



BUSINESS REQUIREMENTS SPECIFICATION (BRS)

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Document Change History Log

Date of Change	Version	Paragraph Changed	Summary of changes
25 August 2006	1.1	Cover	Changed Business Domain to: Supply Chain
25 August 2006	1.1	5.4	Replaced Class Diagram
25 August 2006	1.1	5.4	Replaced Data Element Definitions

1.0 Preamble

Through Title 29, Code of Federal Regulations (CFR), the US Government directs that information describing hazardous material (HAZMAT) be widely available to employees who may come in contact with it. The Occupational Safety and Health Administration (OSHA) Hazard Communication (HAZCOM) Standard promulgates the policy and procedures to distribute that information. HAZMAT manufacturers and vendors develop and communicate data describing their products through Material Safety Data Sheets (MSDS). To help manage MSDS data, the Defense Logistics Agency (DLA) developed a centralized data base repository called the Hazardous Material Information Resource System (HMIRS).

The MSDS plays a critical role in purchasing of HAZMAT, in particular for the US Government. Before a purchase can be completed for anything identified as HAZMAT, a MSDS must be in the HMIRS system.

2.0 References

- US Government HAZMAT Directive Version 3.4, 1997
- UN/CEFACT Modeling Methodology (CEFACT/TMG/N090R10, November 2001)
- UN/CEFACT –eXML Core Components Technical Specifications version 2.01 – ISO 15000-5
- UN/CEFACT Business Requirements Specification version 1.5 (CEFACT/ICG/005)

3.0 Objective

The American National Standards Institute (ANSI) publishes a general MSDS format containing sixteen sections and approximately 350 data elements. The MSDS contains information about the known or possible health and safety effects of exposure to Hazardous material. They are also the source document of chemical-specific data for compliance with reporting requirements under two US Government acts. The MSDS may contain the following Hazardous Material information:

- personal protections,
- emergency response,
- proper procedures for shipment and storage,
- pollution prevention,
- release, emission,
- waste generation management,
- regulatory reporting requirements.

Currently manufacturers and vendors submit MSDS information via different media and in different formats (i.e. by FAX, email, JPEG, PDF, etc)

The objective of this business process is to efficiently collect, store and distribute MSDS data, and thus protect the safety and health of employees by making those data readily available.

4.0 Scope

HMIRS is a repository of MSDS information that plays a critical role in the procurement of hazardous material. MSDS information must be made visible to the end consumer prior to a purchase order being completed. If this information is not available, the procurement can not be completed. Not only must MSDS information be made available to the end consumer, certain data are considered mandatory for the US Government. Once a vendor, submits a MSDS, the procurement officer checks to make sure all the required data is provided. The quality of the data is not checked at this time but only that mandatory data fields are filled in. For tracking purposes, each procurement is tied back to a MSDS document. MSDS information becomes a vital part of the procurement process for the information, as well as a way to control backlog and hardcopy documentation.

5.0 Business Requirements

To begin the procurement of the hazardous material process, an “apparent successful offeror” is selected. Then a procurement officer/reviewer examines the procurement request for hazardous material. The procurement officer/reviewer queries HMIRS to determine if a current MSDS with the mandatory data resides in HMIRS. If the MSDS does exist in HMIRS, the reviewer is done and the purchase request is processed. An important goal of the purchase officer is to identify the possibility of using a less hazardous alternative to the requested HAZMAT material. The MSDS weighs heavily in this search because it provides valuable information regarding the product’s hazards. Activities involved in shipping, handling, using or disposing of hazardous material require query ready, on line access to the HMIRS. Often a set of value added attributes is added to the document to enhance the data.

Because the MSDS are received in a variety of different formats, and thus are difficult to input, process, store and distribute to users and other systems, one goal of this project is the standardization of both the MSDS collection media and data content.

5.1 Business Requirements Views

Figure 1 and 2 displays the process of the purchase of hazardous material.

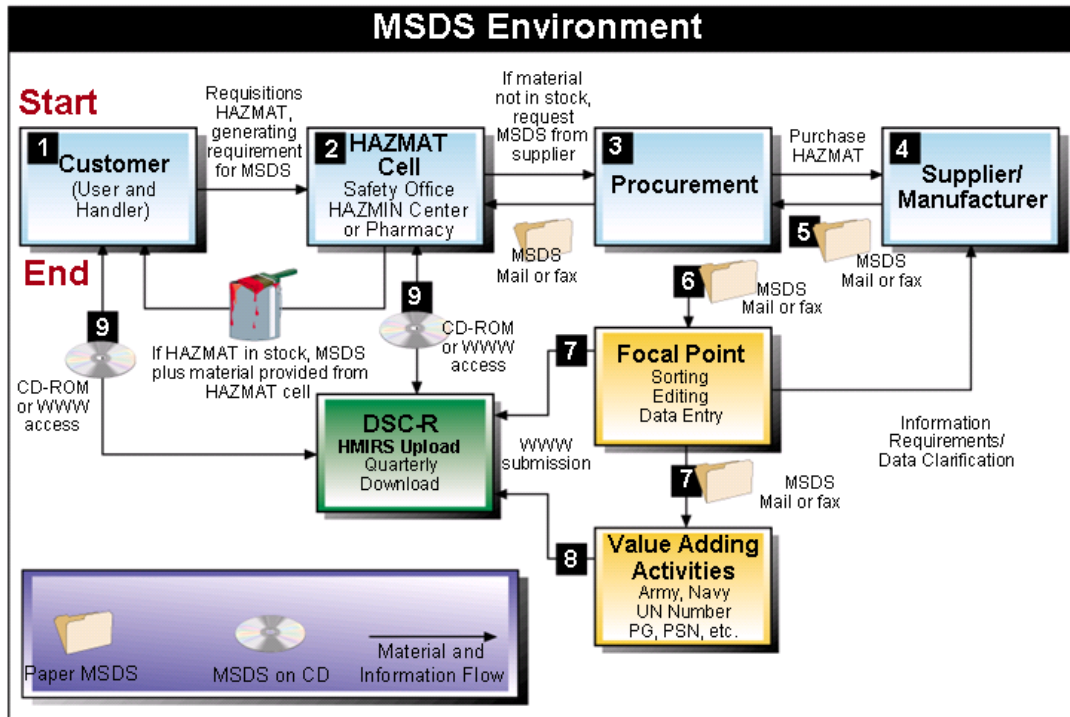
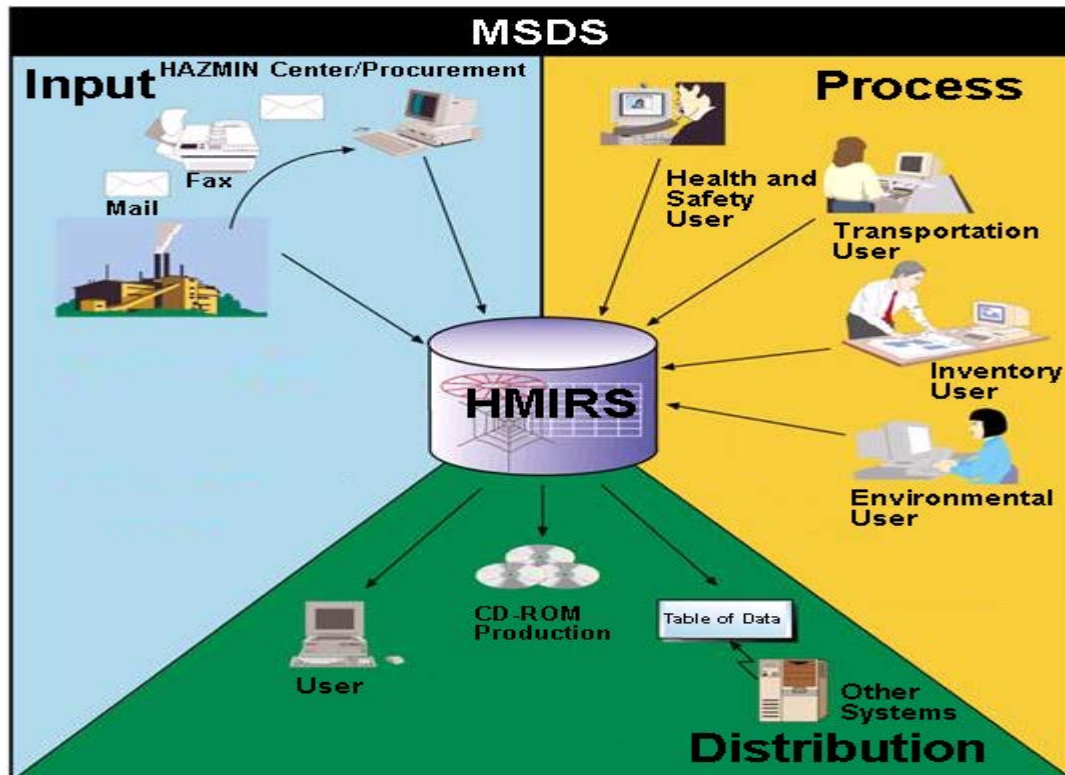


Figure 2.



5.2 Business Process Elaboration

This process details the validation of MSDS information in HMIRS. In this case the purchasing officer has to validate that MSDS information exists in HMIRS. MSDS information is needed by the purchasing officer prior to any purchase of HAZMAT material. Once the purchasing officer receives a request for HAZMAT, it must be verified the information is in HMIRS.

Figure 3 is a Use Case for the MSDS information.

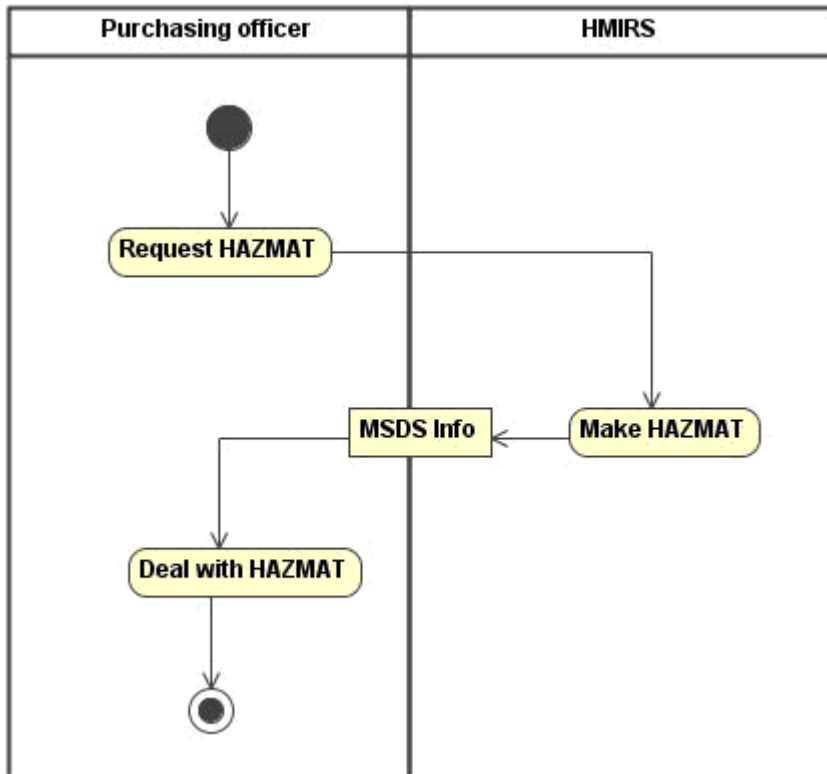


Business Process Name	Purchase of Hazardous Material
Identifier	US Government: MSDS
Actors	<ul style="list-style-type: none"> • Purchasing Officer • HMIRS
Description	A purchasing officer needs to validate if certain MSDS information is stored in HMIRS for a particular material.
Pre-Conditions	The purchasing officer has received a request for the purchase of a product that contains HAZMAT material. <ul style="list-style-type: none"> • HMIRS is available • Vendor complies with Fed. Regulation for procurement
Post Conditions	MSDS information is provided.
Scenario	The purchasing officer sends a request to HMIRS to validate that MSDS information exists for this particular substance. If the MSDS information is present, the purchasing officer can send a purchase order to the vendor (this process is outside of the scope of this Use Case).

5.3 Information Flow Definition

Once a request is received by the purchasing officer, the HMIRS system is then checked to verify that MSDS information is supplied in the data base.

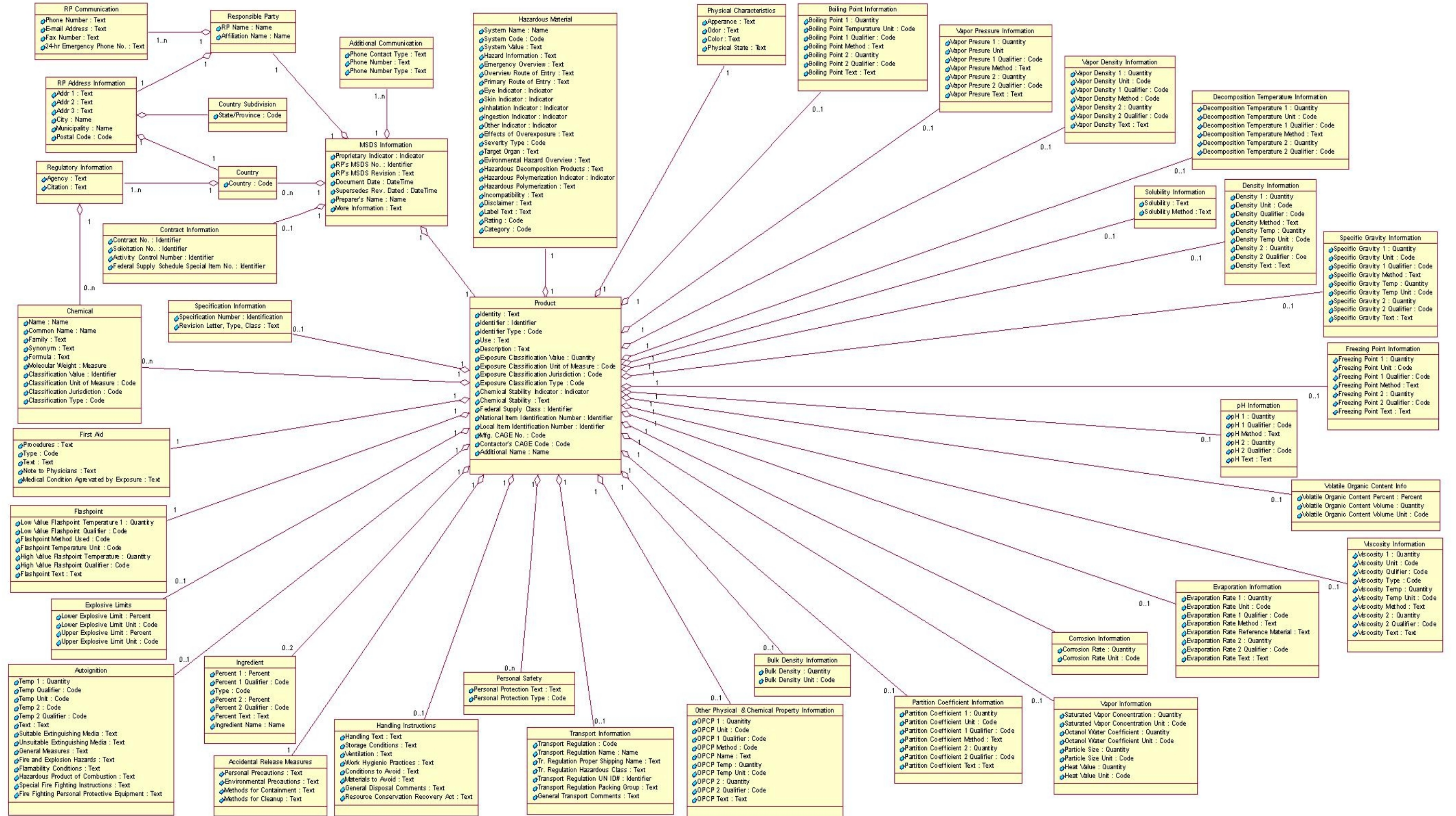
Figure 4: The following activity diagram shows a query to the HMIRS system with the corresponding MSDS information returned.



5.4 Information Model Definition

Figure 5 on the following page provides the Class Diagram providing information for the MSDS. This information is mandatory prior to completing a purchase order for HAZMAT.

Figure 5 is the Class diagram for the MSDS



The table below provides the definitions for the elements identified in the Class Diagram from the preceding figure

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Mandatory (1,1)	MSDS Information	Proprietary Indicator	Proprietary Indicator: Indicator	A code that indicates whether or not a company's determination that the ingredient level data be treated as trade secret. Yes/No
Optional (0,1)	MSDS Information	RP's MSDS No.	RP's MSDS No. : Identifier	A Material Safety Data Sheet (MSDS) preparers unique identification of the MSDS.
Optional (0,1)	MSDS Information	RP's MSDS Revision	RP's MSDS Revision : Text	The Material Safety Data Sheet (MSDS) preparers revision information for their MSDS.
Mandatory (1,1)	MSDS Information	Document Date	Document Date : DateTime	The date, time, date time or other date time value of the creation of the document.
Optional (0,1)	MSDS Information	Supersedes Rev. Dated	Supersedes Rev. Dated : DateTime	The date of the previously released MSDS which has been replaced.
Optional (0, 1)	MSDS Information	MSDS Preparer's Name	MSDS Preparer's Name : Name	The name of the individual or organization that prepares the document.
	MSDS Information	More Information	More Information : Text	Additional information relating to the MSDS but not specifically categorized by another element.
Mandatory (1,1)	Responsible Party	Responsible Party (RP) Name	RP Name : Name	This is the company name that is responsible for the information that is provided for and issues the MSDS.
Optional (0, 1)	Responsible Party	Affiliation Name	Affiliation Name : Name	This is a subsidiary, division or parent company of the company that prepared the MSDS.
Mandatory (1,1)	RP Address Information	RP Addr 1	Addr 1 : Text	The first line of the address
Optional (0, 1)	RP Address Information	RP Addr 2	Addr 2 : Text	The second line of the address
Optional (0, 1)	RP Address Information	RP Addr 3	Addr 3 : Text	The third line of the address
Mandatory (1, 1)	RP Address Information	RP City	City : Name	An incorporated municipality with defined boundaries and legal powers through a charter granted by a state, province or similar entity.
Mandatory (1,1)	RP Address Information	RP Municipality	Municipality : Name	A primarily urban political unit having corporate status and usually powers of self-government
Mandatory (1, 1)	RP Address Information	RP Postal Code	Postal Code : Code	A code specifying the postcode of the address.
Mandatory (1,1)	Country	RP Country	Country: Code	The unique identifier of the country for this address.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
	Country Subdivision	RP State/Province	State/Province : Code	An identification of a country sub-division of this address such as a state or county in the US or county in the UK or a department in France.
Optional (0, Many)	RP Communication	RP Phone No.	Phone Number : Text	The text string of characters that make up the complete number for this communication.
Optional (0, Many)	RP Communication	RP E-mail Address	E-mail Address : Text	The text string of characters that make up the complete number for this communication.
Optional (0, Many)	RP Communication	RP Fax Number	Fax Number : Text	The text string of characters that make up the complete number for this communication.
Mandatory (1,1)	RP Communication	24-hr Emergency . Phone No.	24-hr Emergency Phone No. : Text	This is the mandated 24 hour emergency phone number for this product.
Mandatory (1, Many)	Additional Communication	Phone Contact Type	Phone Contact Type : Text	A description of the type of contact provided in the MSDS for the product.
Optional (1,1)	Additional Communication	Phone Number	Phone Number : Text	The text string of characters that make up the complete number for this communication.
Optional (1, 1)	Additional Communication	Phone Number Type	Phone Number Type : Text	A description of the device associated with a particular Phone Number.
Mandatory (1,1)	Product	Product Identity	Identity : Text	The product identity or name of the product as indicated on the MSDS.
Mandatory (1,1)	Product	Additional Product Identifier	Identifier : Identifier	The value for the additional product identifier.
Mandatory (1,1)	Product	Additional Product Identifier Type	Identifier Type : Code	The name of the additional product identifier type.
Optional (0,1)	Product	Product Use	Use : Text	Describes potential/known uses of the product, as described by the manufacturer
Optional (0, 1)	Product	Product Description	Description : Text	A textual description of the product.
Conditional (1,1)	Product	Product Exposure Classification Value	Exposure Classification Value : Quantity	The value given to a product by a particular organization for that product exposure classification.
Conditional (1,1)	Product	Product Exposure Classification Unit of Measure	Exposure Classification Unit of Measure	The code that stands for the unit of measure for Product Exposure Classification as compared to a standard.
Conditional (1,1)	Product	Product Exposure Classification Jurisdiction	Exposure Classification Jurisdiction	The organization or regulatory community that has identified some classification information on this specific product.
Conditional (1,1)	Product	Product Exposure Classification Type	Exposure Classification Type	The identity of the classification information on the specific product.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Mandatory (1, 1)	Product	Chemical Stability Indicator	Chemical Stability Indicator : Indicator	This is a Yes/No Indicator used to identify whether the product remains unchanged or undergoes changes during storage or use of the product.
Optional (0, 1)	Product	Chemical Stability	Chemical Stability : Text	Textual information whether the product remains unchanged or undergoes changes during storage or use of the product.
Mandatory	Product	Federal Supply Class (FSC)	Federal Supply Class : Identifier	The four digit number that identifies the classification of grouping like items, corresponding to the first four digits of a National Stock Number (NSN)
Conditional (1, 1)	Product	National Item Identification Number (NIIN)	National Item Identification Number : Identifier	A nine digit number used to identify material in the U.S. DoD distribution system. The NIIN is the last nine digits of the National Stock Number (NSN)
Conditional (1, 1)	Product	Local Item Identification Number (LIIN)	Local Item Identification Number : Identifier	The number assigned to a product by a local buying activity when a National Item Identification Number is not available
Optional (0, 1)	Product	Mfg. CAGE No.	Mfg. CAGE No. : Code	The code that stands for the Commercial And Government Entity Code (CAGE) assigned to the manufacturer of the product
Mandatory (1, 1)	Product	Contractor's CAGE Code	Contractor's CAGE Code : Code	The code that stands for the Commercial And Government Entity Code (CAGE) assigned to the contractor.
Mandatory (1, Many)	Regulatory Information	Agency	Agency : Text	A governmental or quasi-governmental entity that issues a regulation or rule.
Mandatory (1, 1)	Regulatory Information	Citation	Citation : Text	A reference to a specific clause or element a regulatory document
Mandatory (1, Many)	Country	Origin	Country : Code	Country of Origin for regulatory information
Optional (0, 1)	Chemical	Product Chemical Name	Name : Name	Text designation for an element, a chemical, or a compound that has physical and chemical properties.
Optional (0, Many)	Chemical	Ingredient Common Name(s)	Common Name : Name	A commonly recognized identity of a specific chemical
Optional (0, 1)	Chemical	Product Chemical Family	Family : Text	A group of elements or, common, compounds that share chemical characteristics and have a common name for the product
Optional (0, Many)	Chemical	Product Synonym	Synonym : Text	An alternate name used to represent the identity of a chemical substance.
Optional (0, 1)	Chemical	Product Chemical Formula	Formula : Text	A chemical formula expresses the exact composition of a molecule or substance using the chemical abbreviations of the chemical elements for the product.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Mandatory (1,1)	Chemical	Ingredient Chemical Name	Name : Name	Text designation for an element, a chemical, or a compound that has physical and chemical properties.
Optional (0, Many)	Chemical	Ingredient Chemical Synonym	Synonym : Name	Alternate names used by various vendors, regulations, and countries to represent the identity of a specific chemical substance.
Optional (0, 1)	Chemical	Ingredient Chemical Formula	Formula : Text	A chemical formula expresses the exact composition of a molecule of a specific substance/chemical using the chemical abbreviation of the chemical elements.
Optional (0, 1)	Chemical	Ingredient Molecular Weight	Molecular Weight : Measure	The numeric value for the molecular weight of a compound in grams, corresponding to the sum of the atomic weights of the elements in the compound.
Optional (0, 1)	Chemical	Molecular Weight	Molecular Weight : Measure	The numeric value for the molecular weight of a compound in grams, corresponding to the sum of the atomic weights of the elements in the product.
Conditional (1,1)	Chemical	Classification Value	Classification Value : Identifier	Identification value given to a chemical by a particular organization or regulatory community.
Conditional (1,1)	Chemical	Classification Unit of Measure	Classification Unit of Measure : Code	A standard method of defining how an item is divided, counted, or described.
Conditional (1,1)	Chemical	Classification Jurisdiction	Classification Jurisdiction : Code	The organization or regulatory community that has identified some classification information on this specific chemical.
Conditional (1,1)	Chemical	Classification Type	Classification Type : Code	The identity of the classification information on the specific chemical.
Optional (1,1)	Ingredient	Ingredient Percent 1	Percent 1 : Percent	The numeric percentage of that particular ingredient within the product for which the MSDS was prepared. When a range is provided, this is the lower limit of the range.
Mandatory (1,1)	Ingredient	Percent 1 Qualifier	Percent 1 Qualifier : Code	A code from a set of values (<=, <, >=, >, =) the specifies the percentage of the particular ingredient within the product for which the MSDS was prepared.
Optional (1,1)	Ingredient	Type	Type : Code	The designation (by weight or by volume) associated to the ingredient percent.
Optional (0, 1)	Ingredient	Ingredient Percent 2	Percent 2 : Percent	The numeric value when the upper percent of the range is specified. That particular ingredient within the product for which the MSDS was prepared. When a range is provided, this is the lower limit of the range.
Optional (0, 1)	Ingredient	Percent 2 Qualifier	Percent 2 Qualifier : Code	A code from a set of values (<, <=, =) that specifies the percentage of the particular ingredient within the product for which the MSDS was prepared.
Optional (0, 1)	Ingredient	Ingredient Percent Text	Percent Text : Text	Textual representation of the ingredient percent when the value or range of values can not be expressed numerically.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Optional (1, 0)	Ingredient	Ingredient Name	Ingredient Name : Name	Chemical and/or common name for an individual ingredient contained in the product.
Mandatory (1,1)	Hazard Material	System Name	System Name : Name	The name of the organization that identifies the hazard classification.
Mandatory (1,1)	Hazard Material	System Code	System Code : Code	The system category from the organization that identifies the hazard classification.
Mandatory (1, 1)	Hazard Material	System Value	System Value : Text	The value given to a product by a particular organization for that hazard classification category
Optional (0, 1)	Hazard Material	Hazard Information	Hazard Information : Text	Information provided on the degree and nature of the hazards associated to a product.
Mandatory (1,1)	Hazard Material	Emergency Overview	Emergency Overview : Text	Information provided on actions and safeguards to take in the event of an unintended release of the product causing an emergency situation.
Optional (0, 1)	Hazard Material	Overview Route of Entry	Overview Route of Entry : Text	Text information provided relative to potential ways for the product to enter a human.
Optional (0, 1)	Hazard Material	Primary Route of Entry	Primary Route of Entry : Text	The primary route by which the hazardous material enters the body.
Mandatory (1, 1)	Hazard Material	Eye Indicator	Eye Indicator : Indicator	The yes/no indicator whether the eye is a route of entry.
Mandatory (1, 1)	Hazard Material	Skin Indicator	Skin Indicator : Indicator	The yes/no indicator whether the skin is a route of entry.
Mandatory (1, 1)	Hazard Material	Inhalation Indicator	Inhalation Indicator : Indicator	The yes/no indicator whether inhalation is a route of entry.
Mandatory (1, 1)	Hazard Material	Ingestion Indicator	Ingestion Indicator : Indicator	The yes/no indicator whether ingestion is a route of entry.
Mandatory (1, 1)	Hazard Material	Other Indicator	Other Indicator : Indicator	A textual description of another route of entry.
Conditional (1, 1)	Hazard Material	Effects of Overexposure	Effects of Overexposure : Text	A textual description of the effects of overexposure to the product.
Conditional (1, 1)	Hazard Material	Severity Type	Severity Type : Code	A textual description of the nature and severity of the product due to overexposure.
Conditional (1, 1)	Hazard Material	Target Organ	Target Organ : Text	The common identification or name of the bodily organ(s) that are most likely to be affected by exposure to the product.
Optional (0,1)	Hazard Material	Environmental Hazard Overview	Environmental Hazard Overview : Text	Text information presenting data on ecological hazards posed by the product.
Optional (0, 1)	Hazardous Material	Hazardous Decomposition Products	Hazardous Decomposition Products : Text	The common identification or name(s) that stands for the hazardous material(s) produced in dangerous amounts by burning, oxidization, or by heating in welding of the product.
Mandatory (1, 1)	Hazardous Material	Hazardous Polymerization Indicator	Hazardous Polymerization Indicator : Indicator	This is a Yes/No Indicator used to identify whether the product remains unchanged or undergoes a Hazardous Polymerization during storage or use of the product.
Optional (0, 1)	Hazardous Material	Hazardous Polymerization	Hazardous Polymerization : Text	A textual description about the conditions that could start a Hazardous Polymerization of the product.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Optional (0, 1)	Hazardous Material	Incompatibility	Incompatibility : Text	Information regarding whether the product could have dangerous reactions with direct contact with another material or product.
Optional (0, 1)	Hazardous Material	Disclaimer	Disclaimer : Text	
Optional (0, 1)	Hazardous Material	Label Text	Label Text : Text	A textual description that provides details about the special hazard precautions for the product.
Optional (0, 1)	Hazardous Material	Rating	Rating : Code	A coding scheme that identifies the product as an environmental hazard.
Optional (0, 1)	Hazardous Material	Category	Category : Code	
Mandatory (1,1)	First Aid	First Aid Procedures	Procedures : Text	A statement providing details about the first aid procedures to be used in the event of inhalation, skin and eye contact, and ingestion of the product.
Conditional(1, 1)	First Aid	Type	Type : Code	The route of entry (eyes, skin, inhalation, ingestion) where a first aid procedure is necessary.
Conditional(1, 1)	First Aid	Text	Text : Text	The first aid procedure recommended for the cited route of entry.
Optional (0, 1)	First Aid	Note to Physicians	Note to Physicians : Text	A statement providing details about the specific information to health care professionals.
Optional (0, 1)	First Aid	Medical Condition. Aggravated by Exposure	Medical Condition. Aggravated by Exposure : Text	Textual information on existing medical conditions which may be complicated by exposure.
Mandatory (1,1)	Flashpoint	Low Value Flashpoint Temperature 1	Low Value Flashpoint Temperature 1 : Quantity	The numeric value for the minimum temperature of the material, in unit measure, at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid.
Mandatory (1,1)	Flashpoint	Low Value Flashpoint Qualifier	Low Value Flashpoint Qualifier : Code	A code from a set of values (<=, <, >=, >, =) that identifies the low flashpoint value.
Mandatory (1, 1)	Flashpoint	Flashpoint Method Used	Flashpoint Method Used : Code	The common identification or name that stands for the method used to determine the Flash Point Temperature.
Mandatory (1,1)	Flashpoint	Flashpoint Temperature Unit	Flashpoint Temperature Unit : Code	The code that stands for the unit of measure code for measuring temperature. Examples: Celsius, Fahrenheit, etc.
Optional (0, 1)	Flashpoint	High Value Flashpoint Temperature	High Value Flashpoint Temperature : Code	The numeric value for the maximum temperature of the material, in unit measure, at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid.
Conditional (1, 1)	Flashpoint	High Value Flashpoint Qualifier	High Value Flashpoint Qualifier : Code	A code from a set of values (<, <=, =) that identifies the highest flashpoint value.
Conditional (1, 1)	Flashpoint	Flashpoint Text	Flashpoint Text : Code	Textual representation of flashpoint information when the value or range of values can not be expressed numerically.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Conditional (1, 1)	Explosive Limits	Lower Explosive Limit	Lower Explosive Limit : Percent	The numeric value for lowest percentage rate in air of the material at which it will produce a flash of fire when an ignition source is present.
Conditional (1, 1)	Explosive Limits	Lower Explosive Limit Unit	Lower Explosive Limit Unit : Code	The unit of measure that is the lower explosive limit.
Conditional (1, 1)	Explosive Limits	Upper Explosive Limit	Upper Explosive Limit : Percent	The numeric value for highest percentage rate in air of the material at which it will produce a flash of fire when an ignition source is present.
Conditional (1, 1)	Explosive Limits	Upper Explosive Limit Unit	Upper Explosive Limit Unit : Code	The unit of measure that is the upper flammability limit.
Conditional (1, 1)	Autoignition	Autoignition Temp 1	Autoignition Temp 1 : Quantity	The numeric value of the temperature of the material, at which a material will ignite spontaneously or burn. When a range is provided, this is the lower limit of the range.
Conditional (1, 1)	Autoignition	Autoignition Temp Qualifier	Autoignition Temp Qualifier : Code	A code from a set of values (<, <=, >, >=, =) that identifies the Autoignition temperature.
Conditional (1, 1)	Autoignition	Autoignition Temp Unit	Autoignition Temp Unit : Code	The unit of measure that is the autoignition temperature.
Conditional (1, 1)	Autoignition	Autoignition Temp 2	Autoignition Temp 2 : Quantity	The upper numeric value of the temperature of the material, at which a material will ignite spontaneously or burn.
Conditional (1, 1)	Autoignition	Autoignition Temp 2 Qualifier	Autoignition Temp 2 Qualifier : Code	A code from a set of values (<, <=, =) that identifies the Autoignition 2 temperature.
Mandatory (1,1)	Autoignition	Autoignition Text	Autoignition Text : Text	Textual representation of the Autoignition Temperature when the value or range of values can not be expressed numerically.
Optional (0, 1)	Autoignition	Suitable Extinguishing Media	Suitable Extinguishing Media : Text	Identification of substances recommended for fighting fires involving the product.
Optional (0, 1)	Autoignition	Unsuitable Extinguishing Media	Unsuitable Extinguishing Media : Text	Identification of substances not recommended for fighting fires involving the product.
Optional (0, 1)	Autoignition	General Measures	General Measures : Text	A textual description of the general safety measures related to fire and explosion hazards.
Optional (0, 1)	Autoignition	Fire and Explosion Hazards	Fire and Explosion Hazards : Text	Provides details of unusual fire and explosion hazards involving the material.
Optional (0, 1)	Autoignition	Flammability Conditions	Flammability Conditions : Text	Conditions under which the flammability hazards, precautions, or limits apply
Optional (0, 1)	Autoignition	Hazardous Product of Combustion	Hazardous Product of Combustion : Text	One or more hazardous materials produced when the subject matter burns.
Optional (0, 1)	Autoignition	Special Fire Fighting Instructions	Special Fire Fighting Instructions : Text	A statement providing details about special fire fighting procedures and instructions for fires involving the material.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Optional (0,1)	Autoignition	Fire Fighting Personal Protective Equipment	Fire Fighting Personal Protective Equipment : Text	Details about the personal protective equipment required for firefighters for fires involving the material
Mandatory (1, 1)	Accidental Release	Personal Precautions	Personal Precautions : Text	Text description of personal protective actions to take in case of and accidental release of the product.
Mandatory (1, 1)	Accidental Release	Environmental Precautions	Environmental Precautions : Text	Text description of environmental protection actions to take in case of an accidental release of the product.
Optional (0, 1)	Accidental Release	Methods for Containment	Methods for Containment : Text	Text description for methods of containing the product in case of an accidental release.
Optional (0, 1)	Accidental Release	Methods for Clean up	Methods for Clean up : Text	Text description for specific methods of clean up of the product in case of an accidental release.
Optional (0, 1)	Handling Instructions	Handling Text	Handling Text : Text	A textual description providing details about precautions when handling the material to avoid reaction hazards
Optional (0, 1)	Handling Instructions	Storage Conditions Text	Storage Conditions Text : Text	A textual description providing details about precautions when storing the material to avoid reaction hazards. Storage precautions also identify any equipment or special containers that are required for transfer or storage.
Optional (0, Many)	Handling Instructions	Ventilation (Engineering Controls)	Ventilation (Engineering Controls) : Text	A textual description of engineering controls that may be appropriate to help minimize chemical or physical hazards.
Optional (0, 1)	Handling Instructions	Work Hygienic Practices	Work Hygienic Practices	A textual description providing details about the work hygienic practices that should be followed for use of the material.
Optional (0, 1)	Handling Instructions	Conditions to Avoid	Conditions to Avoid : Text	A textual description providing details about the type of conditions which may affect the stability of the product.
Optional (0, 1)	Handling Instructions	Materials to Avoid	Materials to Avoid : Text	A textual description providing details about the material(s) to avoid which may affect the stability of the product.
Optional (0, 1)	Handling Instructions	General Disposal Comments	General Disposal Comments : Text	Textual information describing the disposal methods for the product.
Optional (0, 1)	Handling Instructions	Resource Conservation Recovery Act Information	Resource Conservation Recovery Act Information : Text	Textual information from the RCRA regarding specific disposal information for the product.
Conditional (1, 1)	Personal Safety	Personal Protection Text	Personal Protection Text : Text	A textual description of personal protective equipment that can be used to minimize exposure.
Conditional (1, 1)	Personal Safety	Personal Protection Type	Personal Protection Type :Text	A textual description that identifies the method of exposure that would require personal protective equipment.
Optional (0, 1)	Physical Characteristics	Appearance (color, odor phys. state)	Appearance : Text	A textual description providing details about the look or outward aspect of the material. For example: Clear, red concentrate.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Optional (0, 1)	Physical Characteristics	Odor	Odor : Text	A textual description providing details about the physiological sensation due to contact of the material's molecules with the olfactory nervous system. For example: Concentrate with slight clean and fresh odor.
Optional (0, 1)	Physical Characteristics	Color	Color : Text	The aspect of the appearance of objects and light sources that may be described in terms of hue, lightness, and saturation for objects and hue, brightness, and saturation for light sources
Optional (0, 1)	Physical Characteristics	Physical State	Physical State : Text	A textual description for the physical state of a material.
Optional (0, 1)	Boiling Point Information	Boiling Point 1	Boiling Point 1 : Quantity	The numeric value for the minimum temperature of the material at which it changes from liquid to gaseous state.
Conditional (1, 1)	Boiling Point Information	Boiling Point Temperature Unit	Boiling Point Temperature Unit : Code	The unit of measure that represents the boiling point.
Optional (0, 1)	Boiling Point Information	Boiling Point 1 Qualifier	Boiling Point 1 Qualifier : Code	A code from a set of values (<=, <, >=, >, =, =) that specifies the boiling point of the particular ingredient within the product for which the MSDS was prepared.
Conditional (1, 1)	Boiling Point Information	Boiling Point Method	Boiling Point Method : Text	The common identification or name that stands for the method used to determine the boiling point.
Conditional (1, 1)	Boiling Point Information	Boiling Point 2	Boiling Point 2 : Quantity	The numeric value for the upper range temperature of the material at which it changes from liquid to gaseous state.
	Boiling Point Information	Boiling Point 2 Qualifier	Boiling Point 2 Qualifier : Code	A code from a set of values (<, <=, =) that specifies the boiling point of the particular ingredient within the product for which the MSDS was prepared.
	Boiling Point Information	Boiling Point Text	Boiling Point Text : Text	A textual description of the Boiling Point when the value or range of values can not be expressed numerically.
Conditional (1, 1)	Vapor Pressure Information	Vapor Pressure 1	Vapor Pressure 1 : Quantity	The numeric value for the pressure exerted by the liquid's vapor when the liquid and vapor are in dynamic equilibrium at a specified temperature. When a range is provided, this is the lower limit of the range.
Conditional (1, 1)	Vapor Pressure Information	Vapor Pressure Unit	Vapor Pressure Unit : Code	The unit of measure that represents the Vapor Pressure
Conditional (1, 1)	Vapor Pressure Information	Vapor Pressure 1 Qualifier	Vapor Pressure 1 Qualifier : Code	A code from a set of values (<=, <, >=, >, =, =) the specifies the vapor pressure exerted by the liquid's vapor within the product for which the MSDS was prepared when the liquid and vapor are in dynamic equilibrium at a specified temperature.
Conditional (1, 1)	Vapor Pressure Information	Vapor Pressure Method	Vapor Pressure Method : Text	The common identification or name that stands for the method used to determine the vapor pressure.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
	Vapor Pressure Information	Vapor Pressure 2	Vapor Pressure 2 : Quantity	The numeric value when the upper limit of the Vapor Pressure range is specified.
	Vapor Pressure Information	Vapor Pressure 2 Qualifier	Vapor Pressure 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the highest Vapor Pressure value percentage of the particular ingredient within the product for which the MSDS was prepared.
	Vapor Pressure Information	Vapor Pressure Text	Vapor Pressure Text : Text	A textual description of the Vapor Pressure when the value or ranged of values can not be expressed numerically.
Conditional (1, 1)	Vapor Density Information	Vapor Density 1	Vapor Density 1 : Quantity	The weight of a vapor or gas as compared to a standard, usually air. When a range is provided, this is the lower limit of the range.
Conditional (1, 1)	Vapor Density Information	Vapor Density Unit	Vapor Density Unit : Code	The unit of measure that represents the Vapor Density
Optional (0, 1)	Vapor Density Information	Vapor Density Qualifier	Vapor Density 1 Qualifier : Code	A code from a set of values (<=, <, >=, >=, =) that specifies the density of the particular ingredient within the product for which the MSDS was prepared.
Conditional (1, 1)	Vapor Density Information	Vapor Density Method	Vapor Density Method : Text	The common identification or name that stands for the method used to determine the vapor density.
Conditional (1, 1)	Vapor Density Information	Vapor Density 2	Vapor Density 2 : Quantity	The numeric value when the upper range is specified for the weight of a vapor or gas as compared to a standard, usually air.
Conditional (1, 1)	Vapor Density Information	Vapor Density 2 Qualifier	Vapor Density 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the density of the particular ingredient within the product for which the MSDS was prepared.
	Vapor Density Information	Vapor Density Text	Vapor Density Text : Text	A textual description of the Vapor Density when the value of range of values can not be expressed numerically.
Conditional (1, 1)	Decomposition Temperature Information	Decomposition Temperature 1	Decomposition Temperature 1 : Quantity	The numeric value for the temperature of the material, in unit measure, that causes the breakdown of the material into parts or elements or simpler compounds. When a range is provided, this is the lower limit of the range.
Conditional (1, 1)	Decomposition Temperature Information	Decomposition Temperature Unit	Decomposition Temperature Unit : Code	The unit of measure that represents the decomposition temperature
Conditional (1, 1)	Decomposition Temperature Information	Decomposition Temperature 1 Qualifier	Decomposition Temperature 1 Qualifier : Code	A code from a set of values (<=, <, >=, >=, =) that specifies the Decomposition Temperature of the particular ingredient within the product for which the MSDS was prepared.
Optional (1, 1)	Decomposition Temperature Information	Decomposition Temperature Method	Decomposition Temperature Method : Text	The common identification or name that stands for the method used to determine the Decomposition Temperature.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Optional (1, 1)	Decomposition Temperature Information	Decomposition Temperature 2	Decomposition Temperature 2 : Quantity	The numeric value when the upper range of the Decomposition Temperature is specified.
Conditional (1, 1)	Decomposition Temperature Information	Decomposition Temp 2. Qualifier	Decomposition Temperature 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the Decomposition Temperature of the particular ingredient within the product for which the MSDS was prepared.
Conditional (1, 1)	Solubility Information	Solubility	Solubility : Text	The common identification or name that denotes the extent to which the material is soluble in a specific solvent. Examples: Slightly soluble; Insoluble; Very soluble.
Optional (0, 1)	Solubility Information	Solubility Method	Solubility Method : Text	The common identification or name that stands for the method used to determine the solubility.
Conditional (1, 1)	Density Information	Density 1	Density 1 : Quantity	The numeric value for the weight per unit volume of a substance, usually a liquid. When a range is provided, this is the lower limit of the range.
Conditional (1, 1)	Density Information	Density Unit	Density Unit : Code	The code that stands for the unit of measure code for measuring density of the material as compared to a standard
Conditional (1, 1)	Density Information	Density 1 Qualifier	Density 1 Qualifier : Code	A code from a set of values (<=, <, >=, >, =) that specifies the Density of the particular ingredient within the product for which the MSDS was prepared.
Conditional (1, 1)	Density Information	Density Method	Density Method : Text	The common identification or name that stands for the method used to determine the Density.
Conditional (1, 1)	Density Information	Density Temp	Density Temp : Quantity	The temperature of the material at which the density measurement is taken.
Conditional (1, 1)	Density Information	Density Temp Unit	Density Temp Unit : Code	The code that stands for the unit of measure code for measuring the temperature of the of the material as compared to a standard
Conditional (1, 1)	Density Information	Density 2	Density 2 : Quantity	The numeric value when the upper limit of the Density range is specified.
Conditional (1, 1)	Density Information	Density 2 Qualifier	Density 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the upper range for Density of a particular ingredient within the product for which the MSDS was prepared.
Optional (0,1)	Density Information	Density Text	Density Text : Text	A textual description of the Density when the value or range of values can not be expressed numerically.
Conditional (1, 1)	Specific Gravity Information	Specific Gravity 1	Specific Gravity 1 : Quantity	The weight of a material compared to the weight of an equal volume of water is an expression of the density (or heaviness) of a material. When a range is provided, this is the lower limit of the range.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Conditional (1, 1)	Specific Gravity Information	Specific Gravity Unit	Specific Gravity Unit : Code	The code that stands for the unit of measure code for measuring density of the material as compared to a standard
Conditional (1, 1)	Specific Gravity Information	Specific Gravity 1 Qualifier	Specific Gravity 1 Qualifier : Code	A code from a set of values (<=, <, >=, >, =, =) that specifies the Specific Gravity of the particular ingredient within the product for which the MSDS was prepared.
Conditional (1, 1)	Specific Gravity Information	Specific Gravity Method	Specific Gravity Method : Text	The common identification or name that stands for the method used to determine the Specific Gravity.
Conditional (1, 1)	Specific Gravity Information	Specific Gravity Temp	Specific Gravity Temp : Quantity	The temperature of the material at which the Specific Gravity measurement is taken.
Conditional (1, 1)	Specific Gravity Information	Specific Gravity Temp Unit	Specific Gravity Temp Unit : Code	The code that stands for the unit of measure code for measuring the temperature of the material as compared to a standard.
Conditional (1, 1)	Specific Gravity Information	Specific Gravity 2	Specific Gravity 2 : Quantity	The numeric value when the upper limit of the Specific Gravity range of provided for the weight of a material compared to the weight of an equal volume of water is an expression of the density (or heaviness) of a material.
Conditional (1, 1)	Specific Gravity Information	Specific Gravity 2 Qualifier	Specific Gravity 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the Specific Gravity of a particular ingredient within the product for which the MSDS was prepared.
Optional (0,1)	Specific Gravity Information	Specific Gravity Text	Specific Gravity Text : Text	A textual description of the Specific Gravity when the value or range of values can not be expressed numerically.
Conditional (1, 1)	Freezing Point Information	Freezing Point 1	Freezing Point 1 : Quantity	The numeric value for the temperature of the material, in unit measure, at which it changes from liquid to solid state. When a range is provided, this is the lower limit of the range.
Conditional (1, 1)	Freezing Point Information	Freezing Point Unit	Freezing Point Unit : Code	The code that stands for the unit of measure code for measuring the Freezing Point of the material as compared to a standard
Conditional (1, 1)	Freezing Point Information	Freezing Point 1 Qualifier	Freezing Point 1 Qualifier : Code	A code from a set of values (<=, <, >=, >, =, =) that specifies the Freezing Point of the particular ingredient within the product for which the MSDS was prepared.
Conditional (1, 1)	Freezing Point Information	Freezing Point Method	Freezing Point Method : Text	The common identification or name that stands for the method used to determine the Freezing Point.
Conditional (1, 1)	Freezing Point Information	Freezing Point 2	Freezing Point 2 : Quantity	The numeric value when the upper limit is provided for the numeric value for the temperature of the material, in unit measure, at which it changes from liquid to solid state.
Conditional (1, 1)	Freezing Point Information	Freezing Point 2 Qualifier	Freezing Point 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the Freezing Point of a particular ingredient within the product for which the MSDS was prepared.
Optional (0,1)	Freezing Point Information	Freezing Point Text	Freezing Point Text : Text	A textual description of the Freezing Point when the value or range of values can not be expressed numerically.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Conditional (1, 1)	pH Information	pH 1	pH 1 : Quantity	A dimensionless number that represents the hydrogen ion (H+) concentration of an aqueous solution
Conditional (1, 1)	pH Information	pH 1 Qualifier	pH 1 Qualifier : Code	A code from a set of values (<=, <, >=, >=, =) that specifies the pH of a particular ingredient within the product for which the MSDS was prepared.
Conditional (1, 1)	pH Information	pH Method	pH Method : Text	The common identification or name that stands for the method used to determine the pH.
Conditional (1, 1)	pH Information	pH 2	pH 2 : Quantity	A dimensionless number that represents the hydrogen ion (H+) concentration of an aqueous solution
Conditional (1, 1)	pH Information	pH 2 Qualifier	pH 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the pH of a particular ingredient within the product for which the MSDS was prepared.
Optional (0,1)	pH Information	pH Text	pH Text : Text	A textual description of the pH when it can not be described using numerical values.
Optional (0, 1)	Volatile Organic Content Info	Volatile Organic Content %	Volatile Organic Content Percent : Percent	The percent rate of volatile organic compound by weight in the product.
Optional (0, 1)	Volatile Organic Content Info	VOC Volume	Volatile Organic Content Volume : Quantity	The numeric value by volume of volatile organic compound in the product.
Optional (0, 1)	Volatile Organic Content Info	VOC Volume Unit	Volatile Organic Content Volume Unit : Code	The code that stands for the unit of measure code for measuring the VOC Volume of the material as compared to a standard.
Optional (0, many)	Viscosity Information	Viscosity 1	Viscosity 1 : Quantity	This is the internal resistance to flow exhibited by a fluid. When a range is provided, this is the lower limit of the range.
Conditional (1, 1)	Viscosity Information	Viscosity Unit	Viscosity Unit : Code	The code that stands for the unit of measure code for measuring the Viscosity of the material as compared to a standard
Conditional (1, 1)	Viscosity Information	Viscosity 1 Qualifier	Viscosity 1 Qualifier : Code	A code from a set of values (<=, <, >=, >=, =) that specifies the viscosity of a particular ingredient within the product for which the MSDS was prepared.
Conditional (1, 1)	Viscosity Information	Viscosity Type	Viscosity Type : Code	A method of categorizing the properties of a viscosity.
Conditional (1, 1)	Viscosity Information	Viscosity Temp	Viscosity Temp : Quantity	The temperature of the material at which the Viscosity measurement is taken.
Conditional (1, 1)	Viscosity Information	Viscosity Temp Unit	Viscosity Temp Unit : Code	The code that stands for the unit of measure code for measuring the temperature of the material as compared to a standard.
Conditional (1, 1)	Viscosity Information	Viscosity Method	Viscosity Method : Text	Test Method used to determine the viscosity reading.
Conditional (1, 1)	Viscosity Information	Viscosity 2	Viscosity 2 : Quantity	This is the internal resistance to flow exhibited by a fluid.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Conditional (1, 1)	Viscosity Information	Viscosity 2 Qualifier	Viscosity 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the viscosity of a particular ingredient within the product for which the MSDS was prepared. When a range is provided, this is the higher limit of the range.
Conditional (1, 1)	Viscosity Information	Viscosity Text	Viscosity Text : Text	A textual description of the viscosity when the value or range of values can not be expressed numerically.
	Evaporation Information	Evaporation Rate 1	Evaporation Rate 1 : Quantity	The rate at which a material will vaporize compared to the rate of vaporization of a specific known material.
Conditional (1, 1)	Evaporation Information	Evaporation Rate Unit	Evaporation Rate Unit : Code	The code that stands for the unit of measure code for measuring the Evaporation Rate of the material as compared to a standard. When a range is provided, this is the lower limit of the range.
Conditional (1, 1)	Evaporation Information	Evaporation Rate 1 Qualifier	Evaporation Rate 1 Qualifier : Code	A code from a set of values (<=, <, >=, >, =) that specifies the viscosity of a particular ingredient within the product for which the MSDS was prepared.
Conditional (1, 1)	Evaporation Information	Evaporation Rate Method	Evaporation Rate Method : Text	Test Method used to determine the Evaporation Rate.
Conditional (1, 1)	Evaporation Information	Evaporation Rate Reference Material	Evaporation Rate Reference Material	The common identification or name that stands for the established standard material that has been used to determine the evaporation rate of the material.
Conditional (1, 1)	Evaporation Information	Evaporation Rate 2	Evaporation Rate 2 : Quantity	The rate at which a material will vaporize compared to the rate of vaporization of a specific known material. When a range is provided, this is the lower limit of the range.
Conditional (1, 1)	Evaporation Information	Evaporation Rate 2 Qualifier	Evaporation Rate 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the Evaporation Rate of a particular ingredient within the product for which the MSDS was prepared.
Optional (0, 1)	Evaporation Information	Evaporation Rate Text	Evaporation Rate Text : Text	A textual description of the Evaporation Rate when the value or range of values can not be expressed numerically.
Optional (0, 1)	Corrosion Information	Corrosion Rate	Corrosion Rate : Quantity	The rate of the electrochemical degradation of metals or alloys due to reaction with their environment.
Optional (0, 1)	Corrosion Information	Corrosion Rate Unit	Corrosion Rate Unit : Code	Unit of Measure for Corrosion Rate
Optional (0, 1)	Vapor Information	Saturated Vapor Concentration	Saturated Vapor Concentration : Quantity	The static pressure of a vapor when the vapor phase of some material is in equilibrium with the liquid phase of that same material. Definition of Saturation Vapor Pressure from Wikipedia.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Optional (0, 1)	Vapor Information	Saturated Vapor Concentration Unit	Saturated Vapor Concentration Unit : Code	The code that stands for the unit of measure code for measuring the Saturated Vapor Concentration of the material as compared to a standard. When a range is provided, this is the lower limit of the range.
Optional (0, 1)	Vapor Information	Octanol Water Coefficient	Octanol Water Coefficient : Quantity	A measure of environmental fate, specifically bioaccumulation and bioconcentration (expressed as log Kow (sub ow) or log Pow (sub ow) that measures the ability of a chemical to be absorbed in fatty tissues.
Optional (0, 1)	Vapor Information	Octanol Water Coefficient Unit	Octanol Water Coefficient Unit : Code	Unit of measure for Octanol Water Coefficient (expressed as log Know (sub ow) or log Pow (sub ow)).
Optional (0, 1)	Vapor Information	Particle Size	Particle Size : Quantity	The measurement of a size of a particle of the product.
Optional (0, 1)	Vapor Information	Particle Size Unit	Particle Size Unit : Code	The unit of measure for the particle size of the product
Optional (0, 1)	Vapor Information	Heat Value	Heat Value : Quantity	The amount of heat obtainable from a fuel and expressed in a defined unit of measure.
Optional (0, 1)	Vapor Information	Heat Value Unit	Heat Value Unit : Code	The code that stands for the unit of measure code for measuring the Heat Value of the material as compared to a standard.
Optional (1, 1)	Partition Coefficient	Partition Coefficient 1	Partition Coefficient 1 : Quantity	A constant number symbolizing the ratio of the concentration of a solute in the upper of two phases in equilibrium to its concentration in the lower phase. Chemicals in solution are partitioned into dissolved and particulate adsorbed phase based on their corresponding sediment-to-water partitioning coefficient. When a range is provided, this is the lower limit of the range.
Optional (1, 1)	Partition Coefficient	Partition Coefficient Unit	Partition Coefficient Unit : Code	The unit of measure for the partition coefficient of the product.
Optional (1, 1)	Partition Coefficient	Partition Coefficient 1 Qualifier	Partition Coefficient 1 Qualifier : Code	A code from a set of values (<=, <, >=, >, =) that specifies the Partition Coefficient of the particular ingredient within the product for which the MSDS was prepared.
Optional (1, 1)	Partition Coefficient	Partition Coefficient Method	Partition Coefficient Method : Text	The test method for determining the value of the partition coefficient of the product.
Conditional (1, 1)	Partition Coefficient	Partition Coefficient 2	Partition Coefficient 2 : Quantity	A constant number symbolizing the ratio of the concentration of a solute in the upper of two phases in equilibrium to its concentration in the lower phase. When a range is provided, this is the higher limit of the range.
Conditional (1, 1)	Partition Coefficient	Partition Coefficient 2 Qualifier	Partition Coefficient 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the Partition Coefficient of the particular ingredient within the product for which the MSDS was prepared.
Optional (1, 1)	Partition Coefficient	Partition Coefficient Text	Partition Coefficient Text : Text	A textual description of the Partition Coefficient when the value or range of values can not be expressed numerically.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Optional (0, 1)	Bulk Density Information	Bulk Density	Bulk Density : Quantity	Mass of solid material (e.g. powdered, granulated, pulverized, pelletized) per unit of volume of the product
Optional (0, 1)	Bulk Density Information	Bulk Density Unit	Bulk Density Unit : Code	Unit of Measure for the bulk density of the product.
Optional (0, 1)	Other Physical and Chemical Property Information	Other Physical and Chemical Property (OPCP) 1	OPCP 1 : Quantity	The value of the Other Physical and Chemical Property of the product. When a range is provided, this is the lower limit of the range.
Optional (0, 1)	Other Physical and Chemical Property Information	OPCP Unit	OPCP Unit : Code	The unit of measure for the Other Physical and Chemical Property of the product.
	Other Physical and Chemical Property Information	OPCP 1 Qualifier	OPCP 1 Qualifier : Code	A code from a set of values (<=, <, >=, >, =, =) that specifies the Other Physical and Chemical Property of the particular ingredient within the product for which the MSDS was prepared.
Optional (0, 1)	Other Physical and Chemical Property Information	OPCP Method	OPCP Method : Text	The test method for determining the value of the Other Physical and Chemical Property of the product.
Optional (0, 1)	Other Physical and Chemical Property Information	OPCP Name	OPCP Name : Text	The identify of the additional physical and chemical property of the product.
Optional (0, 1)	Other Physical and Chemical Property Information	OPCP Temp	OPCP Temp : Quantity	The temperature of the material at which the Other Physical and Chemical Property measurement is taken.
Optional (0, 1)	Other Physical and Chemical Property Information	OPCP Temp Unit	OPCP Temp Unit : Code	The code that stands for the unit of measure code for measuring the temperature of the material as compared to a standard. Other Physical and Chemical Property
Optional (0, 1)	Other Physical and Chemical Property Information	OPCP 2	OPCP 2 : Quantity	The value of the Other Physical and Chemical Property of the product. When a range is provided, this is the upper limit of the range.
	Other Physical and Chemical Property Information	OPCP 2 Qualifier	OPCP 2 Qualifier : Code	A code from a set of values (<=, <, =) that specifies the Other Physical and Chemical Property t of the particular ingredient within the product for which the MSDS was prepared.
Optional (1,1)	Other Physical and Chemical Property Information	OPCP Text	OPCP Text : Text	A textual description of the Other Physical and Chemical Property Information when the value or range of values can not be expressed numerically.
Optional (0, 1)	Ecological Information	Ecological Overview	Ecological Overview : Text	Textual information on the ecological impact of the product.
Conditional (1,1)	Ecological Information	Ecological Data Type	Ecological Impact Type : Text	Identification of the nature of the ecological impact.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Conditional (1,1)	Ecological Information	Ecological Data Text	Ecological Impact : Text	The information related to the ecological impact.
Optional (0,1)	Ecological Information	Ecological Method	Ecological Method : Text	The test method used to determine the value.
Optional (0, Many)	Transport Information	Transport Regulation	Transport Regulation : Code	The abbreviated name of the Transportation Regulatory Authority
Optional (1, 1)	Transport Information	Transport Regulation Name	Transport Regulation Name : Name	The complete textual name of the Transportation Regulatory Authority.
Mandatory (1,1)	Transport Information	Tr. Regulation Proper Shipping Name	Tr. Regulation Proper Shipping Name : Text	The standard identification or name prescribed by the transportation regulatory organization for the shipment of the product.
Mandatory (1,1)	Transport Information	Tr. Regulation Hazardous Class	Tr. Regulation Hazardous Class : Text	A description of the category of the primary hazard assigned to the product.
Optional (0, 1)	Transport Information	Transport Regulation UN ID#	Transport Regulation UN ID# : Identifier	The identification number assigned to each Proper Shipping Name (PSN), prefixed either by "UN" (United Nations) or "NA" (North American).
Optional (0, 1)	Transport Information	Transport Regulation Packing Group	Transport Regulation Packing Group : Text	The designation that stands for the classification according to the degree of the danger presented by the product.
Optional (0, Many)	Transport Information	General Transport Comments	General Transport Comments : Text	Textual information regarding transportation of the product.
Conditional (1, Many)	Chemical	Chemical Name	Name : Name	The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation
Optional (0, Many)	Chemical	Classification	Classification Value : Identifier	A method of grouping products by characteristics according to hazard criteria specified in legislation of the country where the product will be used.
Optional (0, Many)	Chemical	Classification Type	Classification Type : Code	The designation of a product based on the hazard criteria specified in legislation of the country where the product will be used.
Optional (0, 1)	Contract Information	Contract No.	Contract No. : Identifier	A unique identification for a contract
Optional (0, 1)	Contract Information	Solicitation No.	Solicitation No. : Identifier	A number identifying a request for proposal or other procurement instrument when an organization has a requirement to purchase material goods or services.
Optional (0, 1)	Contract Information	Activity Control Number	Activity Control Number : Identifier	A locally assigned number used to provide a unique identification of material.

Mult.	BRS Model Class	Common Business Term	BRS Model Attribute	Description
Optional (0, 1)	Contract Information	Federal Supply Schedule Special Item No.	Federal Supply Schedule Special Item No. : Identifier	A unique identification of a line item of service offered on contractors Federal Supply Schedule.
Optional (0, 1)	Specification Information	Specification Number	Specification Number : Identification	A reference to document that provides specific requirements for producing or manufacturing a product.
Optional (0, 1)	Specification Information	Revision Letter, Type, Class	Revision Letter, Type, Class : Text	A textual reference that designates the sequential order of a change to an existing document.

5.5 Business Rules

The MSDS for the hazardous material must be in the possession of the receiver of the material prior to the shipment/delivery of the material.

If the hazardous material poses health hazards, the MSDS must indicate the nature of the hazard and the steps and antidotes required in reaction to that hazard.

It is a legal requirement that the MSDS be immediately available to any person who is responsible for transporting/handling/processing/using the hazardous material.

5.6 Definition of Terms

MSDS: Material Safety Data Sheet

HAZMAT: Hazardous material.

Purchasing Officer: The party who is responsible for the purchase of HAZMAT.

HMIRS: A central repository containing MSDS information for HAZMAT.