1.0 Chemical Identity

1.1	Product Form	Mixture
	Product Name	Caustic Soda Lye (50 %)
	CAS No	1310-73-2
	Product Code	LC24150
	Synonyms	Sodium Hydroxide
	Formula	NaOH
1.2	Recommended Use and Restrictions	
	Use of substance	For laboratory and manufacturing use
	Recommended Use	Laboratory Chemical
	Restrictions on Use	Not for food, drug or household use
1.3	Company Information	
		Name: Al Kout Industrial Projects, Kuwait **Plant:** Salt & Chlorine Plant, Shuaiba, Kuwait **Company's Post Box No.:** 10277, Shuaiba-65453, Kuwait **Tel No.:** 00-(965)-22283726 Intercom: 3726, 3725 **Fax No.:** 00-(965)- 22284043 **Company's Emergency Phone No:** 00-(965)-, 23261029, 97216020, 99794511
1.4	Emergency Telephone Number	00-(965)-, 23261029, 97216020

2.0 Hazards Identification

2.1	Classification of the Substance or Mixture

GHS US Classification

Skin corrosion / irritation	H314	Causes Skin Burns & Eye Damage
Serious eye damage / eye irritation	H318	Causes Serious Eye Damage
Hazardous to the aquatic environment	H402	Harmful to aquatic life

Full text of H statements : see section 16

2.2	Label Elements

GHS US Labeling

Hazard Pictograms (GHS – US) :

Single Word (GHS-US) : Danger
Hazard Statements (GHS-US) : H314 – Causes Skin Burns & Eye Damage
: H402 – Harmful to aquatic life
Precautionary Statements (GHS – US) : P260 - Do not breathe mist, vapors, spray.
P264 - Wash exposed skin thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, eye protection, face protectio
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a poison center or doctor/physician.
P363 - Wash contaminated clothing before reuse. P405 - Store locked up.

2.3	Other Hazards

No additional information available

2.4	Unknown acute toxicity (GHS US)

Not Applicable

3.0 Composition/ Information on ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Name	Product Identifier	%	GHS-US classification
Sodium Hydroxide	(CAS-No.) 1310-73-2	50	Acute Tox.4 (Dermal), H312 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 3,H402
Water	(CAS-No.) 7732-18-5	50	Not classified
Finished product specification	Caustic Soda Lye (50 %)		

Chemical Analysis

PARAMETERS	Specification
Specific Gravity	1.480 – 1.52
Temperature °C	40 - 60
Sodium Hydroxide (at above temp) g/lit	720 - 800
Sodium Hydroxide (at above temp) wt.%	50.0 ± 1
Carbonate as Na2CO3 wt. %.	≤ 0.2
Chlorate as NaClO3 ppm	≤ 20
Sulphate as Na2SO4 ppm	≤ 100
Chloride as NaCl ppm	≤ 100
Iron as Fe +3 ppm	≤ 5.0
Nickel as Ni ppm	≤ 1.0
Copper as Cu+2 ppm by wt	≤ 2.0
Manganese as Mn+2 ppm by wt	≤ 2.0
Silicate as SiO2 ppm by wt	≤ 10.0
Water Insolubles ppm by wt	≤ 100

4.0 First Aid Measures

4.1. Description of first aid measures

First-aid measures general	Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.
First-aid measures after skin contact	Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a poison center or doctor/physician.

First-aid measures after eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if prese and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.
First-aid measures after ingestion	Rinse mouth with water. Immediately after ingestion: give lots of water to drink Do not induce vomiting. Do not give activated charcoal. Do not give chemical antidote. Immediately consult a doctor/medical service. Call Poison Information Centre (www.big.be/antigif.htm). Take the container/vomit to the doctor/hospita Ingestion of large quantities: immediately to hospital. Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor/physician.
4.2. Most important symptoms and effects (acute and delayed)	
Symptoms/effects	Causes severe skin burns and eye damage.
Symptoms/effects after inhalation	EXPOSURE TO HIGH CONCENTRATIONS: Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible laryngeal spasm/oedema. Risk of lung edema. Respiratory difficulties.
Symptoms/effects after skin contact	Caustic burns/corrosion of the skin. Slow-healing wounds.
Symptoms/effects after eye contact	Corrosion of the eye tissue. Permanent eye damage. Causes serious eye damage.
Symptoms/effects after ingestion	Vomiting. Diarrhoea. Burns to the gastric/intestinal mucosa. Possible esophageal perforation. Bleeding of the gastrointestinal tract. Shock. AFTER ABSORPTION OF LARGE QUANTITIES: Disturbances of consciousness.
Chronic symptoms	ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Dry skin. Skin rash/inflammation. Possible inflammation of the respiratory tract.
4.3. Immediate medical attention and special treatment, if necessary	
No additional information available	

5.0 Fire Fighting Measures		
5.1	Suitable Extinguishing Media	Foam. Dry powder. Carbon dioxide. Water spray. Sand
	Unsuitable Extinguishing Media	Solid water jet ineffective as extinguishing medium.
5.2	Specific hazards arising from the chemical	Fire Hazard : Not Flammable Explosion hazard : Not available Reactivity : Violent exothermic reaction with water (moisture): (increased) risk of fire. On heating: release of corrosive gases/vapours. Absorbs the atmospheric CO2. Violent exothermic reaction with (some) acids. May be corrosive to metals. Reacts with (some) metals: release of highly flammable gases/vapours (hydrogen).
5.3	Special protective equipment and precaution for fire –fighters	Fire hazard : DIRECT FIRE HAZARD. Non combustible. INDIRECT FIRE HAZARD. Reactions involving a fire hazard: see "Reactivity Hazard". Explosion hazard : INDIRECT EXPLOSION HAZARD. Reactions with explosion hazards: see "Reactivity Hazard". Reactivity : Violent exothermic reaction with water (moisture): (increased) risk of fire. On heating: release of corrosive gases/vapors. Absorbs the atmospheric CO2. Violent exothermic reaction with (some) acids. May

		be corrosive to metals. Reacts with (some) metals: release of highly flammable gases/vapors (hydrogen).

6.0 Accidental Release Measures		
6.1	Personal Precautions	Evacuate area. Clear non-emergency personnel from the area. Ventilate area of spill o leak. Allow only trained personnel wearing appropriate protective gear, to be in the spill response.
6.1.1	For non-emergency personnel	
	Protective equipment	Gloves. Face-shield. Corrosion-proof suit. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit. See "Material-Handling" to select protective clothing.
	Emergency procedures	Mark the danger area. No naked flames. Wash contaminated clothes. Large spills/in confined spaces: consider evacuation. In case of hazardous reactions: keep upwind. In case of reactivity hazard: consider evacuation.
6.1.2	For emergency responders	
	Protective equipment	Equip cleanup crew with proper protection.
	Emergency procedures	Ventilate area.
6.2	Environmental precautions	• If possible, dam large quantities of liquid with sand or earth. • Collect the product with suitable means. • Place everything into a closed, labelled container compatible with the product. • Store the product in a safe and isolated place
6.3	Methods and material for containment and cleaning up	
	For containment	Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Hazardous reaction: measure explosive gas-air mixture. Reaction: dilute combustible gas/vapour with water curtain. Heat exposure: dilute toxic gas/vapour with water spray. Take account of toxic/corrosive precipitation water.
	Methods for cleaning up	Take up liquid spill into absorbent material, e.g.: sand, saw dust, kieselguhr. Scoop absorbed substance into closing containers. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Small quantities of liquid spill: neutralize with acid solution. Wash away neutralized product with plentiful water. Damaged/cooled tanks must be emptied. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.
6.4.	Reference to other sections	
	See Heading 8. Exposure controls and personal protection.	

7.0 Handling and Storage		
7.1	Precautions for safe handling	
	Handling & Storage	Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle and open the container with care. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Keep away from naked flames/heat. Observe very strict hygiene - avoid contact. Keep container tightly closed. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.
	Hygiene measures	Wash exposed skin thoroughly after handling.
7.2.	Conditions for safe storage, including any incompatibilities	
	Technical measures	Comply with applicable regulations.
	Storage conditions	Keep only in the original container in a cool, well ventilated place away from : incompatible materials. Keep container closed when not in use.
	Incompatible products	Strong bases. Strong acids.

	Incompatible materials	Sources of ignition. Direct sunlight
	Storage temperature	> 15 °C
	Heat-ignition	KEEP SUBSTANCE AWAY FROM: heat sources.
	Prohibitions on mixed storage	KEEP SUBSTANCE AWAY FROM: combustible materials. strong acids. metals.
	Storage area	Store in a dry area. Keep container in a well-ventilated place. Keep locked up. Protect against frost. Provide for a tub to collect spills. Unauthorized persons are not admitted. Meet the legal requirements.
	Special rules on packaging	SPECIAL REQUIREMENTS: hermetical. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
	Packaging materials	SUITABLE MATERIAL: stainless steel. nickel. polyethylene. polypropylene. glass. stoneware/porcelain. MATERIAL TO AVOID: lead. aluminum. copper. tin. zinc. bronze.

8.0 Exposure Controls/Personal Protection

8.1. Control parameters		
Sodium Hydroxide, 50% w/w (1310-73-2)		
OSHA	OSHA PEL (TWA) (mg/m³	2 mg/m³
IDLH	US IDLH (mg/m³)	10 mg/m³
NIOSH	NIOSH REL (ceiling) (mg/m³)	2 mg/m³
Sodium Hydroxide (1310-73-2)		
ACGIH	ACGIH Ceiling (mg/m³)	2 mg/m³ (Sodium hydroxide; USA; Momentary value; TLV - Adopted Value)
OSHA	OSHA PEL (TWA) (mg/m³)	2 mg/m³
IDLH	US IDLH (mg/m³)	10 mg/m³
NIOSH	NIOSH REL (ceiling) (mg/m³)	2 mg/m³
Water (7732-18-5)		
Not applicable		
8.2	Appropriate engineering controls	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation.
8.3.	Individual protection measures/Personal protective equipment	Protective goggles. Gloves. Protective clothing. Face shield. Materials for protective clothing: GIVE EXCELLENT RESISTANCE: nitrile rubber. GIVE GOOD RESISTANCE: No data available. GIVE LESS RESISTANCE: chlorinated polyethylene. styrene-butadiene rubber. nitrile rubber/PVC. GIVE POOR RESISTANCE: PVA. natural fibres Hand protection: Wear protective gloves. Eye protection: Chemical goggles or face shield. Face shield Skin and body protection: Corrosion-proof clothing Respiratory protection: Wear gas mask with filter type B if conc. in air > exposure limit Other information: Do not eat, drink or smoke during use. 

9.0 Physical and Chemical Properties

9.1. Information on basic physical and chemical properties	
Physical state	Liquid
Appearance	Liquid.
Color	Colorless
Odor	Odorless
Odor threshold	No data available
pH	14 (8 %)
pH solution	8 %
Melting point	12 °C

Freezing point	No data available
Boiling point	143 °C
Flash point	Not applicable
Relative evaporation rate (buty acetate=1)	No data available
Flammability (solid, gas)	Non flammable
Vapor pressure	1.2 hPa (20 °C)
Relative vapor density at 20 °C	No data available
Relative density	1.5
Specific gravity / density	1525 kg/m³
Molecular mass	40 g/mo
Solubility	Exothermically soluble in water. Soluble in ethanol. Soluble in methanol. Soluble in glycerol. Water: Complete
Log Pow	No data available
Auto-ignition temperature	Not applicable
Decomposition temperature	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	79 mPa.s (20 °C)
Explosion limits	No data available
Explosive properties	Not applicable
Oxidizing properties	None
9.2. Other information	
Minimum ignition energy	Not applicable
VOC content	Not applicable (inorganic)
Other properties	Clear. Hygroscopic. Slightly volatile. Substance has basic reaction.

10.0 Stability and Reactivity

10.1.	Reactivity
Violent exothermic reaction with water (moisture): (increased) risk of fire. On heating: release of corrosive gases/vapou Absorbs the atmospheric CO2. Violent exothermic reaction with (some) acids. May be corrosive to metals. Reacts with (som metals: release of highly flammable gases/vapours (hydrogen).	
10.2.	Chemical stability
Stable under normal conditions. Absorbs atmospheric CO2. Hygroscopic. Not established.	
10.3.	Possibility of hazardous reactions
Not established.	
10.4	Conditions to avoid
Direct sunlight. Extremely high or low temperatures	
10.5.	Incompatible materials
Strong acids. metals.	
10.6.	Hazardous decomposition products
Sodium oxide. Thermal decomposition generates : Corrosive vapors	

11.0 Toxicological Information

Likely routes of exposure	Skin and eye contact
Acute toxicity	Not classified
Sodium Hydroxide (1310-73-2)	

ATE US (dermal)	1350 mg/kg body weight
Water (7732-18-5)	
LD50 oral rat	≥ 90000 mg/kg
ATE US (oral)	90000 mg/kg body weight
Skin corrosion/irritation	Causes severe skin burns and eye damage. pH: 14 (8 %)
Serious eye damage/irritation	Causes serious eye damage. pH: 14 (8 %)
Respiratory or skin sensitization	Not classified
Germ cell mutagenicity	Not classified Based on available data, the classification criteria are not met
Carcinogenicity	Not classified
Reproductive toxicity	Not classified Based on available data, the classification criteria are not met
Specific target organ toxicity single exposure	Not classified
Specific target organ toxicity repeated exposure	Not classified
Aspiration hazard	Not classified
Potential Adverse human health effects and symptoms	Based on available data, the classification criteria are not met.
Symptoms/effects after inhalation	EXPOSURE TO HIGH CONCENTRATIONS: Dry/sore throat. Coughing. Irritation of t respiratory tract. Irritation of the nasal mucous membranes. FOLLOWING SYMPTOMS MA APPEAR LATER: Possible laryngeal spasm/oedema. Risk of lung edema. Respirato difficulties.
Symptoms/effects after skin contact	Caustic burns/corrosion of the skin. Slow-healing wounds.
Symptoms/effects after eye contact	Corrosion of the eye tissue. Permanent eye damage. Causes serious eye damage.
Symptoms/effects after ingestion	Vomiting. Diarrhoea. Burns to the gastric/intestinal mucosa. Possible esophageal perforatio Bleeding of the gastrointestinal tract. Shock. AFTER ABSORPTION OF LARG QUANTITIES: Disturbances of consciousness.
Chronic symptoms	ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Dry skin. Skin rash/inflammatio Possible inflammation of the respiratory tract.

12.0 Ecological Information

12.1. Toxicity	
Ecology - general	Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.
Ecology - air	Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). None of t known components is included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006).
Ecology - water	Ground water pollutant. Maximum concentration in drinking water: 200 mg/l (sodium) (Directive 98/83/EC). Harmful to fishes. Harmful to invertebrates (Daphnia). pH shift.
Sodium Hydroxide (1310-73-2)	
LC50 fish 1	45.4 mg/l (LC50; Other; 96 h; Salmo gairdneri; Static system; Fresh water; Experimental value)
12.2. Persistence and degradability	
Sodium Hydroxide, 50% w/w (1310-73-2)	
Persistence and degradability	Biodegradability: not applicable. No test data on mobility of the components available.
Sodium Hydroxide (1310-73-2)	
Persistence and degradability	Biodegradability: not applicable. No test data on mobility of the substance available.

Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD	Not applicable
ThOD	Not applicable
Water (7732-18-5)	
Persistence and degradability	Not established.
12.3. Bio accumulative potential	
Sodium Hydroxide, 50% w/w (1310-73-2)	
Bio accumulative potential	Does not contain bio accumulative component(s).
Sodium Hydroxide (1310-73-2)	
Bio accumulative potential	No bioaccumulation data available.
Water (7732-18-5)	
Bio accumulative potential	Not established.
12.4. Mobility in soil	
No additional information available	
12.5. Other adverse effects	
Other information: Avoid release to the environment.	

13.0 Disposal Considerations

13.1	Waste disposal recommendations: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the wast Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste sha take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Remove for physico-chemical/biological treatment. Do not discharge into drains or the environment. Additional information: LWCA (the Netherlands): KGA category 05. Hazardous waste according to Directive 2008/98/EC. Ecology - waste materials: Avoid release to the environment.

14.0 Transport Information

Department of Transportation (DOT)
In accordance with DOT

Transport document description : UN1824 Sodium hydroxide solution, 8, II

UN-No.(DOT) : UN1824

Proper Shipping Name (DOT) : Sodium hydroxide solution

Transport hazard class(es) (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Packing group (DOT) : II - Medium Danger

Hazard labels (DOT) : 8 - Corrosive

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 242

DOT Special Provisions (49 CFR 172.102) : B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized. IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa a 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized. N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material. T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3) TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degree celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d5 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.

DOT Packaging Exceptions (49 CFR 173.xxx) : 154

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L

DOT Vessel Stowage Location : A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ a cargo vessel and on a passenger vessel.

DOT Vessel Stowage Other : 52 - Stow ‘‘separated from’’ acids

Other information : No supplementary information available.

15.0 Regulatory Information	
Sodium Hydroxide, 50% w/w (1310-73-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Not subject to reporting requirements of t United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	1000 lb
SARA Section 311/312 Hazard Classes	Health hazard - Skin corrosion or Irritation Health hazard Serious eye damage or eye irritation
Sodium Hydroxide (1310-73-2)	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	1000 lb
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
15.2. US State regulations	

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

16.0 Other Information		
16.1	Packing	Intermediate Bulk Containers (IBC's) and Rubber Lined /Epoxy (Vinyl Ester) coated Tankers
16.2	Disclaimer	Although reasonable care has been taken in the preparation of th document, we extend no warranties and mak no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s)

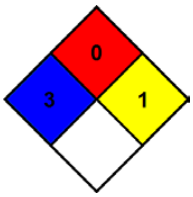
Full text of H-Phrases

H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H402	Harmful to aquatic life

NFPA health hazard : 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA fire hazard : 0 - Materials that will not burn under typical dire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.



Hazard Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Personal protection : H

H - Splash goggles, Gloves, Synthetic apron, Vapor respirator

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.