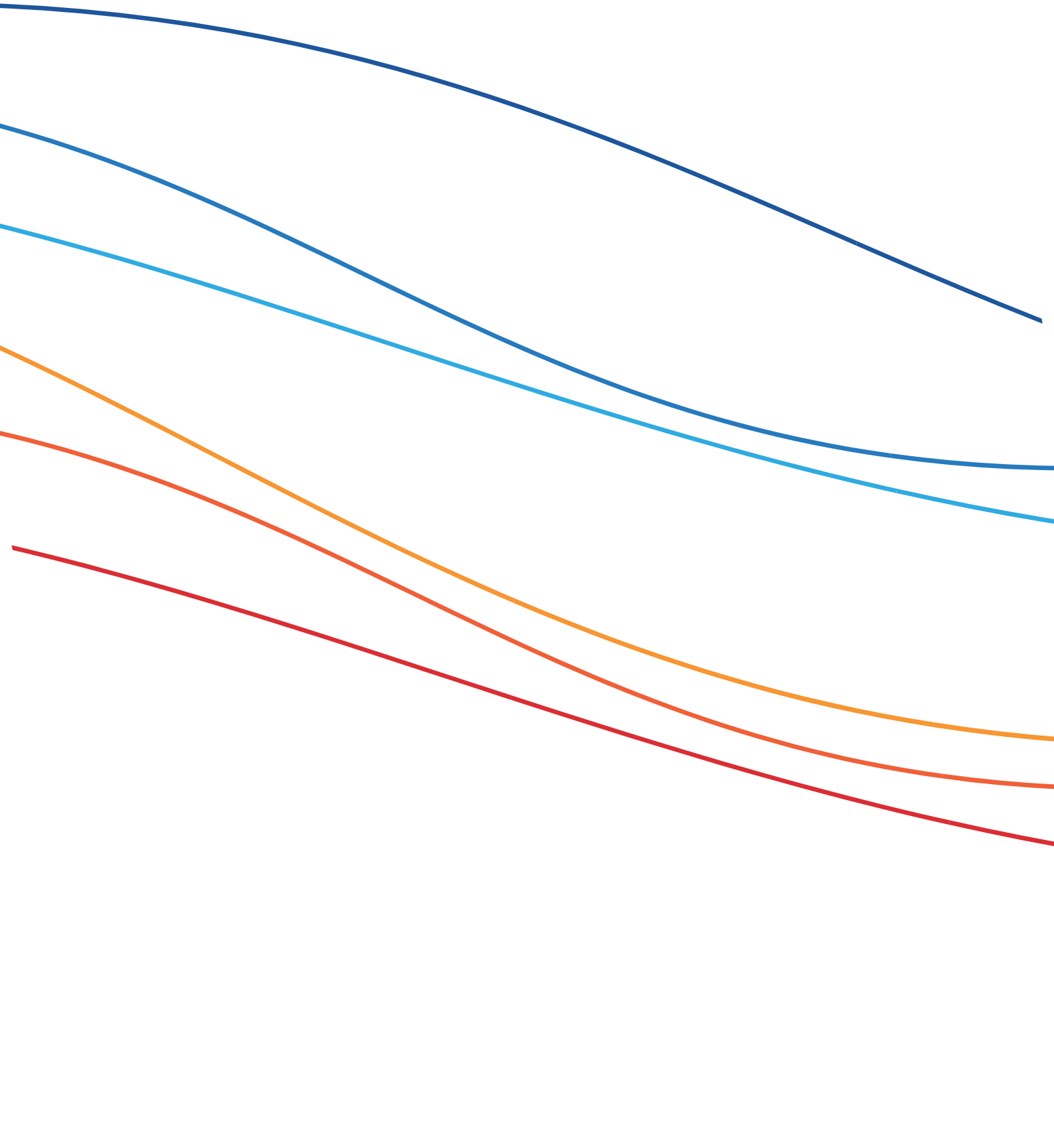
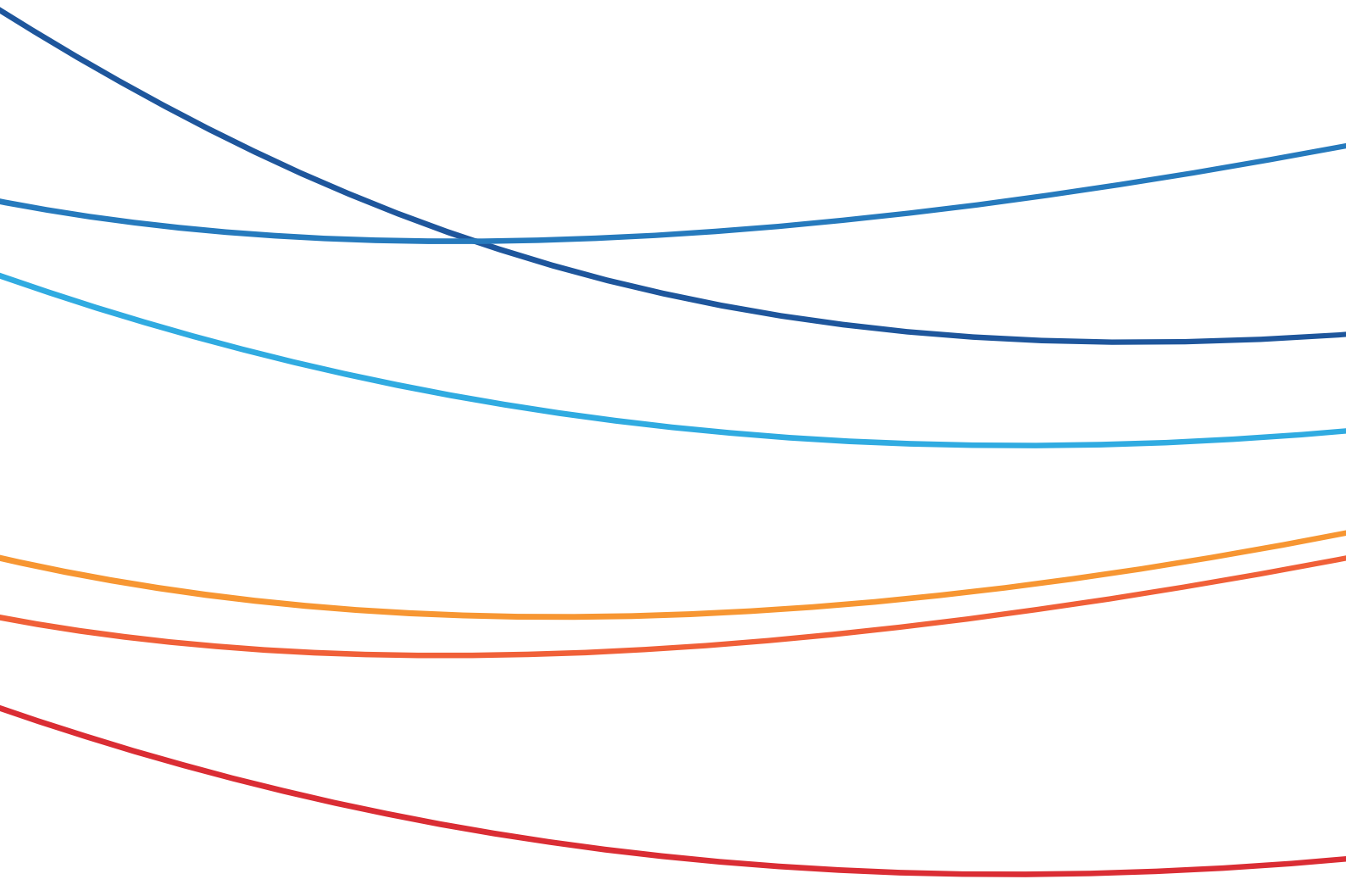

RUSPETROCHEM



Butene-1 MSDS



TECNIMONT	MATERIAL SAFETY DATA SHEET	B 5 / 3
		Sheet 1 of 2
SICIM	1-BUTENE	

SECTION I DEGREES AND SYMBOLS OF HAZARD

1	SLIGHT HEALTH HAZARD
4	EXTREMELY FLAMMABLE
0	NONREACTIVE

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(EEC symbols)

EEC No. 601-012-00-4

SECTION II PRODUCT IDENTIFICATION

CHEMICAL NAME AND SYNONYMS	1-BUTENE / n-Butene / Butylene / Ethylethylene		
TRADE AND / OR COMMON NAME	Butene		
CHEMICAL FAMILY	Olefin	UN No. 1012	CAS RN. 106-98-9
FORMULA	$CH_2=CHCH_2CH_3$		MOLECULAR WEIGHT 56.10

SECTION III HAZARDOUS INGREDIENTS

NAME OF INGREDIENTS	%	HAZARDOUS DATA	REFER.
1- BUTENE	100	Extremely flammable. TLV-TWA: 1000 ppm as LPG	19 21

SECTION IV PHYSICAL DATA

APPEARANCE AND ODOR	Colorless gas, lightly aromatic odor.	2	THRESHOLD ODOR CONC.	0.16 mg/m3	15
MELTING [X] FREEZING POINT	−185.3 °C	2	BOILING POINT	−6.3	2
SPECIFIC GRAVITY (H_2O = 1)	0.5951 at 20/4 °C (liquid)	3	VAPOR DENSITY (AIR = 1)	2.00 at 25 °C	51
DECOMPOSITION TEMPERATURE	Not available		VAPOR PRESSURE	2.63 bar at 21.1°C	51
EVAPORATION RATE	Gas		PERCENT VOLATILE BY VOLUME	Gas	
SOLUBLE IN	Alcohol, ether	27	SOLUBILITY IN WATER	Insoluble	3

SECTION V FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	−80 °C	2	AUTOIGNITION TEMPERATURE	385 °C	26
FLAMMABLE LIMITS IN AIR	LOWER 1.6 %		UPPER 10 %		26
EXTINGUISHING MEDIA	Dry chemical, carbon dioxide.				41
FIRE FIGHTING PROCEDURES	Shut the gas off. Approach from upwind side. Do not approach horizontal LPG tanks from the ends. Water can help disperse LPG vapors. If possible and no risk to surroundings, let fire burn itself out. Keep cylinders cool by spraying with water. Fight fire from sheltered location.				24 41
UNUSUAL FIRE AND EXPLOSION HAZARDS	Butene is heavier than air and will sink into low places. Explosion from vapor cloud can occur. The liquid floats and boils on water: flammable visible cloud is produced.				24 51

SECTION VI REACTIVITY DATA

STABILITY [ ] UNSTABLE [X] STABLE	CONDITIONS TO BE AVOIDED Contact with oxidizing agents.	2
INCOMPATIBILITY (Materials to be avoided) Aluminum tetrahydroborate (explodes after an induction period). Reacts with strong acids, halogens and nitrogen oxides. Reacts violently with strong oxidants.		17 41
HAZARDOUS DECOMPOSITION PRODUCTS	When heated to decomposition it emits acrid smoke and fumes.	2
HAZARDOUS POLYMERIZATION [X] MAY OCCUR [ ] WILL NOT OCCUR	CONDITIONS TO BE AVOIDED Contact with aluminum chloride or boron trifluoride.	51

Rev.	Description	Date	Drawn up	App'd
4				
3	Updated	Jan. '97	PRD	MAA
2	Updated	June '92	PRD	MAA
1	FIRST ISSUE	Mar. '86	CAM	GIO

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		Sheet 2 of 2
SICIM	1-BUTENE	

SECTION VII HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA 1-Butene and its isomers are similar in their pharmacological activity as asphyxiants and weak anesthetics. They are about 4.5 times as toxic as ethylene. Unless encountered in sufficient concentrations to cause asphyxia, these olefins do not appear to warrant serious consideration for their effects on the health of workman exposed to low concentrations for prolonged periods or to higher concentrations for relatively short period of time. 32

ROUTES OF EXPOSURE

INHALATION Prolonged inhalation of high concentrations has an anesthetic effect. May cause cough, dizziness, shortness of breath, drowsiness, unconsciousness. 30 41

SKIN CONTACT Contact with the liquid causes freezing of tissue and result in injury similar to thermal burn. In case of frostbite causes redness, pain, blisters. 30

SKIN ABSORPTION No evidence of systemic effects.

EYE CONTACT As a gas it produces slight or no irritation, liquid may cause redness, pain, impaired vision. 41

INGESTION Not applicable

EFFECTS OF OVEREXPOSURE Anesthetic effects. Asphyxia. 41

EMERGENCY AND FIRST AID PROCEDURES

INHALATION Remove from exposure. If breathing has stopped, start artificial respiration, give oxygen and call a doctor. 41

SKIN Defrost area with cold water before remove clothing.

EYES Flush with flowing water.

INGESTION Not pertinent.

SECTION VIII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN UPON LEAKAGE OF MATERIAL A liquid leak vaporizes almost immediately, chilling the air and making visible the vapor it contains. Shut off gas. 24
Evacuate danger area, call in an expert, ventilate, under no circumstances spray liquid with water. Remove all sources of ignition. 41

NEUTRALIZING CHEMICALS Not applicable

WASTE DISPOSAL METHOD Burn in a flare or in a furnace.

SECTION IX SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION Self-contained breathing apparatus, air-line gas mask.

HAND PROTECTION Insulating gloves **EYE PROTECTION** Goggles, face shield.

OTHER PROTECTIVE EQUIPMENT Flammable gas detectors.

VENTILATION REQUIREMENTS All indoor areas should be provided with continuous ventilation. If important leaks are possible, emergency ventilation system should be provided.

SECTION X STORAGE PRECAUTIONS AND MISCELLANEOUS

Storage tanks should be protected by deluge or sprinkler systems. Take precautionary measures against static discharges and electric storms. 23
Use non-sparking tools. No open flames, no smoking. Containers are to be filled max 0.5 kg/L. Avoid storage temperature above 30 °C. 23
Explosion-proof electrical equipment and lighting; grounding when pumping etc. in liquid form. Do not use compressed air when filling, emptying or processing. Flow, agitation etc. can cause build-up of electrostatic charge due to liquid's low conductivity. Store separate from oxidants. 41
Presumed to be able to form peroxides and thus to polymerize; check for peroxides: if found, render harmless. 41
Separate from incompatible/combustible materials.

REMARKS: **FOR REFERENCES, SYMBOLS AND EXPLANATIONS SEE TM 244.1**