

Appendix 8d - Steps HFSP Rating Criteria For Hazardous Substances

Table 8.3: HFSP Rating Criteria For Hazardous Substances

The full description of **HSNO** Classes, Sub-classes and Categories is contained in the **HSNO** Regulations.

Hazard	HSNO Class & Category	(UN Division)	Description	Effect Type	Hazard Rating
Explosiveness	1.1	1.1	Articles and substances having a mass explosion hazard.	Fire/Explosion	High
	1.2	1.2	Articles and substances having a projection hazard, but not a mass explosion hazard.	Fire/Explosion	Medium
	1.3	1.3	Articles and substances having a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard. This division comprises articles and substances that: <ul style="list-style-type: none"> • give rise to considerable radiant heat, or • burn one after another, producing minor blast and/or projection effects. 	Fire/Explosion	Low
	1.4, 1.5, 1.6	1.4, 1.5, 1.6	Not applicable.		
Flammable Gases	2.1A, 2.1B	2.1	<p>Flammable gases:</p> <p>i) gases which at 20°C and a standard pressure of 101.3 kPa:</p> <ul style="list-style-type: none"> • are ignitable when in a mixture of 13% or less by volume with air, or • have a flammable range with air of at least 12% regardless of the lower flammability limit; or, <p>ii) gases or gas mixtures, other than those of (i) above, that at 20°C and a standard pressure of 101.3 kPa have a flammable range in mixture in air.</p> <p>Flammable aerosols, being a pressurised mixture of containing gas, compressed, liquified, or dissolved under pressure, with or without a liquid, paste or powder; comprising at least 45% by mass of flammable ingredients, under a pressure greater than 100 kPa, which can be released in a finely divided spray.</p>	Fire/Explosion	High

Appendix 8d - Steps HFSP Rating Criteria For Hazardous Substances

Hazard	HSNO Class & Category	(UN Division)	Description	Effect Type	Hazard Rating
		LPG	LPG	Fire/Explosion	Medium
		2.2	Not applicable.		
Explosiveness	1.1	1.1	Articles and substances having a mass explosion hazard.	Fire/Explosion	High
	1.2	1.2	Articles and substances having a projection hazard, but not a mass explosion hazard.	Fire/Explosion	Medium
	1.3	1.3	Articles and substances having a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard. This division comprises articles and substances that: <ul style="list-style-type: none"> • give rise to considerable radiant heat, or • burn one after another, producing minor blast and/or projection effects. 	Fire/Explosion	Low
	1.4, 1.5, 1.6	1.4, 1.5, 1.6	Not applicable.		
Flammable Gases	2.1A, 2.1B	2.1	Flammable gases: <p>(i) gases which at 20°C and a standard pressure of 101.3 kPa:</p> <ul style="list-style-type: none"> • are ignitable when in a mixture of 13% or less by volume with air, or • have a flammable range with air of at least 12% regardless of the lower flammability limit; or, <p>(ii) gases or gas mixtures, other than those of (i) above, that at 20°C and a standard pressure of 101.3 kPa have a flammable range in mixture in air.</p> <p>Flammable aerosols, being a pressurised mixture of containing gas, compressed, liquified, or dissolved under pressure, with or without a liquid, paste or powder; comprising at least 45 % by mass of flammable ingredients, under a pressure greater than 100 kPa, which can be released in a finely divided spray.</p>	Fire/Explosion	High
		LPG	LPG	Fire/Explosion	Medium
		2.2	Not applicable.		

Appendix 8d - Steps HFSP Rating Criteria For Hazardous Substances

Flammable Liquids			Flammable liquids comprising liquids, mixtures of liquids, or liquids containing solids in suspension which give off a flammable vapour at specific temperatures.		
	3A	3 PGI	Flash point: < 23°C Initial boiling point: < 35°C	Fire/Explosion	High
	3B	3 PGII	Flash point: < 23°C Initial boiling point: > 35°C	Fire/Explosion	High
	3C	3 PGIII	(a) Flash point: 23°C; 60°C (b) Flash point: > 60°C, but liquid is manufactured, stored, transported or used (except deliberate burning) at a temperature at or above its flash point.	Fire/Explosion	Medium
	3D	Combustible Liquids	Flash point: > 60°C but 93°C	Fire/Explosion	Low
Flammable Solids	4.1 All Categories	4.1	<ul style="list-style-type: none"> Flammable solids that are readily combustible or may cause fire easily through an ignition source or friction. Self-reacting substances that are thermally unstable and are liable to undergo a strongly exothermic decomposition even without the participation of oxygen (and related substances). Desensitised explosives: substances which are wetted with water or alcohol or diluted with other substances to suppress their explosive properties. 	Fire/Explosion	Medium
	4.2 All Categories	4.2	<p>Substances liable to spontaneous combustion:</p> <p>Pyrophoric substances: liquid or solid substances which, even in small quantities, ignite within 5 minutes of coming in contact with air;</p> <p>Self-heating substances: solid substances which generate heat when in contact with air without additional energy supply.</p>	Fire/Explosion	High
	4.3 All Categories	4.3	Substances which, in contact with water, become spontaneously flammable, or emit flammable gases.	Fire/Explosion	High

Appendix 8d - Steps HFSP Rating Criteria For Hazardous Substances

Hazard	HSNO Class & Category	(UN Division)	Description	Effect Type	Hazard Rating
Oxidising Capacity	5.1 All categories	5.1	Oxidising substances: substances which in themselves are not necessarily combustible, but may cause or contribute to the combustion of other materials by yielding oxygen.	Fire/Explosion	Medium
	5.2 All categories	5.2	Organic peroxides: organic substances that are thermally unstable and may undergo exothermic, self-accelerating decomposition. They may: <ul style="list-style-type: none"> • Be liable to explosive decomposition; • Burn rapidly; • Be sensitive to impact or friction; • React dangerously with other substances; • Cause damage to the eyes. 	Fire/Explosion	High
Toxicity		6.1	Substances which are liable to cause death or injury or to harm human health if swallowed, inhaled, or contacted by the skin.		
	6.1A	6.1 PGI	Oral toxicity LD ₅₀ (mg/kg): 5 Dermal toxicity LD ₅₀ (mg/kg): 50 Inhalation toxicity dust/mist LC ₅₀ (mg/l): 0.05	Human Health	High
	6.1B	6.1 PGII	Oral toxicity LD ₅₀ (mg/kg): >5 - 50 Dermal toxicity LD ₅₀ (mg/kg): >50 - 200 Inhalation toxicity dust/mist LC ₅₀ (mg/l): >0.05 - 0.5	Human Health	High
	6.1C	6.1 PGIII	Oral toxicity LD ₅₀ (mg/kg): >50 - 300 Dermal toxicity LD ₅₀ (mg/kg): >200 - 1,000 Inhalation toxicity dust/mist LC ₅₀ (mg/l): >0.5 - 1	Human Health	Medium
	6.1 D		Oral toxicity LD ₅₀ (mg/kg): >300 - 2,000 Dermal toxicity LD ₅₀ (mg/kg): >1000 - 2,000 Inhalation toxicity dust/mist LC ₅₀ (mg/l): >1 - 5	Human Health	Low

Appendix 8d - Steps HFSP Rating Criteria For Hazardous Substances

Hazard	HSNO Class & Category	(UN Division)	Description	Effect Type	Hazard Rating
		2.3	Toxic gases: gases which are known to be toxic or corrosive to humans and pose a hazard to health. This division is divided into the following categories:		
	6.1A		a) Inhalation toxicity gases LC ₅₀ : < 100 ppm, vapours LC ₅₀ : < 0.5 mg/l	Human Health	High
Toxicity (continued)	6.1B		b) Inhalation toxicity gases LC ₅₀ : >100 ppm - 500 ppm, vapours LC ₅₀ : >0.5 mg/l – 2 mg/l	Human Health	High
	6.1C		c) Inhalation toxicity gases LC ₅₀ : >500 ppm - 2,500 ppm, vapours LC ₅₀ : >2 mg/l – 10 mg/l	Human Health	Medium
	6.1D		d) Inhalation toxicity gases LC ₅₀ : >2,500 ppm – 5,000 ppm, vapours LC ₅₀ : >10 mg/l – 20 mg/l	Human Health	Low
	(8) 6.4 All categories	8	Eye Irritation/Corrosiveness: Chemical Property: 2 > pH > 11.5. Effect: Draize Grade 1 for either corneal opacity or iritis or Grade 2 for either conjunctival redness or chemosis	Human Health	Medium
	(8) 6.3 All categories	8	Skin Irritation/Corrosiveness: Chemical Property: 2 > pH > 11.5. Effect: Draize Grade 1.5 for erythema or oedema	Human Health	Medium
	6.4	(OECD 1 & 2)	Respiratory or contact sensitiser.	Human Health	Medium
	6.7A, 6.7B	(OECD 1 & 2)	Carcinogenicity: Suspected or presumed carcinogen.	Human Health	Medium
	6.9A, 6.9B	(OECD 1 & 2)	Known, presumed or suspected human target organ toxicity.	Human Health	Medium
	6.6A, 6.6B	(OECD 1 & 2)	<ul style="list-style-type: none"> Substances known or regarded as mutagenic; OR Substances which cause concern for man owing to the possibility that they may induce heritable mutations in the germ cells of human. 	Human Health	Medium
	6.8A, 6.8B	(OECD 1 & 2)	<ul style="list-style-type: none"> Known, or presumed Human Reproductive or Developmental Toxicant; OR Suspected Human Reproductive or Developmental Toxicant. 	Human Health	Medium

Appendix 8d - Steps HFSP Rating Criteria For Hazardous Substances

Hazard	HSNO Class & Category	(UN Division)	Description	Effect Type	Hazard Rating
	6.8C	(OECD)	<p>Effects on or via lactation:</p> <p>Data showing:</p> <ul style="list-style-type: none"> i) A likelihood that the substance would be present in potentially toxic levels in human breast milk; AND/OR ii) Clearly defined adverse effect in the offspring of animals due to transfer in the milk; OR clearly defined adverse effect on the quality of the milk in animals; AND/OR iii) Human evidence indicating a hazard to babies during the lactation period. 	Human Health	Medium
		6.2	Not applicable.		
Ecotoxicity			Ecotoxic substances: any substance exhibiting a toxic effect on ecosystems. This division is divided into three categories.		
	9.1A 9.2A 9.3A 9.4A	(OECD1)	a) Very toxic to the aquatic environment; Very toxic to the terrestrial environment; Very toxic to terrestrial vertebrates; Very toxic to beneficial invertebrates.	Environment	High
	9.1B 9.2B 9.3B 9.4B	(OECD2)	b) Toxic to the aquatic environment; Toxic to the terrestrial environment; Toxic to terrestrial vertebrates; Toxic to beneficial invertebrates.	Environment	Medium
	9.1C 9.2C 9.3C 9.4C	(OECD3)	c) Harmful to the aquatic environment; Harmful to the terrestrial environment; Harmful to terrestrial vertebrates; Harmful to beneficial invertebrates.	Environment	Low