SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: GRADE 570 INK
PRODUCT USE: Flexographic Ink

CHEMICAL FAMILY: Mixture
CAS NO.: NOT AVAILABLE (MIXTURE)
DOT HAZARDOUS MATERIALS PROPER SHIPPING NAME: NON-RESTRICTED
INK DOT HAZARD CLASS: Not regulated
UN/NA ID NO.: NONE
HMIS CODES: 2H, 2F, 0R
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 1-800-535-5053

SECTION 2 - HAZARDS IDENTIFICATION

Classification of the substance or mixture
OSHA Regulatory Status This Product is Hazardous under the OSHA Hazard Communication Standard.
Physical hazards Flammable. Liquid 4 - H227
Health hazards Skin Irritant t. 2 - H315 Eye Irritant. 2A - H319
Environmental hazards

Pictogram

Label elements Not Classified
Warning
H227 Combustible liquid.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Comments Full list of Hazard Statements is found in Sec. 16 Precautionary statements

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370+P378 In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.
P403+P235 Store in a well-ventilated place. Keep cool.
P501 Dispose of contents/container in accordance with national regulations.

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

Mixtures

<table>
<thead>
<tr>
<th>HAZARDOUS COMPONENTS</th>
<th>CAS NUMBER</th>
<th>OCCUPATIONAL EXPOSURE LIMITS WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol monobutyl ether</td>
<td>112-34-5</td>
<td>N/est N/est 15-30</td>
</tr>
<tr>
<td>Ethylene glycol monobutyl ether</td>
<td>111-76-2</td>
<td>N/est 25 PPM 20-50</td>
</tr>
</tbody>
</table>

Glycol Ether DB
Classification
GRADE 570 INK

Revision 5/7/2017

SAFETY DATA SHEET

Page 2 of 6

Skin Irritant. 2 - H315
Eye Irritant. 2B - H320
STOT SE 3 - H335, H336
Glycol Ether EB
Classification
Flam. Liq. 4 - H227
Acute Tox. 4 - H302
Acute Tox. 3 - H311
Skin Irritant. 2 - H315
Eye Irritant. 2 - H319

SECTION 4 - FIRST AID MEASURES

Description of first aid measures

General information Consult a physician for specific advice. Show this Safety Data Sheet to the medical personnel.

Inhalation Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. If breathing stops, provide artificial respiration. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention immediately.

Ingestion Get medical attention immediately. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Do not induce vomiting unless under the direction of medical personnel.

Skin Contact Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing. Wash clothing and clean shoes thoroughly before reuse.

Eye contact Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes and get medical attention.

Protection of first aiders First aid personnel should wear appropriate protective equipment during any rescue.

Most important symptoms and effects, both acute and delayed

General information See Section 11 for additional information on health hazards.

Inhalation Gas or vapor in high concentrations may irritate the respiratory system. Vapor may affect central nervous system. Vapors may cause headache, fatigue, dizziness and nausea.

Ingestion May be harmful if swallowed. May cause nausea, headache, dizziness and intoxication.

Skin contact Prolonged or repeated contact with skin may cause irritation, redness and dermatitis.

Eye contact May cause irritation. A single exposure may cause the following adverse effects: Pain. Severe irritation, burning, tearing and blurred vision. Corneal damage.

SECTION 5 - FIRE FIGHTING MEASURES

Suitable extinguishing media Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing None known. media

Special hazards arising from the substance or mixture

Flammability Class 3.1 Combustible Liquid IIIA

Specific hazards Combustible liquid. Vapors are heavier than air and may spread near ground and travel a considerable distance to a source of ignition and flash back.

Hazardous combustion products Thermal decomposition or combustion products may include the following substances: Carbon dioxide (CO2). Carbon monoxide (CO).

Protective actions during firefighting Evacuate area. Stop leak if safe to do so. Use water to keep fire exposed containers cool and disperse vapors. Use water spray to reduce vapors.

Special protective equipment Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective for firefighters.clothing.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions No smoking, sparks, flames or other sources of ignition near spillage. Avoid contact with skin, eyes and clothing. Avoid inhalation of vapors. Wash thoroughly after dealing with a spillage.

Environmental precautions Avoid release to the environment.

Methods for cleaning up Eliminate all sources of ignition. Stop leak if safe to do so. Contain and absorb spillage with sand, earth or other non-combustible material. Dilute contained spill with water. Collect and place in suitable waste disposal containers and seal securely.

SECTION 7 - HANDLING AND STORAGE
Usage precautions
Wear protective clothing as described in Section 8 of this safety data sheet.

Advice on general
Do not eat, drink or smoke when using this product. Provide eyewash station and safety occupational hygiene shower. Good personal hygiene procedures should be implemented. Wash skin thoroughly after handling.

Storage precautions
Keep only in the original container in a cool, well-ventilated place.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits
Glycol Ether DB
Long-term exposure limit (8-hour TWA): ACGIH 10 ppm 67.5 mg/m³ inhalable fraction and vapor Glycol Ether EB
Long-term exposure limit (8-hour TWA): ACGIH 20 ppm 97 mg/m³
Long-term exposure limit (8-hour TWA): OSHA 50 ppm 240 mg/m³ A3, Sk
ACGIH = American Conference of Governmental Industrial Hygienists.
OSHA = Occupational Safety and Health Administration.
A3 = Confirmed Animal Carcinogen with Unknown Relevance to Humans. Sk = Danger of cutaneous absorption.
Ingredient comments
Data based on literature. Product not tested.
Glycol Ether EB (CAS: 111-76-2)

Appropriate engineering controls
This product contains ingredients with exposure limits, process enclosures, local exhaust ventilation or other engineering controls should be used to keep worker exposure below any statutory or recommended limits, if use generates dust, fumes, gas, vapor or mist. Use explosion-proof ventilating equipment.

Eye/face protection
Wear tight-fitting, chemical splash goggles or face shield.

Hand protection
It is recommended that chemical-resistant, impervious gloves are worn.

Other skin and body protection
Wear appropriate clothing to prevent repeated or prolonged skin contact.

Hygiene measures
Provide eyewash station and safety shower.

Respiratory protection
If ventilation is inadequate, suitable respiratory protection must be worn. Organic vapor filter.

Thermal hazards
If there is a risk of contact with hot product, all protective equipment worn should be suitable for use with high temperatures.

Environmental exposure controls
Keep container tightly sealed when not in use. Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Colored liquid.

Color
Various.

Odor
Ether.

Odor threshold
Not available.

pH
pH (concentrated solution): 6.0 - 8.5

Melting point
-75°C/-103°F

Initial boiling point and range
169°C/336°F @ 760 mm Hg

Flash point
67°C/153°F CC (Closed cup).

Evaporation rate
0.1 (butyl acetate = 1)

Upper/lower flammability or explosive limits

Upper flammable/explosive limit: 12.7 % vol

Lower flammable/explosive limit: 0.95 % vol

Vapour pressure
0.6 mm Hg @ 20°C/68°F

Vapour density
4.08

Relative density 2.016 g/cc 2016 g/l 16.79 lbs/gal

Solubility(ies)
Soluble in the following materials: Ether. Miscible with water.

Partition coefficient
log Pow: 0.83

Auto-ignition temperature
204°C/400°F

Decomposition Temperature
Not applicable.

Explosive properties
Not applicable.

Oxidising properties
Not applicable.

Comments
Information given is applicable to the product as supplied.

Volatile organic compound
This product contains a maximum VOC content of 439 g/l. This product contains a maximum VOC content of 3.66 lbs/gal.

SECTION 10 - STABILITY AND REACTIVITY
Reactivity  There are no known reactivity hazards associated with this product.
Stability   Stable at normal ambient temperatures and when used as recommended.
Possibility of hazardous reactions  Strong oxidizing agents.
Conditions to avoid  Avoid Heat, sparks, flames.
Materials to avoid  Avoid Strong oxidizing agents.
Hazardous decomposition products  Carbon dioxide (CO2). Carbon monoxide (CO).

SECTION 11 - TOXICOLOGICAL INFORMATION
Acute toxicity - oral  Data based on literature. Product not tested.
ATE oral (mg/kg)
Acute toxicity - dermal  3,676.47
ATE dermal (mg/kg)  8,088.24
Acute toxicity - inhalation
ATE inhalation (vapours mg/l)  80.88
Specific target organ toxicity - single exposure
Target organs  Central nervous system Eyes Gastro-intestinal tract Respiratory system, lungs Skin
Specific target organ toxicity - repeated exposure
Target organs  Central nervous system Eyes Gastro-intestinal tract Respiratory system, lungs Skin
Aspiration hazard  Not relevant.
Toxicological information on ingredients.
Glycol Ether EB
Acute toxicity - oral
ATE oral (mg/kg)
Acute toxicity - dermal  500.0
ATE dermal (mg/kg)
Acute toxicity - inhalation  1,100.0
ATE inhalation (vapours mg/l)
Carcinogenicity 11.0
IARC carcinogenicity  IARC Group 3  Not classifiable as to its carcinogenicity to humans.

SECTION 12 - ECOLOGICAL INFORMATION
Ecotoxicity  Data based on literature. Product not tested.
Glycol Ether EB  Acute toxicity - fish  LC₅₀, 96 hours: 220 mg/l, Fish
Bioaccumulative potential
Partition coefficient  log Pow: 0.83

SECTION 13 - DISPOSAL CONSIDERATIONS
General information  Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements.
Disposal methods  Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14 - TRANSPORT INFORMATION
UN Number  The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, DoT).
UN proper shipping name  Not applicable.
Transport hazard class(es)  No transport warning sign required.
Packing group  Not applicable.
Environmentally Hazardous Substance  No.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code  Not applicable.

SECTION 15 - REGULATORY INFORMATION
Regulatory Status  Hazardous Chemical
US Federal Regulations
SARA 313 Emission Reporting
Glycol Ether DB
1.0 %
Glycol Ether EB
1.0 %

US State Regulations
California Air Toxics "Hot Spots" (A-I)
Glycol Ether DB Present.
Glycol Ether EB Present.
California Directors List of Hazardous Substances The following ingredients are listed or exempt:
Glycol Ether EB Present.
Massachusetts "Right To Know" List The following ingredients are listed or exempt:
Glycol Ether EB Present.
Rhode Island "Right To Know" List The following ingredients are listed or exempt:
Glycol Ether EB
Minnesota "Right To Know" List
The following ingredients are listed or exempt:
Glycol Ether EB Present.
New Jersey "Right To Know" List The following ingredients are listed or exempt:
Glycol Ether EB Present.
Pennsylvania "Right To Know" List The following ingredients are listed or exempt:
Glycol Ether EB Present.
EU - EINECS/ELINCS
All the ingredients are listed or exempt.
Canada - DSL/NDSL
All the ingredients are listed or exempt.
US - TSCA
All the ingredients are listed or exempt.
Australia - AICS
The following ingredients are listed or exempt:
Glycol Ether DB
Glycol Ether EB
Japan - MITI
The following ingredients are listed or exempt:
Glycol Ether DB
Glycol Ether EB
Korea - KECI
The following ingredients are listed or exempt:
Glycol Ether DB Glycol Ether EB
China - IECSC
The following ingredients are listed or exempt:
Glycol Ether DB
Glycol Ether EB
Philippines - PICCS
The following ingredients are listed or exempt:
Glycol Ether DB
Glycol Ether EB

SECTION 16 - OTHER INFORMATION

General information Containers of this material may be hazardous when emptied, all hazard precautions given in the data sheet must be observed.

Hazard statements in full
H227 Combustible liquid.
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H320 Causes eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

NFPA - flammability hazard Burns only if heated moderately. (2)
NFPA - health hazard  Temporary incapacitation, injury. (2)
NFPA - instability hazard  Normally stable. (0)
ACA HMIS Health rating  Moderate hazard. (2) Chronic hazard.
ACA HMIS Physical hazard rating  Normally stable. (0)
ACA HMIS Personal protection rating  C
ACA HMIS Flammability  Burns only if heated moderately. (2)

DISCLAIMER OF LIABILITY
THE INFORMATION IN THIS MSDS WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE
RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY REPRESENTATION OR
WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS ACCURACY OR CORRECTNESS. THE
CONDITIONS OR METHODS OF HANDLING, STORAGE, USE AND DISPOSAL OF THE PRODUCT ARE
BEYOND OUR CONTROL AND MAY BE BEYOND OUR KNOWLEDGE. FOR THIS AND OTHER REASONS,
WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE
OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE
OR DISPOSAL OF THE PRODUCT