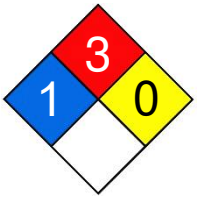
Material Safety Data Sheets



Revision 2

1. IDENTIFICATION

Product Name	**n-Hexane**
Other Names	N-Hexane
Code No	100-NH-2
Uses	Reaction Diluent, Solvent
Chemical Family	No Data Available
Chemical Formula	C_6H_{14}
Chemical Name	Hexane
Product Description	Dearomatised Hydrocarbons
Company	Arman sina.co
Contact Information	info@armansina.com www.armansina.com

2. HAZARD IDENTIFICATION

Hazard Categories

Dangerous For The Environment

Highly Flammable

Harmful

Risk Phrases

Highly flammable.

Irritating to skin.

Harmful : danger of serious damage to health by prolonged exposure through inhalation.

Toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment.

Possible risk of impaired fertility.

Harmful: may cause lung damage if swallowed.

Vapours may cause drowsiness and dizziness.

Safety Phrases

Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharges.

Wear suitable protective clothing and gloves.

Use appropriate containment to avoid environmental contamination.

Avoid release to the environment. Refer to special instructions/Material Safety Data Sheets.

If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Symbol

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
n-Hexane	C_6H_{14}	110-54-3	95 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	**Seek immediate medical attention. Do not induce vomiting.**
Eye	**Flush thoroughly with water. If irritation occurs, get medical assistance.**
Skin	**Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.**
Inhaled	**Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.** **Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.**
Advice to Doctor	**If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately. This light hydrocarbon material, or a component, may be associated with cardiac sensitisation following very high exposures (well above occupational exposure limits) or with concurrent exposure to high stress levels or heart-stimulating substances like epinephrine. Administration of such substances should be avoided.**
Medical Conditions Aggravated by Exposure	**Contains hexane; individuals with pre-existing neurological disease should avoid exposure.**

5. FIRE FIGHTING MEASURES

General Measures	**Flame-proof equipment is necessary in all areas where this chemical is being used. Nearby equipment must be earthed.**
Flammability Conditions	**Highly flammable. Vapour is flammable and heavier than air. Vapour may travel across the ground and reach remote ignition sources, causing a flashback fire danger.**
Extinguishing Media	**Use foam, dry chemical, or carbon dioxide (CO2) to extinguish flames.** **Inappropriate Extinguishing Media: Straight streams of water.**
Fire and Explosion Hazard	**Material can accumulate static charges which may cause an ignition. Material can release vapours that readily form flammable mixtures. Vapour accumulation could flash and/or explode if ignited.**
Hazardous Products of Combustion	**Smoke, Fume, Incomplete combustion products, Oxides of carbon.**
Special Fire Fighting Instructions	**Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapours and to protect personnel attempting to stop a leak. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Use water spray to cool fire exposed surfaces and to protect personnel.**
Personal Protective Equipment	**Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit.**
Flash Point	**-22ºC**
Lower Explosion Limit	**1.2 %**
Upper Explosion Limit	**8.3 %**
Auto Ignition Temperature	**No Data Available**
Hazchem Code	**3YE**

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	**In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.**

Clean Up Procedures	Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces. Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Allow liquid to evaporate from the surface. Seek the advice of a specialist before using dispersants. Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.
Containment	Stop leak if safe to do so.
Environmental Precautionary Measures	Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.
Evacuation Criteria	Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material. See Section 5 for fire fighting information. when applicable, H2S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

7. HANDLING AND STORAGE

Handling	Avoid breathing mists or vapour. Avoid contact with skin. Prevent exposure to ignition sources, for example use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapour may be evolved from heated or agitated material. Use only with adequate ventilation. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity). Loading/Unloading Temperature: [Ambient] Transport Temperature: [Ambient] Transport Pressure: [Ambient] Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.
Storage	Store in a cool, dry, well-ventilated, fire-proof area. Keep containers tightly sealed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Ground and bond storage containers. Store away from incompatible materials as listed in section 10. Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended. The container choice, for example storage vessel, may effect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Outside or detached storage preferred. Storage containers should be earthed and bonded. Fixed storage containers, transfer containers and associated equipment should be earthed and bonded to prevent accumulation of static charge. Storage Temperature: [Ambient]. Storage Pressure: [Ambient]. This product has a UN Classification of 1208 and a Dangerous Goods Class 3 (flammable) according to The AustralianCode for the Transport of Dangerous Goods By Road and Rail
Container	Suitable Containers/Packing: Tank Trucks; Railcars; Barges; Drums Suitable Materials and Coatings (Chemical Compatibility): Carbon Steel; Stainless Steel; Polyethylene; Polypropylene; Polyester; Teflon Unsuitable Materials and Coatings: Natural Rubber; Butyl Rubber; Ethylene-proplyene-diene monomer (EPDM); Polystyrene

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General

Exposure limits/standards (Note: Exposure limits are not additive):

SUBSTANCE NAME:	FORM:	LIMIT/STANDARD:	NOTE:	SOURCE: YEAR:
PELs				2006
n-Hexane		TWA: 50 ppm	Skin	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a

	5 day working week. These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.
Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
Engineering Measures	The level of protection and types of controls necessary will vary depending upon potential exposure conditions. A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Control measures to consider: Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.
Personal Protection Equipment	RESPIRATOR: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include: Half-face filter respirator Type A filter material. For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded. (AS1715/1716). EYES: If contact is likely, safety glasses with side shields are recommended (AS1336/1337). HANDS: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include: Chemical resistant gloves are recommended. Nitrile (AS2161). CLOTHING: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include: Chemical/oil resistant clothing is recommended and safety footwear (AS3765/2210).
Special Hazards Precaustions	PERSONAL PROTECTION: Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.
Work Hygienic Practices	Always observe good personal hygiene measures, such as washing 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Mild Petroleum/Solvent
Colour	Clear, Colourless
pH	No Data Available
Vapour Pressure	160 hpa (20 ºC)
Relative Vapour Density	2.9 (101 kPa - Calculated) Air = 1
Boiling Point	69ºC
Melting Point	-94 ºC
Freezing Point	No Data Available
Solubility	Negligible
Specific Gravity	No Data Available
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	14
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	0.66 g/cm3 (20 ºC)

Specific Heat	**No Data Available**
Molecular Weight	**86 g/mol**
Net Propellant Weight	**No Data Available**
Octanol Water Coefficient	**No Data Available**
Particle Size	**No Data Available**
Partition Coefficient	**No Data Available**
Saturated Vapour Concentration	**No Data Available**
Vapour Temperature	**No Data Available**
Viscosity	**No Data Available**
Volatile Percent	**No Data Available**
VOC Volume	**No Data Available**
Additional Characteristics	**Coefficient of Thermal Expansion: 0.00137 V/V/DEG C** **Relative Density (at 15 deg C): 0.68**
Potential for Dust Explosion	**Product is a flammable liquid**
Fast or Intensely Burning Characteristics	**No Data Available**
Flame Propagation or Burning Rate of Solid Materials	**No Data Available**
Non-Flammables That Could Contribute Unusual Hazards to a Fire	**No Data Available**
Properties That May Initiate or Contribute to Fire Intensity	**No Data Available**
Reactions That Release Gases or Vapours	**No Data Available**
Release of Invisible Flammable Vapours and Gases	**No Data Available**

10. STABILITY AND REACTIVITY

General Information	**Flammable liquid.**
Chemical Stability	**Product is stable under directed conditions of use, storage and temperature.**
Conditions to Avoid	**Avoid heat, sparks, open flames and other ignition sources.**
Materials to Avoid	**Incompatible with strong oxidizing agents.**
Hazardous Decomposition Products	**Material does not decompose at ambient temperatures. If involved in a fire, this product may generate Smoke, Fume, Incomplete combustion products, Oxides of carbon.**
Hazardous Polymerisation	**Hazardous polymerization will not occur.**

11. TOXICOLOGICAL INFORMATION

General Information	**Oral LD50: > 15000 mg/kg** **Dermal LD50: > 2000 mg/kg**
Other	**OTHER HEALTH EFFECTS FROM SHORT AND LONG TERM EXPOSURE:** **Anticipated health effects from sub-chronic, chronic, respiratory or skin sensitization, mutagenicity, reproductive toxicity, carcinogenicity, target organ toxicity (single exposure or repeated exposure), aspiration toxicity and other effects based on human experience and/or experimental data.** **For the product itself:** **Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema. Very high exposure (confined spaces / abuse) to light hydrocarbons may result in abnormal heart rhythm (arrhythmias). Concurrent high stress levels and/or co-exposure to high levels of hydrocarbons (above occupational exposure limits), and to heart-stimulating substances like epinephrine, nasal decongestants, asthma drugs, or cardiovascular drugs may initiate arrhythmias.** **Contains:**

	An ingredient or ingredients that are classified as toxic to a specific target organ from a repeated exposure. N-HEXANE: Prolonged and/or repeated exposures to n-Hexane can cause progressive and potentially irreversible damage to the peripheral nervous system (e.g. fingers, feet, arms, legs, etc.). Simultaneous exposure to Methyl Ethyl Ketone (MEK) or Methyl Isobutyl Ketone (MIBK) and n-Hexane can potentiate the risk of adverse effects from n-Hexane on the peripheral nervous system. n-Hexane has been shown to cause testicular damage at high doses in male rats. The relevance of this effect for humans is unknown. Additional information is available by request.
EyeIrritant	May be irritating to the eyes. May cause mild, short-lasting discomfort to eyes. Based on available literature.
Ingestion	Minimally Toxic. Based on available literature. Harmful: may cause lung damage if swallowed. Overexposure to n-hexane may cause effects on the peripheral nerves, resulting in weakness or numbness of lower limbs. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression.
Inhalation	Minimally Toxic. Based on available literature. Negligible hazard at ambient/normal handling temperatures. Overexposure to n-hexane may cause effects on the peripheral nerves, resulting in weakness or numbness of lower limbs. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression.
SkinIrritant	Overexposure to n-hexane may cause effects on the peripheral nerves, resulting in weakness or numbness of lower limbs. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression. Minimally Toxic. Based on available literature. Mildly irritating to skin with prolonged exposure.
Carcinogen Category	No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity	The information given is based on data available for the material, the components of the material, and similar materials. Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment. CYCLOHEXANE: L(E)C50 >0.1 - 1 mg/L
Persistence/Degradability	Biodegradation: Material -- Expected to be readily biodegradable. Atmospheric Oxidation: Material -- Expected to degrade rapidly in air
Mobility	Material -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.
Environmental Fate	Do NOT let product reach waterways, drains and sewers. OTHER ECOLOGICAL INFORMATION: VOC: Yes
Bioaccumulation Potential	No Data Available
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of in accordance with all local regulations. All empty packaging should be disposed of in accordance with Local Regulations or recycled/reconditioned at an approved facility.
Special Precautions for Land Fill	Contact a specialist disposal company or the local waste regulator for advice. Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

14. TRANSPORT INFORMATION

Land Transport

Proper Shipping Name	HEXANES
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
ERG	128 Flammable Liquids (Non-Polar / Water-Immiscible)
UN Number	1208
Hazchem	3YE
Pack Group	II
Special Provision	No Data Available

Sea Transport
IMDG Code

Proper Shipping Name	HEXANES
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
UN Number	1208
Hazchem	3YE
Pack Group	II
Special Provision	No Data Available
EMS	F-E,S
Marine Pollutant	Yes

Air Transport
IATA

Proper Shipping Name	HEXANES
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
UN Number	1208
Hazchem	3YE
Pack Group	II
Special Provision	No Data Available

15. OTHER INFORMATION

Revision	2
Key/Legend	< Less Than > Greater Than atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm Square Centimetres CO2 Carbon Dioxide COD Chemical Oxygen Demand Degrees Celcius Degrees Farenheit g Grams g/cm Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluable in each other. inHg Inch of Mercury

inH2O Inch of Water
K Kelvin
kg Kilogram
kg/m Kilograms per Cubic Metre
lb Pound
LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or L Litre
m Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m Milligrams per Cubic Metre
Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH2O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight