

N-DULGE[®] 25I - Modified Corn Starch**SECTION I - PRODUCT AND COMPANY IDENTIFICATION**

Comercial Name: N-DULGE[®]25I

Main Recommended Uses: Foods with a high pH, acidic foods, refrigerated and frozen products, soups and sauces, Low-acid canned products, puddings

Company's Name: INGREDION BRASIL INGREDIENTES INDUSTRIAIS LTDA

Address: Rochaverá # Av. Nações Unidas, 14171, 4º andar # Torre A (Ebony) - São Paulo, Brasil, 04794-000

Emergency telephone number:
55 (21) 2602 2020 - Alcântara Plant Entrance / RJ
55 (41) 3636 8871 - Balsa Nova Plant Entrance / PR
55 (81) 3522 8005 - Cabo de Sto. Agostinho Plant Entrance / PE
55 (19) 3861 9630 - Mogi Guaçu Plant Entrance / SP

SECTION II - HAZARDS IDENTIFICATION

Product classification: Chemical not classified as hazardous according to ABNT NBR 14725-2.

ADEQUATE LABELING ELEMENTS.

GHS Symbol:

Signal words: Not required.

Hazard statements: Not required.

Precautionary statements: General
P103 Read the label before use.
Prevention:
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke while using this product.
Reply
P370 + P378 In case of fire: For extinction see item 5 of this

MSDS.

Storage

P403 Store in a well-ventilated place.

Elimination

P501: Delete the contents/container in accordance with local regulations (see item 13)

Other hazards that do not result in classification:

Not classified as dangerous for the environment. High

concentrations of the product can impact the water bodies by decreasing the dissolved oxygen concentration due to the favoring of the eutrophication process.

SECTION III - COMPOSITION/INFORMATION ON INGREDIENTS

Chemical or common name: This product is a substance. Food grade modified starch.

Synonyms: Modified Corn Starch
Concentration: 100%

CAS: 65996-63-6

THE COMPONENTS LISTED BELOW CAN CAUSE SOME HAZARD TO HEALTH AND THE EFFECTS DEPENDING ON TIME AND EXPOSURE DURATION. BEFORE USE, READ AND STUDY THIS MSDS.

Components:

Common chemical name or generic name	Nº CAS	Concentration%
Sulfur Dioxide	7446-09-5	Máx. 0,005

SECTION IV - FIRST-AID MEASURES

EXPOSURE ROUTES.

Inhalation: Remove victim to fresh air and keep at rest. Monitor respiratory function. Get medical attention. Take this MSDS.

Skin contact: Remove contaminated clothing and shoes. Wash exposed skin with

plenty of water for at least 15 minutes. Wash contaminated clothing and shoes before reuse. Get medical attention. Take this MSDS.

Eye contact:	Wash with running water for at least 15 minutes, keeping eyelids open. Remove contact lenses when applicable. Seek medical attention immediately. Take this MSDS.
Ingestion:	Not applicable. Food product. If ingestion of the product occurs in large quantities, seek medical attention. DO NOT INDUCE VOMITING. Take this MSDS.
Main important symptoms and effects, acute or late:	It can cause mild irritation to the eyes, skin and respiratory tract due to mechanical effects.
	Main symptoms: Redness in the eyes. Redness and itching of the skin. Cough.
Notes to a physician:	Symptomatic treatment should include, above all, supportive measures such as correction of hydroelectrolytic and metabolic disorders, as well as respiratory assistance. Do not give anything by mouth to an unconscious person.

SECTION V - FIRE-FIGHTING MEASURES

Suitable extinguishing media:	Non-combustible product compatible with any extinguishing media such as chemical dust, water mist, carbon dioxide, etc. Do not spray water directly onto the burning product as it may spread and increase the intensity of the fire.
Specified hazards from chemical product combustion:	Non-combustible product. When heated it releases gases like monoxide and carbon dioxide. It can react with air to form explosive mixtures in case of high concentrations of product dust. Combustion of the chemical or its packaging can form irritating and toxic gases such as carbon monoxide and carbon dioxide.
Special equipment for the protection	Firefighters: Use self-contained breathing equipment and

of firefighters:

appropriate clothing fire. Do not enter confined areas without proper protective equipment (PPE); this should include autonomous masks for protection against the harmful effects of combustion products or lack of oxygen.

Isolate the hazard area and prohibiting the entry of people. In case of fire use water spray to cool containers exposed to fire.

Keep safe distance from the flames to prevent burns by irradiation.

Use extinction processes that preserve the environment.

SECTION VI - ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTION EQUIPMENT AND EMERGENCY PROCEDURES / FOR NON-EMERGENCY SERVICE PERSONNEL.

Procedures to be adopted:

Isolate spill or leak area within 50 meters at least in all directions. In case of large leaks consider the initial wind evacuation within 300 meters. Wear clothing, gloves and eye protection. Do not touch, stand or walk on spilled product. Avoid low areas. Move away from leak location keeping downwind (back to wind) to avoid contamination.

PERSONAL PRECAUTIONS, PROTECTION EQUIPMENT AND EMERGENCY PROCEDURES / FOR EMERGENCY SERVICE PERSONNEL.

Procedures to be adopted:

Use waterproof protective clothing and chemical resistant. Arrange grounding of all equipment that will be used in the handling of spilled material. Eliminate all possible sources of ignition such as open flames, hot elements without insulation, electrical or mechanical sparks, cigarettes, electrical circuits, etc. Prevent the use of any action or proceeding resulting in the generation of sparks or flames.

ENVIRONMENTAL.

Precautions:

Isolate the area of the accident. Prevent the spread of spilled material, avoiding contamination of rivers and springs. Shut off leak, if possible, avoid contact with skin and clothing. Never dispose of spilled material to sewers. Spills should be reported to

the manufacturer and / or environmental agencies.

METHODS AND MATERIALS FOR RETENTION AND CLEANING.

Procedures to be adopted: Use a vacuum cleaner to collect debris or other non-dusting method.
Collect material in appropriate containers and remove to safe place. Do not dispose of directly into the environment or into the sewage system. Fire control products may cause pollution.

SECTION VII - HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING.

Precautions for safe handling: No smoking in the workplace. Use Personal Protective Equipment.
Ensure adequate ventilation in the workplace.
Keep away from heat, sparks, open flames and hot surfaces. - Do not smoke.
Handle in accordance with good industrial hygiene and safety practices. Storage facilities and use shall be equipped with facilities eyewash and safety shower. The clothing and PPE should always be cleaned and checked before use. Always use water for personal hygiene, soap and cleansers. Operating procedures and good industrial hygiene help reduce the risk in handling chemicals.

APPROPRIATE TECHNICAL MEASURES FOR STORAGE, INCLUDING ANY INCAPABILITY.

Recommended conditions: Store on pallets, in a covered, dry and ventilated place, protected from heat.
Incompatible materials: Oxidizing agents, acids, alkalis and iodine.
Keep the container tightly closed when not in use. These containers must not be reused for other purposes and must be disposed of in suitable places.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

SPECIFIC CONTROL PARAMETERS.

Control Parameters: Modified Starch
TLV # TWA (ACGIH, 2010):6 (mg/m³)

TLV # STEL (ACGIH,2010): - (mg/m3)
TLV # PEL (OSHA, 2010): 5FR (mg/m3)
REL # TWA (NIOSH, 2010): 5 (mg/m3)
RF: Respirable fraction

Engineering controls measures: Promote combined ventilation with local exhaust. Emergency showers and eye wash are recommended in the work area. Engineering control measures are most effective for reducing product exposure.

APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT.

Eye protection: Goggles against dust.

Skin and body protection: Full protective clothing that covers the entire body. Use face shield.

Respiratory protection: Protective mask with dust filter.

Thermal protection: Does not have.

Special precautions: Does not have

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid, powder, white.

Odor and odor limit: Characteristic

pH: 4,5 - 5,5

Melting point/freezing point: Not determined.

Boiling point, initial boiling and boiling range: Not determined.

Flash point: Not applicable. Non flammable product

Evaporation Rate: Not determined.

Flammability (solid, gas):	Not applicable. Non flammable product.
Upper/ Lower flammability or explosive limits:	Not applicable. Non flammable product.
Vapor pressure:	Not determined.
Vapor density:	0.47 g/mL (average)
Relative Density:	Not determined.
Solubility:	No
n-octanol/water partition coefficient:	Not determined.
Temperature of auto-ignition:	Not determined.
Decomposition temperature:	Not determined.
Range of distillation:	Not determined.
Viscosity:	Not determined.
Other informations:	Not determined.

SECTION X - STABILITY AND REACTIVITY

Reactivity:	Not available.
Chemical Stability:	Stable under usual handling and storage conditions.
Hazardous reactions:	It is not known agents that can promote hazardous reactions with the product.
Conditions to avoid:	High temperatures and contact with incompatible materials and excessive dust.
Incompatible materials or substances:	Oxidizing agents, acids and iodine.

Hazardous decomposition products: When heating emits typical gases of combustion as monoxide and dioxide of carbon, nitrogen, oxygen and water.

SECTION XI - TOXICOLOGICAL INFORMATION

Acute toxicity:	Category 5 DL50: SUPERIOR TO 2000 mg/kg
Skin corrosion/irritation:	Not irritating.
Eye irritation/lesion:	Not irritating.
Respiratory/skin sensitization:	Not rated.
Germ cells mutagenicity:	Not rated.
Carcinogenicity:	Not rated.
Reproduction toxicity:	Not rated.
Specific target organ toxicity - single exposure:	Not rated.
Specific target organ toxicity - multiple exposure:	Not rated.
Aspiration hazard:	Not rated.

SECTION XII - ECOLOGICAL INFORMATION

ENVIRONMENTAL EFFECTS, BEHAVIOR AND PRODUCT IMPACT.

Ecotoxicity:	Not classified as dangerous for the environment.
Persistence and degradability:	It is expected that the product presents rapid degradation and low persistence.
Bioaccumulative potential:	It is not expected to bioaccumulate potential in aquatic organisms.
Mobility:	Unknown

Other side effects: No additional information.

SECTION XIII - DISPOSAL CONSIDERATION

RECOMMENDED METHODS FOR TREATMENT AND DISPOSAL APPLIED TO:

Recommended methods for final destination: Never discharge into drains or the environment. Product residues should be disposed of in accordance with federal, state and local regulations for health and the environment, and current applicable: ABNT-NBR 10.004/2004 and ABNT-NBR 16725.

Contaminated packaging: Used packaging: His willingness to comply with all applicable health and environmental regulations, obeying the same criteria applicable to products. Do not reuse empty packaging.

SECTION XIV - TRANSPORT INFORMATION

NATIONAL AND INTERNATIONAL REGULATIONS.

Regulations: Res 5232 ANTT | IMDG / DPC / ANTAQ | ICAO-TI / IATA-DGFT / ANAC

Product not framed in the resolution into effect on transport of dangerous goods.

Other transport information: Avoid transport in vehicles where the cargo space is not separated from the driver's cab. Ensure that the driver knows the potential hazards of the load and the measures to be taken in the event of an accident or emergency. Before transporting containers, check that they are secure. In fractional transport each container must be properly identified, bearing the labeling provided for in the standard.

SECTION XV - REGULATORY INFORMATION

Chemical product specific regulations: Ordinance 704/15 of the Ministry of Labor and Employment (DOU dated 05/28/2015) amending Regulatory Standard 26 (NR 26) - Safety Signaling. This Ordinance included item 26.2.2.5 in Regulatory Standard No. 26, approved by Administrative Rule 3214/1978, with

the wording given by Administrative Rule 229/2011, with the following wording: "Products notified or registered as Sanitation in ANVISA are exempt from compliance with Obligations set forth in paragraphs 26.2.2, 26.2.2.1, 26.2.2.2 and 26.2.2.3 of NR 26. "

Decree 2.657 of 03/07/1998 - promulgates ILO Convention No. 170 on Safety in the Use of Chemicals at Work, signed at Geneva on July 25, 1990.

Decree 2657 of 1998 (ratified in Brazil the ILO Convention No. 170)

NORMA ABNT NBR 14725-4, edition published 11/19/2014. Valid from 12/19/2014.

Decree No. 7,404 of December 23, 2010.

Law 9.605 / 1998 Environmental Crimes.

Law 8.098 / 1990 Code of Consumer Protection.

Regulatory requirements are subject to change and may differ from one region to another; It is the user's responsibility to ensure that its activities comply with local, federal, state and municipal laws.

SECTION XVI - OTHER INFORMATION

Other Info:

Prepared by: Via Brasil Consultoria em Transporte de Produtos Perigosos

"This Safety Data Sheet for Chemicals was prepared in accordance with the guidelines of NBR 14725 issued by ABNT - Brazilian Association of Technical Standards. The information contained in this MSDS represents the current data and accurately reflects our best knowledge about the proper handling of this product under normal conditions and in accordance with the recommendations on the packaging and in the technical literature. Considering the variety of factors that may affect its processing or application, the information contained in this sheet does not exempt processors from the responsibility of running their own tests and experiments. Any other use of the product, whether or not involving the use in combination with another product, or using a process other than that indicated, is the sole responsibility of the user."

REFERENCES:

[ABNT NBR 14725-2] - Danger Rating System # GHS
[RESOLUTION No. 5232/16 ANTT] National Land Transport Agency - Approves the Supplementary Instructions to the Regulation of the Transport of Dangerous Goods.
[HSNO] NEW ZEALAND. HSNO Chemical Classification and Information Database (CCID)
[ECHA] European Union. ECHA European Chemical Agency
TERRESTRIAL (RAILWAYS, ROADS): National Land Transport Agency (ANTT);
WATERWAYS (SEA, river, lake): International Maritime Dangerous Goods Code - Code (IMDG Code); Standard -5 Directorate of Ports and Coasts of the Navy Department (CPD): National Agency for Waterway Transportation (ANTAQ);
AIR: International Civil Aviation Organization - Technical Instructions (ICAO -TI). International Air Transport Association - Dangerous Goods Regulations (IATA - DGFT); National Civil Aviation Agency (ANAC).

* Abbreviations:

NA: Not Applicable
NA: Not available
OSHA: Administration of Occupational Safety and Health
LD50: lethal dose for 50% of the infected population
LC50: Lethal concentration for 50 % of the infected population
CAS: Chemical Abstracts Service
TLV - TWA: is the weighted average concentration allowed for a journey of 8 hours of work
TLV - STEL: is the exposure limit short - term maximum allowable concentration for continuous exposure of 15 minutes.
ACGIH is an organization of personnel from government agencies or educational institutions engaged in programs of occupational health and safety.
ACGIH: develops and publishes exposure limits for hundreds of chemical substances and physical agents.

PEL: maximum allowable concentration of contaminants in air, to which most workers may be repeatedly exposed 8 hours daily, 40 hours a week during the work period (30 years), no adverse health effects.

OSHA: U.S. federal agency with authority to regulatory and compliance provisions in the area of safety and health for industries and businesses in the USA.

IMDG: International Maritime Code for Dangerous Goods - international code for the transport of hazardous materials by sea.

PNEC: Predicted No Effect Concentration.

ILO - International Labour Organization

MTE - Ministry of Labour and Employment.

DISCLAIMER OF EXPRESSED OR IMPLIED WARRANTIES

Clauses:

The above data was compiled from sources from which Ingredion International, Inc. and its affiliates, in good faith, believe they are accurate and reliable to the best of our knowledge and belief. However, Ingredion cannot guarantee or represent the accuracy and completeness of the data and assumes no responsibility for any damage related to this product or for recommendations regarding the protection of employees, customers or others (users must carry out their own tests to determine the applicability of this information or the convenience of any product for specific use).