

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

DCA-31006

Revision Date: 14-Sep-2015

Revision Number: 4

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Product Name DCA-31006
 Internal ID Code HM007682
 Contains n-Methylpyrrolidone

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Solvent

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
 Halliburton House, Howemoss Place
 Kirkhill Industrial Estate
 Dyce
 Aberdeen, AB21 0GN
 United Kingdom

www.halliburton.com

For further information, please contact

E-Mail address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Emergency telephone - §45 - (EC)1272/2008	
Europe	112
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	+210 7793777
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO):+ 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Romania	+40 21 318 36 06
Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Skin Corrosion / irritation	Category 2 - (H315)
Serious Eye Damage / Eye Irritation	Category 2 - (H319)
Reproductive Toxicity	Category 1B - (H360)
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - (H335)

2.2. Label Elements

Hazard Pictograms**Signal Word****Danger****Hazard Statements**

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H335 - May cause respiratory irritation

H360 - May damage fertility or the unborn child

Precautionary Statements - EU (§28, 1272/2008)

P264 - Wash face, hands and any exposed skin thoroughly after handling

P280 - Wear protective gloves/eye protection/face protection

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P308 + P313 - IF exposed or concerned: Get medical advice/attention

Contains**Substances**

n-Methylpyrrolidone

CAS Number

872-50-4

2.3. Other Hazards

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on Ingredients**3.1. Substances**

Substance

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH No.
n-Methylpyrrolidone	212-828-1	872-50-4	60 - 100%	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Repr. 1 (H360) STOT SE 3 (H335)	No data available

For the full text of the H-phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures**4.1. Description of first aid measures****Inhalation**

If inhaled, move victim to fresh air and seek medical attention.

Eyes

In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Skin

In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.

Ingestion

Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

4.2. Most Important symptoms and effects, both acute and delayed

Causes eye irritation. Causes skin irritation. May cause respiratory irritation. May be harmful if swallowed. Potential reproductive hazard. May cause birth defects.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically

SECTION 5: Firefighting Measures

5.1. Extinguishing media**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2. Special hazards arising from the substance or mixture**Special Exposure Hazards**

Decomposition in fire may produce harmful gases.

5.3. Advice for firefighters**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove sources of ignition. Ensure adequate ventilation. Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

SECTION 7: Handling and Storage
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7.1. Precautions for Safe Handling

Remove sources of ignition. Ensure adequate ventilation. Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment. Ground and bond containers when transferring from one container to another.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Store away from oxidizers. Store away from reducing agents. Store in a cool well ventilated area. Store locked up. Keep container closed when not in use. Product has a shelf life of 24 months.

7.3. Specific End Use(s)

Exposure Scenario No information available

Other Guidelines No information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters**Exposure Limits**

Substances	CAS Number	EU	UK	Netherlands	France
n-Methylpyrrolidone	872-50-4	Not applicable	TWA: 10 ppm TWA: 40 mg/m ³ STEL: 75 ppm STEL: 309 mg/m ³	40 mg/m ³	TWA: 40 mg/m ³ TWA: 10 ppm STEL: 80 mg/m ³ STEL: 20 ppm

Substances	CAS Number	Germany	Spain	Portugal	Finland
n-Methylpyrrolidone	872-50-4	TWA: 20 ppm TWA: 82 mg/m ³	TWA: 10 ppm TWA: 40 mg/m ³ 20 ppm STEL [VLA-EC]; 80 mg/m ³ STEL [VLA-EC]	TWA: 10 ppm TWA: 40 mg/m ³ STEL: 20 ppm STEL: 80 mg/m ³	TWA: 10 ppm TWA: 40 mg/m ³ STEL: 20 ppm STEL: 80 mg/m ³

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
n-Methylpyrrolidone	872-50-4	TWA: 10 ppm TWA: 40 mg/m ³ STEL" 20 ppm STEL" 80 mg/m ³	10 ppm TWA; 40 mg/m ³ TWA 20 ppm STEL; 80 mg/m ³ STEL	TWA: 20 ppm TWA: 80 mg/m ³ STEL: 40 ppm STEL: 160 mg/m ³	TWA: 5 ppm TWA: 20 mg/m ³ STEL: 20 ppm STEL: 80 mg/m ³

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
n-Methylpyrrolidone	872-50-4	Not applicable	TWA: 40 mg/m ³ STEL: 80 mg/m ³	Not applicable	TWA: 40 mg/m ³

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
n-Methylpyrrolidone	872-50-4	TWA: 5 ppm TWA: 20 mg/m ³	TWA: 10 ppm TWA: 40 mg/m ³ STEL: 20 ppm STEL: 80 mg/m ³	TWA: 10 ppm TWA: 40 mg/m ³ STEL: 20 ppm STEL: 80 mg/m ³	TWA: 40 mg/m ³ TWA: 10 ppm STEL: 80 mg/m ³ STEL: 20 ppm

Derived No Effect Level (DNEL) Worker

No information available.

General Population

Predicted No Effect Concentration (PNEC)

No information available.

8.2. Exposure controls

Engineering Controls

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional. Organic vapor/acid gas respirator with a dust/mist filter.

Hand Protection

Butyl rubber gloves.

Skin Protection

Rubber apron.

Eye Protection

Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions

Eyewash fountains and safety showers must be easily accessible.

Environmental Exposure Controls Do not allow material to contaminate ground water system

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid

Color: Clear colorless

Odor: Mild amine

Odor Threshold: No information available

Property

Values

Remarks/ - Method

pH:

8.5

Freezing Point/Range

-60 °C

Melting Point/Range

No data available

Boiling Point/Range

201 °C / 395 °F

Flash Point

92 °C / 199 °F PMCC

Flammability (solid, gas)

No data available

upper flammability limit

9.5

lower flammability limit

1.3

Evaporation rate	No data available
Vapor Pressure	0.29
Vapor Density	No data available
Specific Gravity	1.02
Water Solubility	Miscible with water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	-0.46
Autoignition Temperature	270 °C / 518 °F
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Molecular Weight	99
VOC Content (%)	No data available

SECTION 10: Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

Keep away from heat, sparks and flame.

10.5. Incompatible Materials

Strong oxidizers. Reducing agents. Violent, explosive reaction with sulfur trioxide, decaborane, silver perchlorate, triethenyl aluminum, and hydrogen in presence of nickel catalyst at temperatures above 200 C.

10.6. Hazardous Decomposition Products

Oxides of nitrogen. Carbon monoxide and carbon dioxide.

SECTION 11: Toxicological Information
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11.1. Information on Toxicological Effects**Acute Toxicity**

Inhalation	May cause respiratory irritation.
Eye Contact	Causes eye irritation.
Skin Contact	Causes skin irritation.
Ingestion	Irritation of the mouth, throat, and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea.

Chronic Effects/Carcinogenicity Prolonged or repeated exposure may cause embryo and fetus toxicity.

LD50 Oral:	7000 mg/kg (Rat)
LD50 Dermal:	8000 mg/kg (Rabbit)

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
n-Methylpyrrolidone	872-50-4	3598 mg/kg (Rat) 3500 mg/kg (Rabbit) 4150 mg/kg (Rat)	2500 mg/kg (Rat) 2000 mg/kg (Rabbit) > 5000 mg/kg (Rat)	3.1 mg/L (Rat) 4h > 5.1 mg/L (Rat)

Substances	CAS Number	Skin corrosion/irritation
n-Methylpyrrolidone	872-50-4	Causes moderate skin irritation.

Substances	CAS Number	Eye damage/irritation
n-Methylpyrrolidone	872-50-4	Causes moderate eye irritation.

Substances	CAS Number	Skin Sensitization
n-Methylpyrrolidone	872-50-4	Patch test on human volunteers did not demonstrate sensitization properties

Substances	CAS	Respiratory Sensitization
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	Number	
n-Methylpyrrolidone	872-50-4	No information available
Substances	CAS Number	Mutagenic Effects
n-Methylpyrrolidone	872-50-4	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.
Substances	CAS Number	Carcinogenic Effects
n-Methylpyrrolidone	872-50-4	Not regarded as carcinogenic.
Substances	CAS Number	Reproductive toxicity
n-Methylpyrrolidone	872-50-4	Fetotoxic and teratogenic effects observed in experimental animals at concentrations that did not produce maternal toxicity.
Substances	CAS Number	STOT - single exposure
n-Methylpyrrolidone	872-50-4	May cause disorder and damage to the Respiratory system.
Substances	CAS Number	STOT - repeated exposure
n-Methylpyrrolidone	872-50-4	No significant toxicity observed in animal studies at concentration requiring classification.
Substances	CAS Number	Aspiration hazard
n-Methylpyrrolidone	872-50-4	Not applicable

SECTION 12: Ecological Information

12.1. Toxicity Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
n-Methylpyrrolidone	872-50-4	EC50 (72h) 600.5 mg/L (Desmodesmus subspicatus) EC50 (72h) > 500 mg/L (Desmodesmus subspicatus)	LC50 (96h) 832 mg/L (Lepomis macrochirus) LC50 (96h) 4000 mg/L (Leuciscus idus) LC50 (96h) 1072 mg/L (Pimephales promelas) LC50 (96h) 1400 mg/L (Poecilia reticulata) LC50 (96h) 500 mg/L (Oncorhynchus mykiss)	EC50 (0.5h) 600 mg/L (Activated sludge)	EC50 (48h) 4897 mg/L (Daphnia magna) EC50 (24h) 1000 mg/L (Daphnia magna)

12.2. Persistence and degradability

Readily biodegradable

Substances	CAS Number	Persistence and Degradability
n-Methylpyrrolidone	872-50-4	(73% @ 28d)

12.3. Bioaccumulative potential

Does not bioaccumulate

Substances	CAS Number	Log Pow
n-Methylpyrrolidone	872-50-4	-0.46 BCF = 3.16

12.4. Mobility in soil

Substances	CAS Number	Mobility
n-Methylpyrrolidone	872-50-4	KOC = 20.94

12.5. Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment

n-Methylpyrrolidone	Not PBT/vPvB
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12.6. Other adverse effects**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

SECTION 13: Disposal Considerations
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13.1. Waste treatment methods**Disposal Method**

Disposal should be made in accordance with federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

SECTION 14: Transport Information
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IMDG/IMO

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

RID

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

ADR

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

IATA/ICAO

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

14.1. UN Number: Not restricted

14.2. UN Proper Shipping Name: Not restricted

14.3. Transport Hazard Class(es): Not applicable

14.4. Packing Group: Not applicable

14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User: None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory Information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**International Inventories**

EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering Classes (WGK) WGK 1: Low hazard to waters.

Substances	CAS Number	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization
n-Methylpyrrolidone	872-50-4	Use restricted. See item 30.	Not applicable

15.2. Chemical Safety Assessment

No information available

SECTION 16: Other Information**Full text of H-Statements referred to under sections 2 and 3**

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H335 - May cause respiratory irritation

H360 - May damage fertility or the unborn child

Key or legend to abbreviations and acronyms

bw – body weight

CAS – Chemical Abstracts Service

CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures

EC – European Commission

EC10 – Effective Concentration 10%

EC50 – Effective Concentration 50%

EEC – European Economic Community

ErC50 – Effective Concentration growth rate 50%

IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL0 – Lethal Loading 0%

LL50 – Lethal Loading 50%

MARPOL – International Convention for the Prevention of Pollution from Ships

mg/kg – milligram/kilogram

mg/L – milligram/liter

NIOSH – National Institute for Occupational Safety and Health

NOEC – No Observed Effect Concentration

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

PC – Chemical Product category

PEL – Permissible Exposure Limit

ppm – parts per million

PROC – Process category

REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

STEL – Short Term Exposure Limit

SU – Sector of Use category

Key literature references and sources for data

www.ChemADVISOR.com/

NZ CCID

Revision Date: 14-Sep-2015**Revision Note**

SDS sections updated: 1

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

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End of Safety Data Sheet