SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: GRADE 593 SOLVENT
PRODUCT USE: Flexographic Ink Solvent
Not recommended for: Consumer Use
Manufacturer/Supplier:
PANNIER CORPORATION
207 SANDUSKY STREET
PITTSBURGH, PA 15212-5823 U.S.A.
412-323-4900
SALES@PANNIER.COM

24 Hr Emergency Telephone Number: INFOTRAC 800-535-5053

SECTION 2 - HAZARDS IDENTIFICATION

Physical hazards	Flammable liquids	Category 4
Health hazards	Acute toxicity, oral	Category 4
Acute toxicity	dermal	Category 4
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

Environmental hazards This mixture does not meet the classification criteria according to OSHA HazCom 2012.
OSHA defined hazards This mixture does not meet the classification criteria according to OSHA HazCom 2012.
Label elements

Signal word Warning

Hazard statement Combustible liquid. Harmful if swallowed. Harmful in contact with skin. Causes serious eye irritation. May cause respiratory irritation.
Precautionary statement Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid breathing mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing. Wear protective gloves/eye protection/face protection.
Response If swallowed: Call a poison center/doctor if you feel unwell. If on skin: Wash with plenty of water. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center/doctor if you feel unwell. Specific treatment (see this label). Rinse mouth. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.
Storage Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC) In high concentrations, vapors are anesthetic and may cause headache, fatigue, dizziness and central nervous system effects. Prolonged or repeated overexposure may cause kidney effects.
Supplemental information Not applicable.

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

Mixtures

Chemical name	Common name and synonyms	CAS number	%
ISOPHORONE	Not Available	78-59-1	90 - 100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

SECTION 4 - FIRST AID MEASURES

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact Wash off with soap and plenty of water. Call a POISON CENTER or doctor/physician if you feel

unwell. Get medical attention if irritation develops and persists.
Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion Rinse mouth. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
Most important symptoms/effects, acute and delayed
Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

SECTION 5 - FIRE FIGHTING MEASURES

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical Vapors may form explosive mixtures with air. The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. Vapors may travel considerable distance to a source of ignition and flash back. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards Combustible liquid.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors or mists. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up
Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material.
Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions Avoid discharge into drains, water courses or onto the ground.

SECTION 7 - HANDLING AND STORAGE

Precautions for safe handling Keep away from open flames, hot surfaces and sources of ignition. Do not taste or swallow. Avoid breathing mist or vapor. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. Avoid contact with clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Wash contaminated clothing before reuse.
Conditions for safe storage, including any incompatibilities
Store locked up. Keep away from heat, sparks and open flame. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Keep in an area equipped with sprinklers.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
ISOPHORONE (CAS 78-59-1)	PEL	140 mg/m3 25 ppm
US. ACGIH Threshold Limit Values Components	**Type**	**Value**
ISOPHORONE (CAS 78-59-1)	Ceiling	5 ppm
US. NIOSH: Pocket Guide to Chemical Hazards Components	**Type**	**Value**
ISOPHORONE (CAS 78-59-1)	TWA	23 mg/m3 4 ppm

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear eye/face protection. Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear protective gloves.

Other Wear appropriate chemical resistant clothing.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using, do not eat, drink or smoke. 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.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid.
Form	Liquid.
Color	Light yellow.
Odor	Camphor
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	17.42 °F (-8.1 °C)
Initial boiling point and boiling range	419.54 °F (215.3 °C)
Flash point	176.0 - 185.0 °F (80.0 - 85.0 °C) Closed Cup
Evaporation rate	Not Available
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit – lower (%)	0.8 %
Flammability limit – upper (%)	3.8 %
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0.4 hPa
Vapor density	5.7
Relative density	Not available.
Solubility(ies)	
Solubility (water)	12 g/l
Solubility (other)	Soluble in most organic solvents
Partition coefficient (n-octanol/water)	1.7
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	2.62 mPa·s
Viscosity temperature	68 °F (20 °C)
Other information	

Density	920.00 kg/m³
Specific gravity	0.92
Surface tension	32.3 mN/m

SECTION 10 - STABILITY AND REACTIVITY

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability Material is stable under normal conditions.
Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.
Conditions to avoid Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials Strong acids. Strong oxidizing agents. Amines.
Hazardous decomposition products No hazardous decomposition products are known.

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Ingestion Harmful if swallowed.
Inhalation Prolonged inhalation may be harmful. May cause irritation to the respiratory system.
Skin contact Harmful in contact with skin.
Eye contact Causes serious eye irritation.
Symptoms related to the physical, chemical and toxicological characteristics Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
Information on toxicological effects
Acute toxicity Harmful if swallowed. Harmful in contact with skin. May cause respiratory irritation. In high concentrations, vapors are anesthetic and may cause headache, fatigue, dizziness and central nervous system effects. Expected to be a low hazard for usual industrial or commercial handling by trained personnel.

Components	**Species**	**Test Results**
ISOPHORONE (CAS 78-59-1)		
Acute		
Inhalation LC50	Rat	1238 ppm, 4 hours
Oral		
LD50	Rat	1500 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation Causes serious eye irritation.
Respiratory or skin sensitization
Respiratory sensitization Not available.
Skin sensitization This product is not expected to cause skin sensitization.
Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) Not listed.
Reproductive toxicity This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure Respiratory tract irritation.
Specific target organ toxicity - repeated exposure Not classified.
Chronic effects Prolonged inhalation may be harmful. Prolonged or repeated overexposure may cause kidney effects.
Aspiration toxicity Not available.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		**Species**	**Test Results**
ISOPHORONE (CAS 78-59-1)			
Aquatic			
Acute			
Algae	EC50	Green Algae (Scenedesmus subspicatus)	475 mg/l, 72 hours
Crustacea	EC50	Water flea (Daphnia magna)	120 mg/l, 48 hours
Fish	LC50	Sheepshead minnow (Cyprinodon variegatus)	140 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.
Bioaccumulative potential Not available.
Partition coefficient n-octanol / water (log Kow)

Isophorone	1.67
ISOPHORONE	1.7

Mobility in soil No data available.
Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13 - DISPOSAL CONSIDERATIONS

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations Dispose in accordance with all applicable regulations.
Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

SECTION 14 - TRANSPORT INFORMATION

DOT
Not regulated as dangerous goods when shipped in 119 gallons or less. For containers over 119 gallons, use DOT BULK information

UN number	NA1993
DOT BULK (119 gallons or more)	
UN proper shipping name	Combustible liquid, n.o.s.
Transport hazard class(es)	
Class	Combustible liq
Label(s)	None
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB3, T1, T4, TP1
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	241
IATA	Not regulated as dangerous goods.
IMDG	Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code This substance/mixture is not intended to be transported in bulk.
DOT Bulk packaging type

SECTION 15 - REGULATORY INFORMATION

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D) Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)
ISOPHORONE (CAS 78-59-1) Listed.
SARA 304 Emergency release notification Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) Not listed.
Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No
SARA 302 Extremely hazardous substance Not listed.
SARA 311/312 Hazardous chemical No
SARA 313 (TRI reporting) Not regulated.
Other federal regulations
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List ISOPHORONE (CAS 78-59-1)
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130) Not regulated.
Safe Drinking Water Act (SDWA) Not regulated.
US state regulations
US. Massachusetts RTK - Substance List ISOPHORONE (CAS 78-59-1)
US. New Jersey Worker and Community Right-to-Know Act ISOPHORONE (CAS 78-59-1)
US. Pennsylvania Worker and Community Right-to-Know Law ISOPHORONE (CAS 78-59-1)
US. Rhode Island RTK ISOPHORONE (CAS 78-59-1)
US. California Proposition 65 California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.
International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico Toxic Substances Control Act (TSCA) Inventory		Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s)

SECTION 16 - OTHER INFORMATION

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