



SEPARATION SYSTEMS, INC.

Experts in Gas Chromatography

100 Nightingale Lane

Gulf Breeze, Florida 32561

US Sales: (850) 932-1433

Fax: (850) 934-8642

www.separationsystems.com

SAFETY DATA SHEET

Creation Date 08-Mar-2007

Revision Date 10-June-2017

Revision 2.3

1. Identification

Product Name: Retention Time (RT) and/or Response Factor (RF) Standard

Product Part Number: SD-SS3E-02, SD-SS3E-02Q, SD-SS3E-03, SD-SS3E-03-WG, SD-SS3E-04, SD-SS3E-05, SD-SS3E-05Q, & SD-SS3E-06

Synonyms Paraffin hydrocarbon mixture diluted in carbon disulfide, carbon disulfide, dithiocarbonic anhydride, sulphocarbonic anhydride, D2887 RT and RF Standard, RF Standard for D7169, RT Standard for D7169, RT Standard for D7213, RT Standard for D6352

Recommended Use Analytical Chemistry

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company

Separation Systems, Inc.

100 Nightingale Lane

Gulf Breeze, FL 32561

Tel: (850) 932-1433

Emergency Telephone Number

Call CHEMTREC, day or night:

Domestic North America 800-424-9300

International (703) 527-3887 (collect calls accepted)

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200):

Flammable liquids	Category 2
Acute Inhalation Toxicity - Vapors	Category 4
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Reproductive Toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS)	
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Liver, Kidney	

Label Elements

Signal Word

Danger

Hazard Statements

Highly flammable liquid and vapor

Harmful if inhaled

Causes skin irritation

Causes serious eye irritation

Suspected of damaging fertility

Suspected of damaging the unborn child

May cause drowsiness or dizziness

Retention Time (RT) and/or Response Factor (RF) Standard

Causes damage to organs through prolonged or repeated exposure



Precautionary Statements

Prevention

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.
Use only outdoors or in a well-ventilated area.
Wash face, hands and any exposed skin thoroughly after handling.
Wear eye/face protection.
Do not breathe dust/fume/gas/mist/vapors/spray.
Do not eat, drink or smoke when using this product.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.

Response

IF exposed or concerned: Get medical attention/advice.

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Skin

If skin irritation occurs: Get medical advice/attention.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash contaminated clothing before reuse.

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

Fire

In case of fire: Use CO₂, dry chemical, or foam for extinction.

Storage

Store locked up.
Store in a well-ventilated place. Keep container tightly closed.

Disposal

Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC)

None identified.

Other hazards

WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

3. Composition / information on ingredients

Product Information:				
Substance Name		CAS #	Percent	SARA 313
Retention Time and/or Response Factor Standard Mix		NONE	100	YES
Component Information:				
Ingredient Name		CAS #	Percent	SARA 313
n-Propane	C ₃ H ₈	74-98-6	0.0 – Trace	NO
i-Butane	C ₄ H ₁₀	75-28-5	0.0 – Trace	NO
n-Butane	C ₄ H ₁₀	106-97-8	0.0 – Trace	NO

Retention Time (RT) and/or Response Factor (RF) Standard

n-Pentane	C ₅ H ₁₂	109-66-0	0.0 – 0.1	NO
n-Hexane	C ₆ H ₁₄	110-54-3	0.0 – 0.1	YES
n-Heptane	C ₇ H ₁₆	142-82-5	0.0 – 0.1	NO
n-Octane	C ₈ H ₁₈	111-65-9	0.0 – 0.1	NO
n-Nonane	C ₉ H ₂₀	111-84-2	0.0 – 0.1	NO
n-Decane	C ₁₀ H ₂₂	124-18-5	0.01 – 0.1	NO
n-Undecane	C ₁₁ H ₂₄	1120-21-4	0.01 – 0.1	NO
n-Dodecane	C ₁₂ H ₂₆	112-40-3	0.01 – 0.1	NO
n-Tridecane	C ₁₃ H ₂₈	629-50-8	0.01 – 0.1	NO
n-Tetradecane	C ₁₄ H ₃₀	629-59-4	0.01 – 0.1	NO
n-Pentadecane	C ₁₅ H ₃₂	629-62-9	0.01 – 0.1	NO
n-Hexadecane	C ₁₆ H ₃₄	544-76-3	0.01 – 0.1	NO
n-Heptadecane	C ₁₇ H ₃₆	629-78-7	0.01 – 0.1	NO
n-Octadecane	C ₁₈ H ₃₈	593-45-3	0.01 – 0.1	NO
n-Nonadecane	C ₁₉ H ₄₀	629-92-5	0.0 – 0.1	NO
n-Eicosane	C ₂₀ H ₄₂	112-95-8	0.01 – 0.1	NO
n-Tetracosane	C ₂₄ H ₅₀	646-31-1	0.01 – 0.1	NO
n-Octacosane	C ₂₈ H ₅₈	630-02-4	0.01 – 0.1	NO
n-Dotriacontane	C ₃₂ H ₆₆	544-85-4	0.01 – 0.1	NO
n-Hexatriacontane	C ₃₆ H ₇₄	630-06-8	0.01 – 0.1	NO
n-Tetracontane crystalline	C ₄₀ H ₈₂	4181-95-7	0.01 – 0.1	NO
Polywax 655 / 500	-	9002-88-4	0.0 – 0.3	NO
n-Tetratetracontane	C ₄₄ H ₉₀	7098-22-8	0.01 – 0.1	NO
n-Pentacontane	C ₅₀ H ₁₀₂	6596-40-3	0.00-0.1	NO
Carbon Disulfide	CS ₂	75-15-0	>98	YES

N/A = not available

4. First-aid measures

General Advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Carefully remove contacts while flushing. Obtain medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Immediate medical attention is required.
Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately.
Most important symptoms/effects	Breathing difficulties. Symptoms of overexposure may include headache, dizziness, tiredness, nausea and vomiting. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Notes to Physician	Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media	CO ₂ , dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.
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Retention Time (RT) and/or Response Factor (RF) Standard

Unsuitable Extinguishing Media Water may be ineffective.

Auto-ignition Temperature 100 °C / 212 °F

Explosion Limits (% in Air)

Upper 60 vol %

Lower 1 vol %

Sensitivity to Mechanical Impact No information available

Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical

Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products

Carbon monoxide (CO), Carbon dioxide (CO₂), Sulfur oxides

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

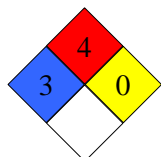
NFPA

Health
3

Flammability
4

Instability
0

Physical hazards
N/A



6. Accidental release measures

Personal Precautions

Use personal protective equipment. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing.

Environmental Precautions

Should not be released into the environment. See Section 12 for additional ecological information.

Methods for Containment and Clean Up

Remove all sources of ignition. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling

Use only under a chemical fume hood. Use spark-proof tools and explosion-proof equipment. Wear personal protective equipment. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Do not ingest. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Flammables area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Carbon disulfide	TWA: 1 ppm Skin	(Vacated) TWA: 4 ppm (Vacated) TWA: 12 mg/m ³ Ceiling: 30 ppm	IDLH: 500 ppm TWA: 1 ppm TWA: 3 mg/m ³

Retention Time (RT) and/or Response Factor (RF) Standard

		(Vacated) STEL: 12 ppm (Vacated) STEL: 36 mg/m ³ Skin TWA: 20 ppm	STEL: 10 ppm STEL: 30 mg/m ³
Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Carbon disulfide	TWA: 4 ppm TWA: 12 mg/m ³ STEL: 12 ppm STEL: 36 mg/m ³ Skin	TWA: 10 ppm TWA: 30 mg/m ³	TWA: 1 ppm Skin

Engineering Measures

Use only under a chemical fume hood. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Stench
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-111 °C / -167.8 °F
Boiling Point/Range	46 °C / 114.8 °F @ 760 mmHg
Flash Point	-30 °C / -22 °F
Evaporation Rate	No information available
Flammability (solid, gas)	Not applicable
Flammability or explosive limits (% in Air)	
Upper	60 vol %
Lower	1 vol %
Vapor Pressure	400 hPa @ 20 °C
Vapor Density	2.67 (Air = 1.0)
Relative Density	1.262 g/cm ³
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Auto-ignition Temperature	100 °C / 212 °F
Decomposition Temperature	No information available
Viscosity	0.363 cP at 20 °C

10. Stability and reactivity

Reactive Hazard

None known, based on information available.

Stability

Stable under normal conditions.

Conditions to Avoid

Excess heat. Incompatible products. Keep away from open flames, hot surfaces and sources of ignition.

Incompatible Materials

Oxidizing agents, Amines, Halogens, Fluorine, Metals, copper, Butyl rubber

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO₂), Sulfur oxides

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Carbon disulfide	3020 mg/kg (Rat)	Not Listed	25 g/m ³ (Rat) 2 h

Toxicologically Synergistic Products No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Other Adverse Effects Teratogenic effects have occurred in experimental animals.

Irritation Irritating to eyes and skin.

Sensitization No information available.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Carbon disulfide	75-15-0	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects Substances which cause concern for man owing to possible mutagenic effects but for which the available information is not adequate for making a satisfactory assessment

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)
STOT - repeated exposure Liver Kidney

Aspiration hazard No information available.

Symptoms / effects, both acute and delayed Symptoms of overexposure may include headache, dizziness, tiredness, nausea and vomiting. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Endocrine Disruptor Information

Component	EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Carbon disulfide	Group II Chemical	Not applicable	Not applicable

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Carbon disulfide	21 mg/L EC50 = 96 h	4 mg/L LC50 96 h 3 - 5.8 mg/L LC50 96 h	EC50 = 260 mg/L 15 min	2.1 mg/L EC50 = 48 h

Persistence and Degradability Persistence is unlikely based on information available.

Retention Time (RT) and/or Response Factor (RF) Standard

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
Carbon disulfide	1.9

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN No. UN1131
 Proper Shipping Name CARBON DISULFIDE
 Hazard Class 3
 Subsidiary Hazard Class 6.1
 Packing Group I

TDG

UN No. UN1131
 Proper Shipping Name CARBON DISULFIDE
 Hazard Class 3
 Subsidiary Hazard Class 6.1
 Packing Group I

IATA

UN No. UN1131
 Proper Shipping Name CARBON DISULPHIDE FORBIDDEN FOR IATA TRANSPORT
 Hazard Class 3
 Subsidiary Hazard Class 6.1
 Packing Group I

IMDG/IMO

UN No. UN1131
 Proper Shipping Name CARBON DISULPHIDE
 Hazard Class 3
 Subsidiary Hazard Class 6.1
 Packing Group I

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Carbon disulfide	X	X	-	200-843-6	-		X	X	X	X	X

Legend:

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

Retention Time (RT) and/or Response Factor (RF) Standard

U.S. Federal Regulations

TSCA 12(b)

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Carbon disulfide	75-15-0	>95	1.0

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Carbon disulfide	X	100 lb	-	-

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Carbon disulfide	X		-

OSHA Occupational Safety and Health Administration

Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Component	Hazardous Substances RQs	CERCLA EHS RQs
Carbon disulfide	100 lb	100 lb

California Proposition 65

This product contains the following Proposition 65 chemicals:

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Carbon disulfide	75-15-0	Developmental Female Reproductive Male Reproductive	-	Developmental

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Carbon disulfide	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security

This product contains the following DHS chemicals:

Component	DHS Chemical Facility Anti-Terrorism Standard
Carbon disulfide	15000 lb STQ

Other International Regulations

Mexico - Grade

Serious risk, Grade 3

Retention Time (RT) and/or Response Factor (RF) Standard

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Workplace Hazardous Materials Information System (WHMIS) Hazard Class:

B2 Flammable liquid

D1B Toxic materials

D2A Very toxic materials

D2B Toxic materials



16. Other information

References:	Not Available
Creation Date	08-Mar-2007
Revision Date	10-June-2017
Version:	2.3

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, expressed or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Separation Systems, Inc. be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Separation Systems Inc. has been advised of the possibility of such damages.