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PRODUCT SAFETY SUMMARY: REACTIVE RED 271

This Product Safety Summary is intended to provide a general description of certain Huntsman chemical substances and products containing the chemical substance(s). The information in this Summary is not intended to replace the information included on the Safety Data Sheet (SDS), Product Safety Label, and other safe use and handling literature for the chemical substance(s).

Chemical Identity:

Name	Other Identifiers
Reactive Red 271	NOVACRON® RED EC-2BL HC

General Product Overview:

Reactive Red 271, a textile dye is sold by Huntsman for industrial downstream users only but may also be reformulated by downstream users into products used by professionals and end-use consumer.
Reactive Red 271 has excellent all-round fastness and application properties. It also has properties such as high fixation, wet fastness, good chlorine, and peroxide fastness.

Applications and Uses:
Reactive Red 271 is used in textile and apparel treatment products for dyeing and printing.

At home, the dyeing procedure is limited to dyeing in a closed system (washing machine). The preparations for home-dyeing are either liquid formulations or ready-to-use solid preparations.

Physical and Chemical Properties:

Reactive Red 271 is a reddish brown odorless powder.
Certain physical/chemical properties specific to Reactive Red 271 are summarized below:

Physical/Chemical Property	Result
Molecular Weight	496.5 g/mol
Melting point	>147 °C (decomposition temperature 290 °C)

Physical/Chemical Property	Result
Boiling point	No boiling point detected as decomposition started at approx. 290 °C
Partition coefficient (Log Kow)	-5 at 20°C
Water Solubility	100 g/L at 20°C
Flammability	Non-flammable
Explosiveness	Non-explosive
Oxidizing property	Non-oxidizing (does not cause or intensify fire or explosion)

Additional physical and chemical property information is available on the product Safety Data Sheet (SDS), which can be requested at SDS@huntsman.com.

Human Health Information:

The probability of experiencing health effects associated with exposure to Reactive Red 271 is controlled, provided the recommendations stated in the Safety Data Sheet are enforced. Adverse health effects are subject to dose level, route, and duration of exposure.
Reactive Red 271 is classified as eye irritation - category 1 under the US Globally Harmonized System (US GHS) for Hazard Communication, so if exposure occurs an individual's susceptibility should also be considered.

Different regulatory classification criteria apply in different geographic regions. These different criteria may result in different human health regulatory classifications for the same product in different geographic regions. Specific regulatory classification information is contained in the Safety Data Sheet for each product in use in a specific geographic region. The acute and chronic health effects information set forth below is based on US GHS.

All instructions found on the packaging should be followed. Reactive Red 271 is safe when used appropriately. The uses identified for the substance have been assessed as safe under several regulatory programs.

Summary- Toxicological data:

Effect Assessment	Result
Acute Toxicity	Not toxic after a single ingestion
Skin Irritation	Not irritating to the skin
Eye Irritation	Causes serious eye damage.
Sensitization	Does not cause skin sensitization

Effect Assessment	Result
Genotoxicity	Does not cause genetic defect
Repeated dose toxicity	May cause damage to organs through prolonged or repeated exposure
Toxicity for reproduction	Does not cause effects on fertility and/or unborn child

Note: For more information on the health hazards of this substance and recommended protective equipment, please refer to the relevant SDS.

Acute Health Effects:

Likelihood/frequency of oral, skin and inhalation exposures are low, if used under strictly recommended conditions and closed process. Reactive Red 271 has low vapor pressure, high water solubility and low partition coefficient, hence expected to have low inhalation and dermal exposure.

The oral exposure is not expected as this product is manufactured or handled in closed systems. Animal studies in rats have demonstrated low acute toxicity of Reactive Red 271 by ingestion and via skin exposure. While it is noted to cause severe eye irritation upon eye contact.

Chronic Health Effects:
No adverse effects with repeated exposure can be anticipated in humans.

No effects on reproduction or fertility were observed in the rats exposed orally to Reactive Red 271. Extensive experimental genetic toxicity studies have been conducted, which indicates that Reactive Red 271 has no potential to cause genetic defects.

Summary: Ecotoxicological Data:

Effect Assessment	Result
Short term toxicity to fish	Not harmful to fish
Short term toxicity to aquatic invertebrates	Not harmful to daphnids
Toxicity to aquatic plants	Not harmful to algae
Toxicity to microorganisms	Not harmful to bacteria

Reactive Red 271 was found to pose no hazard to aquatic species including fish, daphnids, aquatic plants and microorganisms.

Summary: Environmental fate and pathway:

Effect Assessment	Result
Abiotic Degradation - Hydrolysis as a function of pH	Hydrolytically stable
Ready biodegradability	Non-biodegradable
Adsorption on soil and sediment	No adsorption potential

Reactive Red 271 was found to be not readily biodegradable but is hydrolytically stable. It is also considered to have no adsorption potential on soil and sediment.

Reactive Red 271 is not classified under the US GHS for Hazard Communication. More information can be obtained in the Safety Data Sheet.

The closed process in which the product is used does not lead to direct emissions to soil and air. Procedural and/or control technologies are used to minimize emissions and potential exposure during cleaning and maintenance activities.

Potential Occupational Exposure:

At Huntsman, Reactive Red 271 is manufactured in closed systems. During normal operating conditions, occupational exposure to Reactive Red 271 is not expected in the manufacturing process. Procedural and/or control technologies are used to minimize exposure during sampling, cleaning, maintenance, or in more open handling systems. Appropriate engineering controls (such as ventilation) and personal protective equipment should be used in accordance with the exposure guidelines and workplace practices identified in the Safety Data Sheet.

Potential Consumer Exposure:

Consumer:

Consumer exposure can result from handling of products that contain Reactive Red 271 such as textiles or dyes. Use of these products are safe if the instructions provided by the manufacturer of the respective product are followed carefully.

At home the dyeing procedure is limited to dyeing in a closed system (washing machine). Likelihood/frequency of skin and inhalation exposure is low, due to closed process (dyeing in a washing machine). The preparations for home-dyeing are either liquid formulations or ready-to-use solid preparations which do not allow exposure to Reactive Red 271 e.g., tablet(s) sealed in pods/packages can be directly added to the washing machine without direct skin contact.

Further, it is recommended to keep Reactive Red 271 away from the reach of children and avoid direct contact.

Workplace exposure:

Workers working with Reactive Red 271 in industrial operations could be exposed during maintenance, sampling, testing, or other procedures. Workplace exposure is controlled and minimized by use of proper occupational handling procedures and personal protection and safety equipment. Potential routes of worker exposure to Reactive Red 271 are through dermal contact and to a minor extent, through inhalation in a Reactive Red 271 manufacturing facility or in the various industrial facilities that use Reactive Red 271. Ingestion is not an anticipated route of exposure. Worker exposure can occur in industrial facilities where the substance is produced or formulated into end-use products or used as textile dyes. Within this assessment, both industrial workers and trained professionals are evaluated. The exposure has been assessed as safe if the substance is used as directed on the label, avoiding splashes onto skin and into eyes. Huntsman follows and recommends customers to follow workplace exposure guidelines through a variety of industrial hygiene and ventilation measures. The substance has been assessed as safe for professional and industrial use, when the provisions identified in the SDS are followed carefully.

Potential routes of worker exposure to Reactive Red 271 are through dermal contact and to a minor extent, through inhalation in spray applications for certain industrial uses. Ingestion is not an anticipated route of exposure. Worker exposure can occur in industrial facilities where the substance is produced or formulated into end-use products or used as textile dyes. Within this assessment, both industrial workers and trained professionals are evaluated. In general, all the worker situations are controlled to avoid any direct contact with the Reactive Red 271, either through process engineering controls or using personal protective equipment.

Likelihood/frequency of skin and inhalation exposure is low, due to its usage under strictly controlled conditions and closed process. The preparations for home-dyeing are either liquid formulations or ready-to-use solid preparations which do not allow exposure to Reactive Red 271. However, the use of gloves is strongly advised and highlighted in the outer package of the Reactive Red 271 products.

Environmental exposure:

Reactive Red 271 is not readily biodegradable, hydrolytically stable and not harmful to aquatic organisms. Conclusively, all identified uses are safe for the environment based on the scientific facts and when carried out in compliance with recommended risk management measures and applicable regulations.

EU REACH Status:

Reactive Red 271 has been registered under the European REACH Regulation EC/1907/2006 and the substance was found to be safe for the uses identified.

Regulatory Information/Classification and Labeling:

Regulations exist that govern manufacture, sales, transportation, use and disposal of Reactive Red 271. These regulations may vary by city, state, country or geographic region. Information can be found by consulting the relevant SDS.

Reactive Red 271 was registered under REACH Regulation in the EU and listed on Canadian Domestic Substances List (DSL), Toxic Substances Control Act (TSCA) Inventory and U.S. EPA Substance Registry Services.

Under the US GHS for Hazard Communication, substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the Safety Data Sheets. US 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.

The hazard statements and symbols presented here refer to the hazard properties of the concentrated substance and are meant to provide a brief overview of the substance's labeling. It is not intended to be comprehensive or to replace information found in the Safety Data Sheet.

Labeling according to US GHS:

Signal Word
Danger

GHS Classification	
Eye irritation	Category 1

Hazard Statements	
H318:	causes severe eye damage.

Additional Information:

Information on registered substances is available on the European Chemicals Agency (ECHA) website at https://echa.europa.eu.

References:

Information on registered substance (ECHA)
https://echa.europa.eu/registration-dossier/-/registered-dossier/19347.

Disclaimer

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IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity, and behavior of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity, and behavior should be determined by the user and made known to handlers, processors, and end users.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

Contact:

For further information on this substance or GPS safety summaries in general, please contact: pehs_te@huntsman.com