition temperature;	(q) Decomposition temperature;	
(r) Viscosity.	(r) Viscosity;	Viscosity
	(s) Explosive properties; (t) Oxidising properties.	
		Vapour density Evaporation rate
If specific characteristics do not apply or are not available, they should still be listed on the SDS with a statement that they do not apply or not available.	If it is stated that a particular property does not apply or if information on a particular property is not available, the reasons shall be given.	
	To enable proper control measures to be taken, all relevant information on the substance or mixture shall be provided. The information in this section shall be consistent with the information provided in a registration where one is required.	
	In the case of a mixture, the entries shall clearly indicate to which substance in the mixture the data apply, unless it is valid for the whole mixture.	
	9.2. Other information	9.3. Other information
Other physical or chemical parameters in addition to those	Other physical and chemical parameters shall be indicated as necessary, such as	Indicate other important safety parameters, such as, miscibility, fat solubility (solvent –

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<p>listed above may also be included in this section of the SDS.</p>	<p>miscibility, fat solubility (solvent – oil to be specified), conductivity, or gas group. Appropriate and available safety information on redox potential, radical formation potential and photocatalytic properties shall be indicated.</p>	<p>oil to be specified), conductivity, melting point/melting range, gas group (useful for Directive 94/9/EC of the European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres¹), auto-ignition temperature, etc.</p>
		<p>Note 1 The above properties shall be determined in accordance with the specifications laid down in the Commission Regulation on testing methods referred to in Article 13(3) or any other comparable method.</p>
<p>A4.3.10 SECTION 10: Stability and reactivity</p>	<p>10. SECTION 10: Stability and reactivity</p>	<p>10. STABILITY AND REACTIVITY</p>
	<p>This section of the safety data sheet shall describe the stability of the substance or mixture and the possibility of hazardous reactions occurring under certain conditions of use and also if released into the environment, including, where appropriate, a reference to the test methods used. If it is stated that a particular property does not apply or if information on a particular property is not available, the reasons shall be given.</p>	<p>State the stability of the substance or preparation and the possibility of hazardous reactions occurring under certain conditions of use and also if released into the environment.</p>
<p>A4.3.10.1 Reactivity</p>	<p>10.1. Reactivity</p>	
<p>A4.3.10.1.1 Describe the reactivity hazards of the substance or mixture in</p>	<p>10.1.1. The reactivity hazards of the substance or mixture shall be</p>	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
<p>this section. Provide specific test data for the substance or mixture as a whole, where available. However, the information may also be based on general data for the class or family of chemical if such data adequately represent the anticipated hazard of the substance or mixture.</p>	<p>described. Specific test data shall be provided for the substance or mixture as a whole, where available. However, the information may also be based on general data for the class or family of substance or mixture if such data adequately represent the anticipated hazard of the substance or mixture.</p>	
<p>A4.3.10.1.2 If data for mixtures are not available, ingredient data should be provided. In determining incompatibility, consider the substances, containers and contaminants that the substance or mixture might be exposed to during transportation, storage and use.</p>	<p>10.1.2. If data for mixtures are not available, data on substances in the mixture shall be provided. In determining incompatibility, the substances, containers and contaminants that the substance or mixture might be exposed to during transportation, storage and use shall be considered.</p>	
<p>A4.3.10.2 Chemical stability</p>	<p>10.2. Chemical stability</p>	
<p>Indicate if the substance or mixture is stable or unstable under normal ambient and anticipated storage and handling conditions of temperature and pressure. Describe any stabilizers which are, or may need to be, used to maintain the product. Indicate the safety significance of any change in the physical appearance of the</p>	<p>It shall be indicated if the substance or mixture is stable or unstable under normal ambient and anticipated storage and handling conditions of temperature and pressure. Any stabilisers which are, or may need to be, used to maintain the chemical stability of the substance or mixture shall be described. The safety significance of any change in the physical appearance of the substance or mixture shall be indicated.</p>	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
product.		
A4.3.10.3 <i>Possibility of hazardous reactions</i>	10.3. Possibility of hazardous reactions	10.3. Hazardous decomposition products
If relevant, state if the substance or mixture will react or polymerize, releasing excess pressure or heat, or creating other hazardous conditions. Describe under what conditions the hazardous reactions may occur.	If relevant, it shall be stated if the substance or mixture will react or polymerise, releasing excess pressure or heat, or creating other hazardous conditions. The conditions under which the hazardous reactions may occur shall be described.	List hazardous materials produced in dangerous amounts upon decomposition.
A4.3.10.4 <i>Conditions to avoid</i>	10.4. Conditions to avoid	10.1. Conditions to avoid
List conditions such as heat, pressure, shock, static discharge, vibrations or other physical stresses that might result in a hazardous situation.	Conditions such as temperature, pressure, light, shock, static discharge, vibrations or other physical stresses that might result in a hazardous situation shall be listed and if appropriate a brief description of measures to be taken to manage risks associated with such hazards shall be given.	List those conditions such as temperature, pressure, light, shock, etc., which may cause a dangerous reaction and if possible give a brief description.
A4.3.10.5 <i>Incompatible materials</i>	10.5. Incompatible materials	10.2. Materials to avoid
List classes of chemicals or specific substances with which the substance or mixture could react to produce a hazardous situation (e.g. explosion, release of toxic or flammable materials, liberation of excessive heat).	Families of substances or mixtures or specific substances, such as water, air, acids, bases, oxidising agents, with which the substance or mixture could react to produce a hazardous situation (like an explosion, a release of toxic or flammable materials, or a liberation of excessive heat) shall be listed and if appropriate a brief description of measures to be taken to manage risks associated with such hazards shall be given.	List materials such as water, air, acids, bases, oxidising agents or any other specific substance which may cause a dangerous reaction and if possible give a brief description.
A4.3.10.6 <i>Hazardous decomposition</i>	10.6. Hazardous decomposition	

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<i>products</i>	products	
List known and reasonably anticipated hazardous decomposition products produced as a result of use, storage and heating. Hazardous combustion products should be included in section 5 (Fire-fighting measures) of the SDS.	Known and reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating shall be listed. Hazardous combustion products shall be included in Section 5 of the safety data sheet.	
		<p>Note Address specifically:</p> <ul style="list-style-type: none"> – the need for and the presence of stabilisers, – the possibility of a hazardous exothermic reaction, – safety significance, if any, of a change in physical appearance of the substance or preparation, – hazardous decomposition products, if any, formed upon contact with water, – possibility of degradation to unstable products.
A4.3.11 SECTION 11: Toxicological information	11. SECTION 11: Toxicological information	11. TOXICOLOGICAL INFORMATION
A4.3.11.1 This section is used primarily by medical professionals, occupational health and safety	This section of the safety data sheet is meant for use primarily by medical professionals, occupational health and safety professionals	This section deals with the need for a concise but complete and comprehensible description of the various toxicological

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<p>professionals and toxicologists. A concise but complete and comprehensible description of the various toxicological (health) effects, and the available data used to identify those effects, should be provided.</p>	<p>and toxicologists. A concise but complete and comprehensible description of the various toxicological (health) effects and the available data used to identify those effects shall be provided, including where appropriate information on toxicokinetics, metabolism and distribution.</p>	<p>(health) effects, which can arise if the user comes into contact with the substance or preparation.</p> <p>The information shall include dangerous-to-health effects from exposure to the substance or preparation, based on the conclusion from, for example, test data and experience. The information shall also include, where appropriate, delayed, immediate and chronic effects from short- and long-term exposure such as sensitisation, narcosis, carcinogenicity, mutagenicity and reproductive toxicity (developmental toxicity and fertility). It shall also include information on the different routes of exposure (inhalation, ingestion, skin and eye contact), and describe the symptoms related to the physical, chemical and toxicological characteristics.</p>
		<p>Taking account of the information already provided under heading 3, composition/information on ingredients, it may be necessary to make reference to specific health effects of certain substances in the preparation.</p>
	<p>The information in this section shall be consistent with the information provided in the registration and/or in the chemical safety report where required, and with the</p>	<p>The information in this section shall be consistent with the information provided for in a registration where required and/or in a Chemical Safety Report where required and</p>

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	classification of the substance or mixture.	shall give information on the following groups of potential effects:
Under GHS classification, the relevant hazards, for which data should be provided, are:	11.1. Information on toxicological effects	
<ul style="list-style-type: none"> (a) acute toxicity; (b) skin corrosion/irritation; (c) serious eye damage/irritation; (d) respiratory or skin sensitization; (e) germ cell mutagenicity; (f) carcinogenicity; (g) reproductive toxicity; (h) STOT-single exposure; (i) STOT-repeated exposure; and (j) aspiration hazard. 	<p>11.1.1. Substances</p> <p>11.1.1.1. The relevant hazard classes for which information shall be provided, are:</p> <ul style="list-style-type: none"> (a) acute toxicity; (b) skin corrosion/irritation; (c) serious eye damage/irritation; (d) respiratory or skin sensitization; (e) germ cell mutagenicity; (f) carcinogenicity; (g) reproductive toxicity; (h) STOT-single exposure; (i) STOT-repeated exposure; (j) aspiration hazard. 	<ul style="list-style-type: none"> – toxicokinetics, metabolism and distribution, – acute effects (acute toxicity, irritation and corrosivity), – sensitisation, – repeated dose toxicity, and – CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction).
	11.1.1.2. For substances subject to registration, brief summaries of the information derived from the application of Annexes VII to XI shall be given, including, where appropriate, a reference to the test methods used. For substances subject to registration, the	For substances subject to registration, summaries of the information derived from the application of Annexes VII to XI of this Regulation shall be given. The information shall also include the result of the comparison of the available data with the criteria given in Directive 67/548/EEC for CMR, categories 1 and 2, following

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	<p>information shall also include the result of the comparison of the available data with the criteria given in Regulation (EC) No 1272/2008 for CMR, categories 1A and 1B, following point 1.3.1 of Annex I to this Regulation.</p>	<p>paragraph 1.3.1 of Annex I of this Regulation.</p>
	<p>11.1.2. Mixtures</p> <p>11.1.2.1. The relevant effects, for which information shall be provided, are:</p> <ul style="list-style-type: none"> (a) acute toxicity; (b) irritation; (c) corrosivity; (d) sensitisation; (e) repeated dose toxicity; (f) carcinogenicity; (g) mutagenicity; (h) toxicity for reproduction. 	
	<p>11.1.2.2. For the health effects of carcinogenicity, mutagenicity and toxicity for reproduction, classification for a given health effect based on the conventional method outlined in Article 6(1)(a) of Directive 1999/45/EC, and relevant information for the substances listed under Section 3 shall be provided.</p> <p>11.1.2.3. For other health effects, if a mixture has not been tested as a</p>	

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	<p>whole for a given health effect, information relevant to that health effect relating to substances listed under Section 3 shall be provided, if relevant.</p>	
<p>If data for any of these hazards is not available, they should still be listed on the SDS with a statement that data is not available.</p>	<p>11.1.3. Information shall be provided for each hazard class, differentiation or effect. If it is stated that the substance or mixture is not classified for a particular hazard class, differentiation or effect, the safety data sheet shall clearly state whether this is due to lack of data, technical impossibility to obtain the data, inconclusive data or data which are conclusive although insufficient for classification; in the latter case the safety data sheet shall specify “based on available data, the classification criteria are not met.”</p>	
<p>A4.3.11.2 The data included in this subsection should apply to the substance or mixture as used. The toxicological data should describe the mixture. If that information is not available, the classification under GHS and the toxicological properties of the hazardous ingredients should be provided.</p>	<p>11.1.4. The data included in this subsection shall apply to the substance or mixture as placed on the market. If available, the relevant toxicological properties of the hazardous substances in a mixture shall also be provided, such as the LD₅₀, Acute Toxicity Estimates or LC₅₀.</p>	

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<p>A4.3.11.3 The health effects included in the SDS should be consistent with those described in the studies used for the classification of the substance or mixture.</p> <p>A4.3.11.4 General statements such as “Toxic” with no supporting data or “Safe if properly used” are not acceptable as they may be misleading and do not provide a description of health effects. Phrases such as “not applicable”, “not relevant”, or leaving blank spaces in the health effects section can lead to confusion and misunderstanding and should not be used. For health effects where information is not available, this should be clearly stated. Health effects should be described accurately and relevant distinctions made. For example, allergic contact dermatitis and irritant contact dermatitis should be distinguished from each other.</p>		
<p>A4.3.11.5 Where there is a substantial amount of test data on the substance or mixture, it may be desirable to summarize results</p>	<p>11.1.5. Where there is a substantial amount of test data on the substance or mixture, it may be necessary to summarise results of the critical</p>	

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e.g. by route of exposure (see A4.3.11.1).	studies used, for example by route of exposure.	
A4.3.11.6 Also provide information on the relevant negative data (see A4.1.2.3). Information to support negative test results should be provided (e.g. “carcinogenicity studies in the rat have shown no significant increase in the incidence of cancer”).	11.1.6. Where the classification criteria for a particular hazard class are not met, information supporting this conclusion shall be provided.	
A4.3.11.7 <i>Information on the likely routes of exposure</i>	11.1.7. Information on likely routes of exposure	
Provide information on the likely routes of exposure and the effects of the substance or mixture via each possible route of exposure, that is, through ingestion (swallowing), inhalation or skin/eye exposure. A statement should be made if health effects are not known.	Information shall be provided on likely routes of exposure and the effects of the substance or mixture via each possible route of exposure, that is, through ingestion (swallowing), inhalation or skin/eye exposure. If health effects are not known, this shall be stated.	
A4.3.11.8 <i>Symptoms related to the physical, chemical and toxicological characteristics</i>	11.1.8. Symptoms related to the physical, chemical and toxicological characteristics	
Describe the potential adverse health effects and symptoms associated with exposure to the substance or mixture and its ingredients or known by-products. Provide information	Potential adverse health effects and symptoms associated with exposure to the substance or mixture and its ingredients or known by-products shall be described. Available information shall be provided on	

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<p>on the symptoms related to the physical, chemical and toxicological characteristics of the substance or mixture following exposure related to the intended uses. Describe the first symptoms at the lowest exposures through to the consequences of severe exposure; for example, “headaches and dizziness may occur, proceeding to fainting or unconsciousness; large doses may result in coma and death”.</p>	<p>the symptoms related to the physical, chemical, and toxicological characteristics of the substance or mixture following exposure. The first symptoms at low exposures through to the consequences of severe exposure shall be described, such as “headaches and dizziness may occur, proceeding to fainting or unconsciousness; large doses may result in coma and death”.</p>	
<p>A4.3.11.9 <i>Delayed and immediate effects and also chronic effects from short and long term exposure</i></p>	<p>11.1.9. Delayed and immediate effects as well as chronic effects from short and long term exposure</p>	
<p>Provide information on whether delayed or immediate effects can be expected after short or long term exposure. Also provide information on acute and chronic health effects relating to human exposure to the substance or mixture. Where human data are not available, animal data should be summarised and the species clearly identified. It should be indicated in the SDS whether toxicological data is based on</p>	<p>Information shall be provided on whether delayed or immediate effects can be expected after short or long term exposure. Information on acute and chronic health effects relating to human exposure to the substance or mixture shall also be provided. Where human data are not available, animal data shall be summarised and the species clearly identified. It shall be indicated whether toxicological data is based on human or animal data.</p>	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
human or animal data.		
A4.3.11.10 Numerical measures of toxicity (such as acute toxicity estimates)		
Provide information on the dose, concentration or conditions of exposure that may cause adverse health effects. Where appropriate, doses should be linked to symptoms and effects, including the period of exposure likely to cause harm.		
A4.3.11.11 Interactive effects	11.1.10. Interactive effects	
Information on interactions should be included if relevant and readily available.	Information on interactions shall be included if relevant and available.	
A4.3.11.12 Where specific chemical data are not available	11.1.11. Absence of specific data	
It may not always be possible to obtain information on the hazards of a substance or mixture. In cases where data on the specific substance or mixture are not available, data on the chemical class, if appropriate, may be used. Where generic data are used or where data are not available, this should be stated clearly in the SDS.	It may not always be possible to obtain information on the hazards of a substance or mixture. In cases where data on the specific substance or mixture are not available, data on similar substances or mixtures if appropriate, may be used, provided the relevant similar substance or mixture is identified. Where specific data are not used, or where data are not available, this shall be clearly stated.	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
<p>A4.3.11.13 Mixtures If a mixture has not been tested for its health effects as a whole then information on each ingredient listed under A4.3.3.2.1 should be provided and the mixture should be classified using the processes that are described in the GHS (Section 1.3.2.3 and subsequent chapters).</p>		
<p>A4.3.11.14 Mixture versus ingredient information</p>	<p>11.1.12. Mixture versus substance information</p>	
<p>A4.3.11.14.1 Ingredients may interact with each other in the body resulting in different rates of absorption, metabolism and excretion. As a result, the toxic actions may be altered and the overall toxicity of the mixture may be different from its ingredients.</p>	<p>11.1.12.1. The substances in a mixture may interact with each other in the body resulting in different rates of absorption, metabolism and excretion. As a result, the toxic actions may be altered and the overall toxicity of the mixture may be different from that of the substances in it. This shall be taken into account when providing toxicological information in this section of the safety data sheet.</p>	
<p>A4.3.11.14.2 It is necessary to consider whether the concentration of each ingredient is sufficient to contribute to the overall health effects of the mixture. The information on toxic</p>	<p>11.1.12.2. Classification of mixtures as having effects of carcinogenicity, mutagenicity or toxicity for reproduction must be calculated from available information regarding substances in the</p>	

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<p>effects should be presented for each ingredient, except:</p>	<p>mixture. For other health effects, it is necessary to consider whether the concentration of each substance is sufficient to contribute to the overall health effects of the mixture. The information on toxic effects shall be presented for each substance, except for the following cases:</p>	
<p>(a) if the information is duplicated, it is not necessary to list this more than once. For example, if two ingredients both cause vomiting and diarrhoea, it is not necessary to list this twice. Overall, the mixture is described as causing vomiting and diarrhoea;</p> <p>(b) if it is unlikely that these effects will occur at the concentrations present. For example, when a mild irritant is diluted in a non-irritating solution, there comes a point where the overall mixture would be unlikely to cause</p>	<p>(a) if the information is duplicated, it shall be listed only once for the mixture overall, such as when two substances both cause vomiting and diarrhoea;</p> <p>(b) if it is unlikely that these effects will occur at the concentrations present, such as when a mild irritant is diluted to below a certain concentration in a non-irritant solution;</p>	

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<p>(c) irritation; Predicting the interactions between ingredients is extremely difficult, and where information on interactions is not available, assumptions should not be made and instead the health effects of each ingredient should be listed separately.</p>	<p>(c) where information on interactions between substances in a mixture is not available, assumptions shall not be made and instead the health effects of each substance shall be listed separately.</p>	
<p>A4.3.11.15 Other information</p>	<p>11.1.13. Other information</p>	
<p>Other relevant information on adverse health effects should be included even when not required by the GHS classification criteria.</p>	<p>Other relevant information on adverse health effects shall be included even when not required by the classification criteria.</p>	
<p>A4.3.12 SECTION 12: Ecological information</p>	<p>12. SECTION 12: Ecological information</p>	<p>12. ECOLOGICAL INFORMATION</p>
<p>A4.3.12.1 Provide information to evaluate the environmental impact of the substance or mixture if it were released to the environment. This information can assist in handling spills, and evaluating waste treatment practices and should clearly indicate species, media, units, test duration and test conditions. Where</p>	<p>This section of the safety data sheet shall describe the information provided to evaluate the environmental impact of the substance or mixture where it is released to the environment. Under Subsections 12.1 to 12.6 of the safety data sheet a short summary of the data shall be provided including, where available, relevant test data and clearly indicating species, media, units, test duration and test conditions. This</p>	<p>Describe the possible effects, behaviour and environmental fate of the substance or preparation in air, water and/or soil. Where available, give relevant test data (e.g. LC50 fish ≤ 1 mg/l).</p>

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
information is not available this should be stated. Provide also a short summary of the data given under A4.3.12.3 to A4.3.12.7.	information may assist in handling spills, and evaluating waste treatment practices, control of release, accidental release measures and transport. If it is stated that a particular property does not apply or if information on a particular property is not available, the reasons shall be indicated.	
A4.3.12.2 Some ecotoxicological properties are substance specific, i.e. bioaccumulation, persistence and degradability. The information should therefore be given, where available and appropriate, for each substance of the mixture.	Information on bioaccumulation, persistence and degradability shall be given, where available and appropriate, for each relevant substance in the mixture. Information shall also be provided for hazardous transformation products arising from the degradation of substances and mixtures.	Describe the most important characteristics likely to have an effect on the environment owing to the nature of the substance or preparation and likely methods of use. Information of the same kind shall be supplied for dangerous products arising from the degradation of substances and preparations.
	The information in this section shall be consistent with the information provided in the registration and/or in the chemical safety report where required, and with the classification of the substance or mixture.	The information in this section shall be consistent with the information provided for in a registration where required and/or in a Chemical Safety Report where required.
		This may include the following:
A4.3.12.3 Toxicity	12.1. Toxicity	12.1. Ecotoxicity
Information on toxicity can be provided using data from tests performed on aquatic and/or terrestrial organisms. This should include relevant available data on both acute and	Information on toxicity using data from tests performed on aquatic and/or terrestrial organisms shall be provided when available. This shall include relevant available data on aquatic toxicity, both acute and chronic for fish, crustaceans, algae and other aquatic	This shall include relevant available data on aquatic toxicity, both acute and chronic for fish, crustaceans, algae and other aquatic plants. In addition, toxicity data on soil micro- and macro-organisms and other environmentally relevant organisms, such as

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<p>chronic aquatic toxicity for fish, crustaceans, algae and other aquatic plants. In addition, toxicity data on other organisms (including soil micro-and macro-organisms) such as birds, bees and plants, should be included when available. Where the substance or mixture has inhibitory effects on the activity of micro-organisms, the possible impact on sewage treatment plants should be mentioned.</p>	<p>plants. In addition, toxicity data on soil micro and macro-organisms and other environmentally relevant organisms, such as birds, bees and plants, shall be included when available. Where the substance or mixture has inhibitory effects on the activity of micro-organisms, the possible impact on sewage treatment plants shall be mentioned.</p>	<p>birds, bees and plants, shall be included when available. Where the substance or preparation has inhibitory effects on the activity of micro-organisms, the possible impact on sewage treatment plants shall be mentioned.</p>
	<p>For substances subject to registration, summaries of the information derived from the application of Annexes VII to XI shall be included.</p>	<p>For substances subject to registration, summaries of the information derived from the application of Annexes VII to XI shall be included.</p>
<p>A4.3.12.4 Persistence and degradability</p>	<p>12.2. Persistence and degradability</p>	<p>12.3. Persistence and degradability</p>
<p>Persistence and degradability is the potential for the substance or the appropriate constituents of a mixture to degrade in the environment, either through biodegradation or other processes, such as oxidation or hydrolysis. Test results relevant to assess persistence and degradability should be given where available. If degradation half-lives are quoted it must be indicated whether these half-</p>	<p>Persistence and degradability is the potential for the substance or the appropriate substances in a mixture to degrade in the environment, either through biodegradation or other processes such as oxidation or hydrolysis. Test results relevant to assess persistence and degradability shall be given where available. If degradation half-lives are quoted it must be indicated whether these half lives refer to mineralisation or to primary degradation. The potential of the substance or certain substances in a mixture to degrade in sewage treatment plants shall</p>	<p>The potential of the substance or the appropriate constituents of a preparation¹ to degrade in relevant environmental media, either through biodegradation or other processes such as oxidation or hydrolysis. Degradation half lives shall be quoted where available. The potential of the substance or appropriate constituents of a preparation¹ to degrade in sewage treatment plants shall also be mentioned.</p>

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<p>lives refer to mineralization or to primary degradation. The potential of the substance or certain constituents (see also A4.3.12.6) of a mixture to degrade in sewage treatment plants should also be mentioned.</p>	<p>also be mentioned.</p> <p>This information shall be given where available and appropriate, for each individual substance in the mixture which is required to be listed in Section 3 of the safety data sheet.</p>	
<p>A4.3.12.5 <i>Bioaccumulative potential</i></p>	<p>12.3. Bioaccumulative potential</p>	<p>12.4. Bioaccumulative potential</p>
<p>Bioaccumulation is the potential for the substance or certain constituents of a mixture to accumulate in biota and, possibly, pass through the food chain. Test results relevant to assess the bioaccumulative potential should be given. This should include reference to the octanol-water partition coefficient (Kow) and bioconcentration factor (BCF), if available.</p>	<p>Bioaccumulative potential is the potential of the substance or certain substances in a mixture to accumulate in biota and, eventually, to pass through the food chain. Test results relevant to assess the bioaccumulative potential shall be given. This shall include reference to the octanol-water partition coefficient (Kow) and bioconcentration factor (BCF), if available.</p> <p>This information shall be given where available and appropriate, for each individual substance in the mixture which is required to be listed in Section 3 of the safety data sheet.</p>	<p>The potential of the substance or the appropriate constituents of a preparation¹ to accumulate in biota and, eventually, to pass through the food chain, with reference to the octanol-water partition coefficient (Kow) and bioconcentration factor (BCF), if available.</p>
<p>A4.3.12.6 <i>Mobility in soil</i></p>	<p>12.4. Mobility in soil</p>	<p>12.2. Mobility</p>
<p>Mobility in soil is the potential of a substance or the constituents of a mixture, if released to the environment, to move under natural forces to the groundwater or to a distance from the site of release. The</p>	<p>Mobility in soil is the potential of the substance or the constituents of a mixture, if released to the environment, to move under natural forces to the groundwater or to a distance from the site of release. The potential for mobility in soil shall be given where available. Information on mobility</p>	<p>The potential of the substance or the appropriate constituents of a preparation¹, if released to the environment, to transport to groundwater or far from the site of release. Relevant data might include:</p> <ul style="list-style-type: none"> - known or predicted distribution to environmental compartments,

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<p>potential for mobility in soil should be given where available. Information on mobility can be determined from relevant mobility data such as adsorption studies or leaching studies. For example, Koc values can be predicted from octanol/water partition coefficients (Kow). Leaching and mobility can be predicted from models.</p>	<p>can be determined from relevant mobility data such as adsorption studies or leaching studies, known or predicted distribution to environmental compartments, or surface tension. For example, Koc values can be predicted from octanol/water partition coefficients (Kow). Leaching and mobility can be predicted from models.</p> <p>This information shall be given where available and appropriate, for each individual substance in the mixture which is required to be listed in Section 3 of the safety data sheet.</p>	<ul style="list-style-type: none"> - surface tension, - absorption/desorption. <p>For other physicochemical properties see heading 9.</p>
<p><i>NOTE: Where real data on the substance or mixture is available this data will take precedence over models and predictions.</i></p>	<p>Where experimental data is available, this data shall, in general, take precedence over models and predictions.</p>	
	<p>12.5. Results of PBT and vPvB assessment</p>	<p>12.5. Results of PBT assessment</p>
	<p>Where a chemical safety report is required, the results of the PBT and vPvB assessment as set out in the chemical safety report shall be given.</p>	<p>Where a Chemical Safety Report is required, the results of the PBT assessment as set in the Chemical Safety Report shall be given.</p>
<p>A4.3.12.7 Other adverse effects</p>	<p>12.6. Other adverse effects</p>	<p>12.6. Other adverse effects</p>
<p>Information on any other adverse effects to the environment should be included where available, such as environmental fate (exposure),</p>	<p>Information on any other adverse effects on the environment shall be included where available, such as environmental fate (exposure), photochemical ozone creation potential, ozone depletion potential,</p>	<p>If available, include information on any other adverse effects on the environment, e.g. ozone depletion potential, photochemical ozone creation potential, endocrine disrupting potential and/or global</p>

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ozone depletion potential, photochemical ozone creation potential, endocrine disrupting potential and/or global warming potential.	endocrine disrupting potential and/or global warming potential.	warming potential.
		<p>Remarks</p> <p>Ensure that information relevant to the environment is provided under other headings of the Safety Data Sheet, especially advice for controlled release, accidental release measures, transport and disposal considerations under headings 6, 7, 13, 14 and 15.</p>
A4.3.13 SECTION 13: Disposal considerations	13. SECTION 13: Disposal considerations	13. DISPOSAL CONSIDERATIONS
		If the disposal of the substance or preparation (surplus or waste resulting from the foreseeable use) presents a danger, a description of these residues and information on their safe handling shall be given.
A4.3.13.1.1 Provide information for proper disposal, recycling or reclamation of the substance or mixture and/or its container to assist in the determination of safe and environmentally preferred waste management	This section of the safety data sheet shall describe information for proper waste management of the substance or mixture and/or its container to assist in the determination of safe and environmentally preferred waste management options, consistent with the requirements in	

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options, consistent with the requirements of the national competent authority. For the safety of persons conducting disposal, recycling or reclamation activities, please refer to the information in section 8 (exposure controls and personal protection) of the SDS.	accordance with Directive 2008/98/EC of the European Parliament and of the Council ⁴ of the Member State in which the safety data sheet is being supplied. Information relevant for the safety of persons conducting waste management activities, shall complement the information given in Section 8.	
	Where a chemical safety report is required and where a waste stage analysis has been performed, the information on the waste management measures shall be consistent with the identified uses in the chemical safety report and the exposure scenarios from the chemical safety report set out in the annex to the safety data sheet.	Where a Chemical Safety Report is required, the information on the waste management measures that adequately control exposure of humans and the environment to the substance shall be consistent with the exposure scenarios set out in the annex to the Safety Data Sheet.
A4.3.13.1 Disposal methods	13.1. Waste treatment methods	
A4.3.13.1.2 Specify disposal containers and methods.	(a) Waste treatment containers and methods shall be specified including the appropriate methods of waste treatment of both the substance or mixture and any contaminated packaging (for example incineration, recycling, landfilling);	Specify the appropriate methods of disposal of both the substance or preparation and any contaminated packaging (incineration, recycling, landfilling, etc.)
A4.3.13.1.3 Discuss physical/chemical properties that may affect disposal options.	(b) Physical/chemical properties that may affect waste treatment options shall be specified;	
A4.3.13.1.4 Discourage sewage disposal.	(c) Sewage disposal shall be discouraged;	
A4.3.13.1.5 Where appropriate, identify any	(d) Where appropriate, any special	

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special precautions for incineration or landfill.	precautions for any recommended waste treatment option shall be identified.	
	Any relevant Community provisions relating to waste shall be referred to. In their absence any relevant national or regional provisions in force shall be referred to.	Note Refer to any relevant Community provisions relating to waste. In their absence, it is useful to remind the user that national or regional provisions may be in force.
A4.3.14 SECTION 14: Transport information	14. SECTION 14: Transport information	14. TRANSPORT INFORMATION
This section provides basic classification information for the transporting/shipment of a hazardous substance or mixture by road, rail, sea or air. Where information is not available or relevant this should be stated.	This section of the safety data sheet shall provide basic classification information for transporting/shipment of substances or mixtures mentioned under Section 1 by road, rail, sea, inland waterways or air. Where information is not available or relevant this shall be stated.	
	Where relevant, it shall provide information on the transport classification for each of the UN Model Regulations: European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) ⁵ , Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) ⁶ , European Agreement concerning the International Carriage of	Where relevant, provide information on the transport classification for each of the modal regulations: IMDG (sea), ADR (Council Directive 94/55/EC of 21 November 1994 on the approximation of the laws of the Member States with regard to the transport of dangerous goods by road), RID (Council Directive 96/49/EC of 23 July 1996 on the approximation of the laws of the Member

⁵ United Nations, Economic Commission for Europe, version applicable as from 1 January 2009, ISBN-978-92-1-139131-2.

⁶ Annex 1 to Appendix B (Uniform Rules concerning the Contract for International Carriage of Goods by Rail) of the Convention concerning International Carriage by Rail, version with effect from 1 January 2009.

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
	Dangerous Goods by Inland Waterways (ADN) ⁷ , all three of which have been implemented by Directive 2008/68/EC of the European Parliament and of the Council on the inland transport of dangerous goods ⁸ , International Maritime Dangerous Goods (IMDG) Code ⁹ (sea), and Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO) ¹⁰ (air).	States with regard to the transport of dangerous goods by rail), ICAO/IATA (air). This might include inter alia:
A4.3.14.1 UN Number	14.1. UN number	– UN number,
Provide the UN Number (i.e. four-figure identification number of the substance or article) from the <i>UN Model Regulations</i> .	The UN number (i.e. the four-figure identification number of the substance, mixture or article preceded by the letters ‘UN’) from the UN Model Regulations shall be provided.	
A4.3.14.2 UN Proper Shipping Name	14.2. UN proper shipping name	– proper shipping name,
Provide the UN proper shipping name from the UN Model Regulations. For substances or mixtures the UN proper shipping name should be provided in this sub-section if it has not appeared as the GHS product identifier or national or regional identifiers.	The UN proper shipping name from the UN Model Regulations shall be provided, unless it has appeared as the product identifier in Subsection 1.1.	

⁷ Version as revised as of 1 January 2007.

⁸ OJ L 260, 30.09.2008, p. 1.

⁹ International Maritime Organisation, 2006 edition, ISBN 978-92-8001-4214-3.

¹⁰ IATA, 2007-2008 edition.

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
<p>A4.3.14.3 <i>Transport hazard class(es)</i></p> <p>Provide the transport class (and subsidiary risks) assigned to the substances or mixtures according to the most predominant hazard that they present in accordance with the UN Model Regulations.</p>	<p>14.3. Transport hazard class(es)</p> <p>The transport hazard class (and subsidiary risks) assigned to the substances or mixtures according to the predominant hazard that they present in accordance with the UN Model Regulations shall be provided.</p>	<p>– class,</p>
<p>A4.3.14.4 <i>Packing group, if applicable</i></p> <p>Provide the packing group number from the UN Model Regulations, if applicable. The packing group number is assigned to certain substances in accordance with their degree of hazard.</p>	<p>14.4. Packing group</p> <p>The packing group number from the UN Model Regulations shall be provided, if applicable. The packing group number is assigned to certain substances in accordance with their degree of hazard.</p>	<p>– packing group,</p>
<p>A4.3.14.5 <i>Environmental hazards</i></p> <p>Indicate whether the substance or mixture is a known marine pollutant according to the IMDG Code, and if so, whether it is a “marine pollutant” or a “severe marine pollutant”. Also indicate whether the substance or mixture is environmentally hazardous according to the UN Model Regulations, ADR, RID and ADN.</p>	<p>14.5. Environmental hazards</p> <p>It shall be indicated whether the substance or mixture is environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID and ADN) and /or a marine pollutant according to the IMDG Code. If authorized or intended for carriage by inland waterways in tank-vessels, it shall be indicated whether the substance or mixture is environmentally hazardous in tank-vessels only according to ADN.</p>	<p>– marine pollutant,</p>
<p>A4.3.14.6 <i>Special precautions for user</i></p> <p>Provide information on any special precautions, which a</p>	<p>14.6. Special precautions for user</p> <p>Information shall be provided on any special precautions with which a user should or</p>	<p>– other applicable information.</p> <p>Indicate any special precautions which a user needs to be aware of or needs to comply</p>

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
user needs to be aware of, or needs to comply with in connection with transport.	must comply or be aware of in connection with transport or conveyance either within or outside his premises.	with in connection with transport or conveyance either within or outside his premises.
A4.3.14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	
This sub-section only applies when cargoes are intended to be carried in bulk according to the following IMO instruments: Annex II of MARPOL 73/78 and the IBC Code.	This subsection only applies when cargoes are intended to be carried in bulk according to the following International Maritime Organisation (IMO) instruments: Annex II of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) ¹¹ and the International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code) (IBC Code) ¹² .	
Provide the product name (if name is different to that given in A4.3.1.1) as required by the shipment document and in accordance with the name used in the lists of product names given in Chapters 17 or 18 of the IBC Code or the latest edition of the IMO's MEPC.2/Circular. Indicate ship	The product name shall be provided (if different from that given in Subsection 1.1) as required by the shipment document and in accordance with the name used in the lists of product names given in chapters 17 or 18 of the IBC Code or the latest edition of the IMO's Marine Environment Protection Committee (MEPC).2/Circular ¹³ . Ship type required and pollution category shall be indicated.	

¹¹ MARPOL 73/78 – Consolidated edition 2006, London, IMO 2007, ISBN 978-92-801-4216-7.

¹² IBC Code, 2007 edition, London, IMO 2007, ISBN 978-92-801-4226-6.

¹³ MEPC.2/Circular, Provisional categorization of liquid substances, version 14, effective 1 January 2009.

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
type required and pollution category.		
A4.3.15 SECTION 15: Regulatory information	15. SECTION 15: Regulatory information	15. REGULATORY INFORMATION
Describe any other regulatory information on the substance or mixture that is not provided elsewhere in the SDS (e.g. whether the substance or mixture is subject to the Montreal Protocol, the Stockholm Convention or the Rotterdam Convention).	This section of the safety data sheet shall describe the other regulatory information on the substance or mixture that is not already provided in the safety data sheet (such as whether the substance or mixture is subject to Regulation (EC) No 2037/2000 of the European Parliament and of the Council of 29 June 2000 on substances that deplete the ozone layer ¹⁴ , Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC ¹⁵ or Regulation (EC) No 689/2008 of the European Parliament and of the Council of 17 June 2008 concerning the export and import of dangerous chemicals ¹⁶).	
A4.3.15.1 Safety, health and environmental regulations specific for the product in question	15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture	
Provide relevant national and/or regional information on the regulatory status of the	Information regarding relevant Community safety, health and environmental provisions (for example Seveso category/named	Give the health, safety and environmental information shown on the label according to Directives 67/548/EEC and 1999/45/EC.

¹⁴ OJ L 244, 29.9.2000, p. 1.

¹⁵ OJ L 229, 30.4.2004, p. 5.

¹⁶ OJ L 204, 31.7.2008, p. 1.

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
<p>substance or mixture (including its ingredients) under relevant safety, health and environmental regulations.</p>	<p>substances in Annex I of Directive 96/82/EC) or national information on the regulatory status of the substance or mixture (including the substances in the mixture), including advice regarding action that should be taken by the recipient as a result of these provisions shall be provided. Where relevant the national laws of the relevant Member States which implement these provisions and any other national measures that may be relevant shall be mentioned.</p>	<p>Also mention, where possible, the national laws which implement these provisions and any other national measures that may be relevant.</p>
<p>This should include whether the substance is subject to any prohibitions or restrictions in the country or region into which it is being supplied.</p>	<p>If the substance or mixture covered by this safety data sheet is the subject of specific provisions in relation to protection of human health or the environment at Community level (such as authorisations given under Title VII or restrictions under Title VIII) these provisions shall be mentioned.</p>	<p>If the substance or preparation covered by this safety data sheet is the subject of specific provisions in relation to protection of man or the environment at Community level (e.g. authorisations given under Title VII or restrictions under Title VIII) these provisions shall, as far as is possible, be stated.</p>
	<p>15.2. Chemical Safety Assessment</p>	
	<p>It shall be indicated if a chemical safety assessment has been carried out for the substance or the mixture by the supplier.</p>	<p>Indicate if a Chemical Safety Assessment has been carried out for the substance (or a substance in the preparation).</p>
<p>A4.3.16 SECTION 16: Other information</p>	<p>16. SECTION 16: Other information</p>	<p>16. OTHER INFORMATION</p>
<p>Provide information relevant to the preparation of the SDS in this section. This should incorporate other information that does not belong in sections 1 to 15 of the SDS, including</p>	<p>This section of the safety data sheet shall describe the information relevant to the compilation of the safety data sheet. It shall incorporate other information that is not included in Sections 1 to 15, including information on revision of the safety data</p>	<p>Indicate any other information which the supplier assesses as being of importance for the health and safety of the user and for the protection of the environment, for example:</p>

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
information on preparation and revision of the SDS such as:	sheet such as:	
(a) the date of preparation of the latest revision of the SDS. When revisions are made to an SDS, unless it has been indicated elsewhere, clearly indicate where the changes have been made to the previous version of the SDS. Suppliers should maintain an explanation of the changes and be willing to provide it upon request;	(a) in case of a revised safety data sheet, a clear indication of where changes have been made to the previous version of the safety data sheet, unless such indication is given elsewhere in the safety data sheet, with an explanation of the changes, if appropriate. A supplier of a substance or mixture shall maintain an explanation of the changes and provide it upon request;	For a revised Safety Data Sheet, indicate clearly the information, which has been added, deleted or revised (unless this has been indicated elsewhere).
		– recommended restrictions on use (i.e. non-statutory recommendations by supplier),
(b) a key/legend to abbreviations and acronyms used in the SDS; and	(b) a key or legend to abbreviations and acronyms used in the safety data sheet;	
(c) key literature references and sources for data used to compile the SDS. <i>NOTE: While references are not necessary in SDS's, references may be included in this section if desired.</i>	(c) key literature references and sources for data;	– sources of key data used to compile the Safety Data Sheet. – further information (written references and/or technical contact point),
	(d) in the case of mixtures, an	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
	indication of which of the methods of evaluating information referred to in Article 9 of Regulation (EC) No 1272/2008 was used for the purpose of classification;	
	(e) list of relevant R phrases, hazard statements, safety phrases and/or precautionary statements. Write out the full text of any statements which are not written out in full under Sections 2 to 15;	– list of relevant R phrases. Write out the full text of any R phrases referred to under headings 2 and 3 of the Safety Data Sheet,
	(f) advice on any training appropriate for workers to ensure protection of human health and the environment.	– training advice,
	If in accordance with Article 31(10) a supplier of a mixture chooses to identify and inform about the classification necessary from 1 June 2015 in advance of using it fully for classification and labelling on the package, he may include this classification in this section.	
	PART B	
	The safety data sheet shall include the following 16 headings in accordance with Article 31(6) and in addition the subheadings also listed except Section 3, where only Subsection 3.1 or 3.2 need to be included as appropriate:	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
	<p>SECTION 1: Identification of the substance/mixture and of the company/undertaking</p> <ol style="list-style-type: none"> 1.1. Product identifier 1.2. Relevant identified uses of the substance or mixture and uses advised against 1.3. Details of the supplier of the safety data sheet 1.4. Emergency telephone number <p>SECTION 2: Hazards identification</p> <ol style="list-style-type: none"> 2.1. Classification of the substance or mixture 2.2. Label elements 2.3. Other hazards <p>SECTION 3: Composition/information on ingredients</p> <ol style="list-style-type: none"> 3.1. Substances 3.2. Mixtures <p>SECTION 4: First aid measures</p> <ol style="list-style-type: none"> 4.1. Description of first aid measures 4.2. Most important symptoms and effects, both acute and delayed 4.3. Indication of immediate medical attention and special treatment needed <p>SECTION 5: Fire-fighting measures</p> <ol style="list-style-type: none"> 5.1. Extinguishing media 	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
	<p>5.2. Special hazards arising from the substance or mixture</p> <p>5.3. Advice for fire-fighters</p> <p>SECTION 6: Accidental release measures</p> <p>6.1. Personal precautions, protective equipment and emergency procedures</p> <p>6.2. Environmental precautions</p> <p>6.3. Methods and material for containment and cleaning up</p> <p>6.4. Reference to other sections</p> <p>SECTION 7: Handling and storage</p> <p>7.1. Precautions for safe handling</p> <p>7.2. Conditions for safe storage, including any incompatibilities</p> <p>7.3. Specific end use(s)</p> <p>SECTION 8: Exposure controls/personal protection</p> <p>8.1. Control parameters</p> <p>8.2. Exposure controls</p> <p>SECTION 9: Physical and chemical properties</p> <p>9.1. Information on basic physical and chemical properties</p> <p>9.2. Other information</p> <p>SECTION 10: Stability and reactivity</p> <p>10.1. Reactivity</p>	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
	<p>10.2. Chemical stability</p> <p>10.3. Possibility of hazardous reactions</p> <p>10.4. Conditions to avoid</p> <p>10.5. Incompatible materials</p> <p>10.6. Hazardous decomposition products</p> <p>SECTION 11: Toxicological information</p> <p>11.1. Information on toxicological effects</p> <p>SECTION 12: Ecological information</p> <p>12.1. Toxicity</p> <p>12.2. Persistence and degradability</p> <p>12.3. Bioaccumulative potential</p> <p>12.4. Mobility in soil</p> <p>12.5. Results of PBT and vPvB assessment</p> <p>12.6. Other adverse effects</p> <p>SECTION 13: Disposal considerations</p> <p>13.1. Waste treatment methods</p> <p>SECTION 14: Transport information</p> <p>14.1. UN number</p> <p>14.2. UN proper shipping name</p> <p>14.3. Transport hazard class(es)</p> <p>14.4. Packing group</p> <p>14.5. Environmental hazards</p> <p>14.6. Special precautions for user</p> <p>14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</p>	

GHS text, Annex 4 (Rev.2)	Revised Annex II text (as of 1/12/2010)	Original Annex II text (text parts do not necessarily appear in the correct order)
	SECTION 15: Regulatory information 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture 15.2. Chemical Safety Assessment SECTION 16: Other information	