GPS Safety Summary

Substance Name:

Sodium Perchlorate

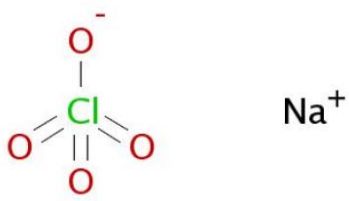
1. General Statement

Sodium Perchlorate is a white inorganic solid. Products containing sodium perchlorate (powder and solutions) are only used at industrial stage.

Strong oxidiser, harmful and may causing damage to organs through prolonged or repeated exposure if swallowed, irritating to eyes, this substance must be carefully handled and stored to preserve human health and environment.

2. Chemical Identity

Name:	Sodium Perchlorate
Brand name:	Anhydrous Sodium Perchlorate
Chemical name (IUPAC):	Sodium Perchlorate
CAS number(s):	7601-89-0
EC number:	231-511-9
Molecular formula:	$Na.ClO_4$
Structure:	



3. Use and applications

Sodium Perchlorate shows strong oxidizing properties.

It is used as a precursor to ammonium and potassium Perchlorates, which are themselves used as propellants in the military and space industries.

Sodium Perchlorate is also used in pyrotechnic compositions or as chemical intermediates, as well as an additive for PVC production.

4. Physical / Chemical properties

Property	Value
Physical state	Solid, powder
Colour	White
Odour	None
Density	2.520 at 20°C

Melting point	≥ 469°C at 1013 hPa
Boiling point	Not applicable
Flammability	Non flammable
Explosive properties	Not explosive based on the structure
Oxidising properties	Strong oxidiser
Self-ignition temperature	> 400°C at 1013 hPa
Vapour pressure	Not relevant
Water solubility	2.09 g/l at 20°C
Flash point	Not relevant
Octanol-water partition coefficient (LogKow)	Not relevant (inorganic substance)

5. Health Effects

Perchlorate has been shown, in both human and animal studies, to be readily absorbed after oral exposure.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Sodium Perchlorate is not harmful by oral and dermal ingestion as shown in animal studies. No data is available for the inhalation route.
Irritation / corrosion Skin / eye/ respiratory tract	Sodium Perchlorate was found to be slightly irritant, when applied to skin but irritant when applied by the ocular route. No data is available for the inhalation route.
Sensitisation	Sodium Perchlorate is not a skin sensitizer as demonstrated in animal experiment.
Toxicity after repeated exposure Oral / inhalation / dermal	Sodium Perchlorate was considered harmful by ingestion after repeated exposure based on toxicological experiment.
Genotoxicity / Mutagenicity	Sodium Perchlorate was not a mutagen as demonstrated in *in vitro* experiments.
Carcinogenicity	No data is available.
Toxicity for reproduction	Sodium Perchlorate was not considered as a reprotoxic based on toxicological experiment.

6. Environmental Effects

Effect Assessment	Result
Aquatic Toxicity	Slightly harmful to aquatic organisms
Fate and behaviour	**Result**
Biodegradation	Not applicable
Bioaccumulation potential	Bioaccumulation is unlikely
PBT / vPvB conclusion	Not considered to be PBT* or vPvB**

*: Persistent, Bioaccumulative and Toxic (PBT)
**: very Persistent and very Bioaccumulative (vPvB)

7. Exposure

7.1 Human health

In industrial and professional settings, the most likely route of human exposure (workers) to Sodium Perchlorate is through inhalation and/or to a much lesser extent dermal contact.

The probability of exposure to industrial and professional workers is expected to be low because this product is manufactured and used in enclosed controlled environment and is transported in well sealed containers. However, workers may be exposed during (un)loading, mixing, sampling, analysis or maintenance operations and particularly in case of batch processes. The exposure must be kept as minimum as possible by the use of appropriate risk management measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the extended safety datasheet.

In addition, general population is not expected to be exposed to Sodium Perchlorate by inhalation, dermal or oral exposure, as the product is only used at industrial stage.

7.2 Environment

The manufacture of Sodium Perchlorate is a closed process, where potential releases are treated by on-site and off-site risk management measures.

Release in the air is expected to be limited due to the physicochemical properties (low volatility) and control systems in place at the use sites (i.e., sites producing/using solid forms should use dust filters).

Regarding the water compartment, Sodium Perchlorate is highly soluble in water and is not biodegradable (inorganic substance). The substance is highly mobile in the environment once dissolved in water and does not typically sorb to soils or sediment particles. Risk management measures are in place to avoid releases of the substance into the environment.

Based on the risk assessment, the use of Sodium Perchlorate is safe under conditions recommended in the extended safety data sheet.

8. Risk Management recommendations

Human health measures		
Organizational	Implement a good basic standard of occupational hygiene Ensure operatives are well informed of the hazards and trained to minimize exposures. Hygiene measures must be respected and incompatible materials must be clearly identified.	
Protection	**Eye/Face protection:**	Safety glasses.
	Skin protection:	Incombustible protective clothing, Meraclon suit, boots. Prohibited: textiles, leather.
	Hand protection:	Splash contact, intermittent and prolonged: PVC gloves – thickness: 1.2-1.4 mm.
	Respiratory protection:	Low concentration or short activity: no special protective equipment required High concentration or prolonged activity: half-mask, recommended filter: P1 (respiratory protection complying with EN 143).

Engineering controls	Provide appropriate exhaust ventilation at machinery. Ensure that eyewash stations and safety showers are close to workstation locations. Provide water supplies near the point of use.
Environmental protective measures	
This substance and all industrial releases that may contain the substance must be treated to avoid any exposure to the environment. Recover the product, wash the remainder with water. For elimination, dilute with water.	

9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

This substance has been registered under:

- EU Regulation EC 1907/2006 (REACH)

9.2 Classification and labelling

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the safety data sheet. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according to CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
According to REGULATION (EC) no 1272/2008: – Oxidizing solids, cat. 1 – Oral: Acute toxicity, cat. 4 – Eye irritation, cat. 2 – Oral: Specific target organ toxicity – repeated exposure, cat.2, Thyroid gland	
Signal Word	
Danger	
Pictogram	
– GHS03: Flame over circle	
– GHS07: Exclamation mark	
– GHS08: Health hazard	

Labelling: hazard statement
– H271: May cause fire or explosion; strong oxidiser – H302: Harmful if swallowed – H319: Causes serious eye irritation – H373: May cause damage to organs through prolonged or repeated exposure if swallowed
Additional classification according to Globally Harmonized System (GHS)
/

10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

– arkema-hydroperox-reach-uses@arkema.com

– **ICCA portal where the GPS Safety Summary is posted**: http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/

11. Date of Issues / Revision

– Date of issue: 2014/12/15

– Date of revision:

12. Disclaimer

The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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