1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Spent Hydrogenator Catalyst

Manufacturer or supplier's details

Supplier :
SHELL EASTERN CHEMICALS (S)
A REGISTERED BUSINESS OF SHELL EASTERN TRADING (PTE) LTD (UEN:198902087C)
9 North Buona Vista Drive , #07-01
The Metropolis Tower 1
Singapore 138588
Singapore

Telephone :
Telefax :
Contact for Safety Data Sheet : If you have any enquiries about the content of this SDS please email fuelSDS@shell.com

Emergency telephone number : (+86) 0532 83889090 (This telephone number is available 24 hours per day, 7 days per week)

Recommended use of the chemical and restrictions on use

Recommended use : Spent Catalyst

Restrictions on use : This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the supplier.

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	solid
Colour	Black;Grey
Odour	Hydrocarbon

GHS Classification

Oxidizing solids : Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:
H272 May intensify fire; oxidizer.
HEALTH HAZARDS:
ENVIRONMENTAL HAZARDS:

Precautionary statements :

Prevention:
P210 Keep away from heat.
P220 Keep/ Store away from clothing/ combustible materials.
P221 Take any precaution to avoid mixing with combustibles.
P280 Wear protective gloves/ eye protection/ face protection.

Response:
P370 + P378 In case of fire: Use alcohol-resistant foam, carbon dioxide or dry sand for extinction.

Storage:
P405 Store locked up.

Disposal:
P501 Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

Other hazards which do not result in classification

Contact with dust can cause mechanical irritation or drying of the skin.This material has the potential to be a static accumulator.

Health Hazards	Inhalation: Skin: Contact with dust can cause mechanical irritation or drying of the skin. Eyes: Dust or small particles may abrade skin and irritate eyes. Ingestion:

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Classification	Concentration (% w/w)
Nickel	7440-02-0	Skin Sens.1; H317 Carc.2; H351 STOT RE1; H372 Aquatic Chronic3; H412	>= 45 - <= 60

Aluminium oxide	1344-28-1		>= 10 - <= 25
Silicon, amorphous	112945-52-5		>= 15 - <= 25
Water	7732-18-5		>= 10 - <= 15

For explanation of abbreviations see section 16.

Further information

Contains:

Chemical name	Identification number	Concentration (% w/w)
Paraffins, branched and linear		>= 0 - <= 0.5
Alkanes, C14-17	90622-47-2	>= 0 - <= 0.5
C12-15 Alcohols	63393-82-8	>= 0 - <= 1

4. FIRST-AID MEASURES

General advice : Treat symptomatically.

If inhaled : If inhalation of mists, fumes or vapour causes irritation to the nose or throat, remove to fresh air.
Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.

In case of skin contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.

In case of eye contact : Flush eyes with water at least 15 minutes. Get medical attention if eye irritation develops or persists.

If swallowed : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

Most important symptoms and effects, both acute and delayed : Skin sensitisation (allergic skin reaction) signs and symptoms may include itching and/or a rash.

Protection of first-aiders : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Not applicable

Specific hazards during firefighting : Not applicable

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid dust formation. Avoid breathing dust.
Environmental precautions	:	Take measures to minimise the effects on groundwater. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.
Methods and materials for containment and cleaning up	:	Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.
See Chapter 13 for information on disposal.
Observe all relevant local and international regulations.
Remove contaminated clothing.
Evacuate the area of all non-essential personnel.
Avoid contact with skin, eyes and clothing.
Ventilate contaminated area thoroughly.

Additional advice	:	For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet. Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

Handling

General Precautions	:	Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Prevent spillages. Ensure that all local regulations regarding handling and storage facilities are followed.
Advice on safe handling	:	Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk. When using do not eat or drink. Avoid prolonged or repeated contact with skin.
Avoidance of contact	:	Combustible material Strong acids and strong bases

Product Transfer : Keep containers closed when not in use. Refer to guidance under Handling section.

Storage

Other data : Drum and small container storage:
Drums should be stacked to a maximum of 3 high.
Use properly labeled and closable containers.
Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.
Ensure electrical continuity by bonding and grounding (earthing) all equipment.

Packaging material : Suitable material: For containers and container linings, use materials specifically approved for use with this product.
Unsuitable material: Compatibility should be checked with the manufacturer.

Specific use(s) : Not applicable.

American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity).
IEC/TS 60079-32-1: Electrostatic hazards, guidance

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Nickel	7440-02-0	PC-TWA	1 mg/m3	CN OEL
	Further information: G2B - Possibly carcinogenic to humans, Sensitizing			
Nickel	7440-02-0	TWA (Inhalable particulate matter)	1.5 mg/m3	ACGIH
Nickel		TWA	1 mg/m3	OSHA Z-1
Nickel		TWA	1 mg/m3	OSHA P0
Nickel		TWA	0.015 mg/m3	NIOSH REL
Aluminium oxide	1344-28-1	PC-TWA (Total dust)	4 mg/m3	CN OEL
Aluminium oxide	1344-28-1	TWA (total dust)	15 mg/m3	OSHA Z-1
Aluminium oxide		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
Aluminium oxide		TWA	1 mg/m3	ACGIH

		(Respirable particulate matter)		
		TWA (Dust)	20 Million particles per cubic foot	OSHA Z-3
		TWA (Dust)	80 mg/m3 / %SiO2	OSHA Z-3
		TWA	6 mg/m3	NIOSH REL
		PEL	6 mg/m3	CAL PEL

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.
Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/

Engineering measures : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances.
Appropriate measures include:
Use sealed systems as far as possible.
Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.
Local exhaust ventilation is recommended.
Eye washes and showers for emergency use.
Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned.
Practice good housekeeping.
Define procedures for safe handling and maintenance of controls.
Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Personal protective equipment

Protective measures

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory protection	:	If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. All respiratory protection equipment and use must be in accordance with local regulations. Select a filter suitable for combined particulate/inorganic gases and vapours.
Hand protection		
Remarks	:	Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When handling heated product wear heat resistant gloves. When prolonged or frequent repeated contact occurs, Nitrile gloves may be suitable. (Breakthrough time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be suitable.
Eye protection	:	Wear dust-tight mono-goggles for use against fine dust particles.
Skin and body protection	:	Wear chemical resistant gloves/gauntlets and boots. Where risk of splashing, also wear an apron. It is good practice to wear chemical resistant gloves. Protective clothing approved to EU Standard EN14605.

Hygiene measures	:	Ensure that all local regulations regarding handling and storage facilities are followed. American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity). IEC/TS 60079-32-1: Electrostatic hazards, guidance

Environmental exposure controls

General advice	:	Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Section 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	solid
Colour	:	Black;Grey
Odour	:	Hydrocarbon
Odour Threshold	:	Data not available
pH	:	Not applicable
Melting point/freezing point	:	Data not available
Initial boiling point and boiling range	:	Not applicable
Flash point	:	Not applicable
Evaporation rate	:	Data not available
Upper explosion limit	:	Not applicable
Lower explosion limit	:	Not applicable
Vapour pressure	:	Data not available (50.0 °C / 122.0 °F) Method: Unspecified
Relative vapour density	:	Data not available
Relative density	:	Data not available
Density	:	15,000 - 16,000 kg/m3 (15.0 °C / 59.0 °F)
Solubility(ies)		
Water solubility	:	insoluble
Solubility in other solvents	:	Data not available
Partition coefficient: n-	:	Data not available

octanol/water		
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	Data not available
Viscosity		
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Classification Code: Not classified.
Oxidizing properties	:	Not applicable
Conductivity	:	Low conductivity: < 100 pS/m

10. STABILITY AND REACTIVITY

Reactivity	:	May oxidise in the presence of air.
Chemical stability	:	Stable under normal conditions of use.
Possibility of hazardous reactions	:	No hazardous reaction is expected when handled and stored according to provisions
Conditions to avoid	:	Not applicable
Incompatible materials	:	Combustible material Strong acids and strong bases
Hazardous decomposition products	:	Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

Basis for assessment	:	Information given is based on product data, a knowledge of the components and the toxicology of similar products.Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
Exposure routes	:	Skin and eye contact are the primary routes of exposure although exposure may occur through inhalation or following accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity	:	LD 50 rat: >2000 mg/kg Remarks: Low toxicity

Acute inhalation toxicity : LC50 Rat: >5 mg/kg
Exposure time: 4 h
Remarks: Low toxicity

Acute dermal toxicity : LD50 Rabbit: >5000 mg/kg
Remarks: Low toxicity

Components:

Aluminium oxide:
Acute oral toxicity : LD50 Rat: > 2,000 mg/kg

Acute inhalation toxicity : LC50 Rat: > 2.3 mg/l
Test atmosphere: dust/mist

Skin corrosion/irritation

Product:

Remarks: May irritate skin.

Serious eye damage/eye irritation

Product:

Remarks: May irritate eyes.

Respiratory or skin sensitisation

Product:

Remarks: May cause sensitisation by skin contact.

Germ cell mutagenicity

Product:

: Remarks: Not mutagenic.

Germ cell mutagenicity-Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Carcinogenicity

Product:

Remarks: Limited evidence of carcinogenic effect

Carcinogenicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Material	GHS/CLP Carcinogenicity Classification

Paraffins, branched and linear	No carcinogenicity classification.
Nickel	Carcinogenicity Category 2
Alkanes, C14-17	No carcinogenicity classification.
Aluminium oxide	No carcinogenicity classification.
C12-15 Alcohols	No carcinogenicity classification.
Silicon, amorphous	No carcinogenicity classification.
Water	No carcinogenicity classification.

Material	**Other Carcinogenicity Classification**
Nickel	IARC: Group 1: Carcinogenic to humans
Nickel	IARC: Group 2B: Possibly carcinogenic to humans
Silicon, amorphous	IARC: Group 3: Not classifiable as to its carcinogenicity to humans

Reproductive toxicity

Product:

: Remarks: Not a developmental toxicant., Does not impair fertility.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

STOT - single exposure

Product:

Remarks: Inhalation of dust may cause respiratory irritation.

STOT - repeated exposure

Product:

Remarks: May cause damage to organs or organ systems through prolonged or repeated exposure., Repeated exposure affects the respiratory system.

Aspiration toxicity

Product:

Not considered an aspiration hazard.

Further information

Product:

Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

12. ECOLOGICAL INFORMATION

Basis for assessment : Incomplete ecotoxicological data are available for this product. The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products.

Ecotoxicity

Product:

Toxicity to fish (Acute toxicity) :
Remarks: Harmful
LL/EL/IL50 >10 <= 100 mg/l

Toxicity to crustacean (Acute toxicity) :
Remarks: Harmful
LL/EL/IL50 >10 <= 100 mg/l

Toxicity to algae/aquatic plants (Acute toxicity) :
Remarks: Harmful
LL/EL/IL50 >10 <= 100 mg/l

Toxicity to fish (Chronic toxicity) : Remarks: Data not available

Toxicity to crustacean (Chronic toxicity) : Remarks: Data not available

Toxicity to microorganisms (Acute toxicity) : Remarks: Harmful
LL/EL/IL50 >10 <= 100 mg/l

Persistence and degradability

Product:

Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Data not available

Partition coefficient: n-octanol/water : Remarks: Data not available

Mobility in soil

Product:

Mobility : Remarks: If it enters soil, it will adsorb to soil particles and will not be mobile.

Other adverse effects

no data available

Product:

Additional ecological information	:	None

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
Contaminated packaging	:	Send to drum recoverer or metal reclaimer. Do not pollute the soil, water or environment with the waste container. Comply with any local recovery or waste disposal regulations.
Local legislation Remarks	:	Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION

National Regulations

International Regulations

IATA-DGR

UN/ID No.	:	UN 1378
Proper shipping name	:	Metal catalyst, wetted (NICKEL)
Class	:	4.2
Packing group	:	II
Labels	:	4.2

IMDG-Code

UN number	:	UN 1378
Proper shipping name	:	METAL CATALYST, WETTED (NICKEL)
Class	:	4.2
Packing group	:	II

Labels	:	4.2
Marine pollutant	:	no

Maritime transport in bulk according to IMO instruments

Pollution category	:	Not applicable
Ship type	:	Not applicable
Product name	:	Not applicable
Special precautions	:	Not applicable

Special precautions for user

Remarks	:	Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

15. REGULATORY INFORMATION

National regulatory information

GB 6944-2012: Classification and Code of Dangerous Goods.

GB/T 16483-2008: Safety Data Sheet for Chemical Products Content and Order of Sections.GB 30000 Rules for classification and labelling of chemicals.

GB 12268-2012: List of Dangerous Goods.

GBZ 2.1-2007: Occupational Exposure Limits for Hazardous Agents in the Workplace Part 1: Chemical Hazardous Agents. National Catalogue of Hazardous Wastes.

GB/T 17519-2013 Guidance on the compilation of safety data sheet for chemical products.

Regulations on Safety Management of Hazardous Chemicals

Other international regulations

The components of this product are reported in the following inventories:

EINECS	:	All components listed.
DSL	:	All components listed.
TSCA	:	All components listed.
AICS	:	All components listed.

16. OTHER INFORMATION

Full text of H-Statements

H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Aquatic Chronic	Long-term (chronic) aquatic hazard
Carc.	Carcinogenicity
Skin Sens.	Skin sensitisation
STOT RE	Specific target organ toxicity - repeated exposure

Abbreviations and Acronyms

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Further information

Other information : This product is intended for use in closed systems only.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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