



GL Specialized Inks (Pty) Ltd

Material Safety Data Sheet

Conforms to EU Directive 91/155/EC and ISO 11014-1

Product name : HT Series Vinyl Screen Inks

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Version : 1.00

Date of issue : 12/12/2005.

Date of previous issue : No previous validation.

1. Identification of the substance/preparation and of the company

Product name : HT Series Vinyl Screen Inks
Product code : 460
Use of the substance/preparation : Screen Ink
Supplier : GL Specialized Inks (Pty) Ltd
 8 Hawthorne Place, Mahogany Ridge, Pinetown, Durban
 36 Roper Street, New Centre, Johannesburg
 19 Vierlanden Street, Durbanville, Cape Town
Emergency telephone number : 031 - 700 6455
 011 - 493 0383
 021 - 975 5240

2. Composition/information on ingredients

Chemical characterization : Mixture.

Ingredient name	CAS number	%	EC number	Classification
resin mixtures		15 - 25		Not classified.
pigment mixture		0 - 35		Not classified.
titanium dioxide	13463-67-7	0 - 45	236-675-5	Not classified.
2-Butoxyethyl acetate	112-07-2	15 - 25	203-933-3	Xn; R20/21
lead sulfochromate yellow	1344-37-2	0 - 35	215-693-7	Carc. Cat. 3; R40 Repr. Cat. 1; R61 Repr. Cat. 3; R62 R33
lead chromate molybdate sulfate red	12656-85-8	0 - 35	235-759-9	N; R50/53 Carc. Cat. 3; R40 Repr. Cat. 1; R61 Repr. Cat. 3; R62 R33
solvent naphtha (petroleum), light arom.	64742-95-6	10 - 15	265-199-0	N; R50/53 Xn; R65
gamma butyrolactone	96-48-0	8 - 15	202-509-5	Xn; R22
2-Ethoxyethyl acetate	111-15-9	8 - 15	203-839-2	Repr. Cat. 2; R60, R61 Xn; R20/21/22
copper	7440-50-8	0 - 15	231-159-6	N; R50/53
cyclohexanone	108-94-1	3 - 8	203-631-1	R10 Xn; R20 Xi; R36
aluminium	7429-90-5	0 - 10	231-072-3	F; R15 R10
2-butoxyethanol	111-76-2	2 - 8	203-905-0	Xn; R20/21/22 Xi; R36/38
carbon black	1333-86-4	0 - 8	215-609-9	Not classified.
n-Methyl-2-pyrrolidone	872-50-4	2 - 5	212-828-1	Xi; R36/38
See section 16 for the full text of the R-phrases declared above				

Occupational exposure limits, if available, are listed in section 8.

This MSDS covers all formulations in the the range. Not all of the components listed will be present in an individual formulation. Formulae specific MSDS available on request.

3. Hazards identification

The preparation is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification	: Carc. Cat. 3; R40 Repr. Cat. 1; R61 Repr. Cat. 2; R60 Xn; R20/21/22 R33 N; R50/53
Physical/chemical hazards	: No known significant effects or critical hazards.
Human health hazards	: Harmful by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Limited evidence of a carcinogenic effect. May impair fertility. May cause harm to the unborn child.
Environmental hazards	: Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

See section 11 for more detailed information on health effects and symptoms.

4. First aid measures

Inhalation	: Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Ingestion	: Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact	: Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Get medical attention. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Eye contact	: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

See section 11 for more detailed information on health effects and symptoms.

5. Fire-fighting measures

Extinguishing media	
Suitable	: In case of fire, use water spray (fog), foam or dry chemical.
Not suitable	: None known.
Special exposure hazards	: No specific hazard. This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous thermal decomposition products	: These products are carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂ etc.). Some metallic oxides.
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Remark	: Fine powder forms flammable and explosive mixtures in air. (copper)

6. Accidental release measures

Personal precautions	: Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.
Environmental precautions	: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. :

Methods for cleaning up If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

7. Handling and storage

Handling : Do not ingest. Avoid prolonged contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Avoid contact of spilled material and runoff with soil and surface waterways. Wash thoroughly after handling.

Storage : Sensitive to light. Keep container tightly closed and sealed until ready for use. Keep container in a cool, well-ventilated area. Avoid all possible sources of ignition (spark or flame).

Packaging materials

Recommended : Use original container.

8. Exposure controls/personal protection

Ingredient name	Occupational exposure limits
titanium dioxide	<p>ACGIH (United States). TWA: 10 mg/m³</p> <p>ACGIH TLV (United States, 1/2004). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen. 1996 Adoption Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) :36338-33351, June 30, 1993, for revised OSHA PEL. Refers to Appendix A – Carcinogens.</p>
2-Butoxyethyl acetate	<p>TWA: 10 mg/m³ 8 hour/hours. Form: All forms</p> <p>EU OEL (Europe, 4/2004). Skin Notes: Indicative STEL: 333 mg/m³ 15 minute/minutes. Form: All forms STEL: 50 ppm 15 minute/minutes. Form: All forms TWA: 133 mg/m³ 8 hour/hours. Form: All forms TWA: 20 ppm 8 hour/hours. Form: All forms</p>
2-Ethoxyethyl acetate	<p>ACGIH TLV (United States, 1/2004). Skin Notes: Substances for which there is a Biological Exposure Index or Indices TWA: 27 mg/m³ 8 hour/hours. Form: All forms</p>
copper	<p>TWA: 5 ppm 8 hour/hours. Form: All forms</p> <p>ACGIH TLV (United States, 1/2004). Notes: Adopted Values enclosed are those for which changes are proposed. Consult the Notice of Intended Changes for current proposal. See Notice of Intended changes. TWA: 1 mg/m³ 8 hour/hours. Form: All forms</p> <p>ACGIH TLV (United States, 1/2004). Notes: Adopted Values enclosed are those for which changes are proposed. Consult the Notice of Intended Changes for current proposal. Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) :36338-33351, June 30, 1993, for revised OSHA PEL. See Notice of Intended changes.</p>
cyclohexanone	<p>TWA: 0.2 mg/m³ 8 hour/hours. Form: Fume</p> <p>EU OEL (Europe, 4/2004). Skin Notes: Indicative STEL: 81.6 mg/m³ 15 minute/minutes. Form: All forms STEL: 20 ppm 15 minute/minutes. Form: All forms TWA: 40.8 mg/m³ 8 hour/hours. Form: All forms TWA: 10 ppm 8 hour/hours. Form: All forms</p>
aluminium	<p>ACGIH (United States). Notes: Respirable TWA: 5 mg/m³</p> <p>ACGIH TLV (United States). Notes: Total TWA: 15 mg/m³ 8 hour/hours.</p> <p>ACGIH TLV (United States, 1/2004). TWA: 5 mg/m³ 8 hour/hours. Form: All forms TWA: 10 mg/m³ 8 hour/hours. Form: Dust TWA: 5 mg/m³ 8 hour/hours. Form: Fume</p>
2-butoxyethanol	<p>EU OEL (Europe, 6/2000). Skin STEL: 246 mg/m³ 15 minute/minutes. Form: All forms STEL: 50 ppm 15 minute/minutes. Form: All forms TWA: 98 mg/m³ 8 hour/hours. Form: All forms TWA: 20 ppm 8 hour/hours. Form: All forms</p>
carbon black	<p>ACGIH TLV (United States, 1/2004). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen. 1996 Adoption Refers to Appendix A – Carcinogens. TWA: 3.5 mg/m³ 8 hour/hours. Form: All forms</p>

Occupational exposure controls : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are close to the workstation location.

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Respiratory protection	: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: Neoprene gloves. Nitrile gloves.
Eye protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.
Skin protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

9. Physical and chemical properties

General information

Appearance

Physical state	: Liquid. (Viscous liquid.)
Color	: Various
Odor	: Characteristic.
Odor threshold	: The lowest known value is 0.88 ppm (cyclohexanone)

Important health, safety and environmental information

Boiling point	: >150°C (302°F)
Melting point	: May start to solidify at -23.99°C (-11.2°F) based on data for: n-methyl-2-pyrrolidone.
Flash point	: Closed cup: 71°C (159.8°F). (Setaflash.)
Explosive properties	: Explosive in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Explosion limits	: The greatest known range is Lower: 1.2% Upper: 12.7% (2-Ethoxyethyl acetate)
Vapor pressure	: The highest known value is 28.3 kPa (212 mm Hg) (at 20°C) (2-butoxyethanol).
Solubility	: Partially soluble in methanol, diethyl ether, n-octanol, acetone. Insoluble in cold water, hot water.
Octanol/water partition coefficient	: The product is much more soluble in octanol.
Vapor density	: The highest known value is 5.5 (Air = 1) (2-butoxyethyl acetate).
Evaporation rate (butyl acetate = 1)	: The highest known value is 0.3 (cyclohexanone) compared with Butyl acetate.

Other information

Auto-ignition temperature	: The lowest known value is 244°C (471.2°F) (2-butoxyethanol).
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10. Stability and reactivity

Stability	: The product is stable.
Conditions to avoid	: Sensitive to light. Avoid all possible sources of ignition (spark or flame).
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials, reducing materials, organic materials, acids and alkalis.
Hazardous decomposition products	: Evolves toxic fumes when heated to decomposition.

11. Toxicological information

Potential acute health effects

Inhalation	: Harmful by inhalation.
Ingestion	: Harmful if swallowed.
Skin contact	: Harmful in contact with skin.
Eye contact	: Mildly irritating to the eyes.

Acute toxicity

<u>Product/ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
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2-Butoxyethyl acetate	LD50	2400 mg/kg	Oral	Rat
	LD50	3200 mg/kg	Oral	Mouse
	LD50	1500 mg/kg	Dermal	Rabbit
solvent naphtha (petroleum), light arom.	LD50	8400 mg/kg	Oral	Rat
	LD50	>2150 mg/kg	Oral	quail
	LC50	10200 mg/m ³ (4 hour/hours)	Inhalation	Rat.
gamma butyrolactone	LD50	1540 mg/kg	Oral	Rat
	LD50	1460 mg/kg	Oral	Mouse
2-Ethoxyethyl acetate	LD50	2700 mg/kg	Oral	Rat
	LD50	1950 mg/kg	Oral	Rabbit
	LD50	1910 mg/kg	Oral	Guinea pig
	LD50	>19460 mg/kg	Dermal	Guinea pig
	LC50	2000 mg/m ³ (4 hour/hours)	Inhalation	Rat.
cyclohexanone	LC50	10811 mg/m ³ (4 hour/hours)	Inhalation	Rat.
	LD50	1400 mg/kg	Oral	Mouse
	LDLo	1600 mg/kg	Oral	Rabbit
2-butoxyethanol	LD50	470 mg/kg	Oral	Rat
	LD50	300 mg/kg	Oral	Rabbit
	LD50	1200 mg/kg	Oral	Guinea pig
	LD50	220 mg/kg	Dermal	Rabbit
carbon black	LD50	>15400 mg/kg	Oral	Rat
	LD50	>3000 mg/kg	Dermal	Rabbit
n-Methyl-2-pyrrolidone	LD50	3914 mg/kg	Oral	Rat
	LD50	5130 mg/kg	Oral	Mouse

Potential chronic health effects

<u>Ingredient name</u>	<u>Carcinogenic effects</u>	<u>Mutagenic effects</u>	<u>Developmental toxicity</u>	<u>Impairs fertility</u>
lead sulfochromate yellow	Carc. Cat. 3; R40	-	Repr. Cat. 1; R61	Repr. Cat. 3; R62
lead chromate molybdate	Carc. Cat. 3; R40	-	Repr. Cat. 1; R61	Repr. Cat. 3; R62
sulfate red				
2-Ethoxyethyl acetate	-	-	Repr. Cat. 2; R61	Repr. Cat. 2; R60

- Carcinogenicity** : Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure.
- Mutagenicity** : No known significant effects or critical hazards.
- Reproductive toxicity** : Contains material which can cause birth defects.

Over-exposure signs/symptoms

- Inhalation** : Inhalation of vapors may cause dizziness, an irregular heartbeat, narcosis, nausea or asphyxiation.
- Ingestion** : Ingestion may cause nausea, weakness and central nervous system effects.
- Skin** : Repeated skin exposure can produce local skin destruction or dermatitis.
- Target organs** : Contains material which causes damage to the following organs: blood, kidneys, lungs, the nervous system, the reproductive system, liver, mucous membranes, lymphatic system, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea

12. Ecological information

Ecotoxicity data

<u>Ingredient name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>	
titanium dioxide	Daphnia magna (EC50)	48 hour/hours	>1000 mg/l	
	Lepomis macrochirus (LC50)	96 hour/hours	41 mg/l	
	Pimephales promelas (LC50)	96 hour/hours	42.1 mg/l	
	Pimephales promelas (LC50)	96 hour/hours	42.2 mg/l	
	Pimephales promelas (LC50)	96 hour/hours	42.8 mg/l	
	Lepomis macrochirus (LC50)	96 hour/hours	45 mg/l	
	Lepomis macrochirus (LC50)	96 hour/hours	52 mg/l	
	copper	Daphnia magna (EC50)	48 hour/hours	0.0318 mg/l
		Daphnia magna (EC50)	48 hour/hours	0.036 mg/l
		Daphnia magna (EC50)	48 hour/hours	0.055 mg/l
Pimephales promelas (LC50)		96 hour/hours	0.0094 mg/l	
Pimephales promelas (LC50)		96 hour/hours	0.0103 mg/l	
Pimephales promelas (LC50)		96 hour/hours	0.0278 mg/l	
cyclohexanone	Pimephales promelas (LC50)	96 hour/hours	527 mg/l	
	Pimephales promelas (LC50)	96 hour/hours	630 mg/l	
	Pimephales promelas (LC50)	96 hour/hours	732 mg/l	
aluminium	Oncorhynchus mykiss (LC50)	96 hour/hours	0.12 mg/l	
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.16 mg/l	
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.31 mg/l	
2-butoxyethanol	Lepomis macrochirus (LC50)	96 hour/hours	1490 mg/l	

Other ecological information

Persistence/degradability

<u>Ingredient name</u>	<u>BOD₅</u>	<u>COD</u>	<u>ThOD</u>
2-Ethoxyethyl acetate	>1 g O ₂ /g [10 - 20 d]	-	-
2-butoxyethanol	>1 g O ₂ /g [10 d]	-	-
<u>Ingredient name</u>	<u>Aquatic half-life</u>	<u>Photolysis</u>	<u>Biodegradability</u>
2-Butoxyethyl acetate	9 to 70 day/days	<1 day/days.	Inherent
gamma butyrolactone	-	7 day/days.	-
2-Ethoxyethyl acetate	24 to 180 day/days	-	Readily
copper	> 100 day/days	-	Not readily
cyclohexanone	4.1 to 33 day/days	1.3 day/days.	Inherent
2-butoxyethanol	-	1 day/days.	Readily
n-Methyl-2-pyrrolidone	-	<1 day/days.	Readily

Bioaccumulative potential




<u>Ingredient name</u>	<u>LogP_{ow}</u>	<u>BCF</u>	<u>Potential</u>
2-Butoxyethyl acetate	-	3	low
gamma butyrolactone	-0.64	3.2	low
2-Ethoxyethyl acetate	-	1	low
copper	-	1000	high
cyclohexanone	0.81	2.4	low
2-butoxyethanol	-	2.5	low
n-Methyl-2-pyrrolidone	-0.54	0.23	low

Other adverse effects : Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

13. Disposal considerations

Methods of disposal : Hazardous chemical waste.
Waste must be disposed to a landfill permitted in terms of the Department of Water Affairs and Forestry's minimum requirements for waste disposal to landfill, and the minimum requirements for the handling, classification and disposal of hazardous waste.

14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
ADR / SANS 10228 Class	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	9	III		Hazard identification number 90 Limited quantity LQ7 CEFIC Tremcard 90GM6-III
IMDG Class	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	9	III		Emergency schedules (EmS) F-A, S-F
IATA Class	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	9	III		Passenger and Cargo Aircraft Packaging instructions: 914 Cargo Aircraft Only Packaging instructions: 914 Limited Quantities - Passenger Aircraft Quantity limitation: 30 kg Packaging instructions: Y914

15. Regulatory information**SANS 10265 / EU Regulations****Hazard symbol/symbols**

Toxic, Dangerous for the environment.

Risk phrases

- : R40- Limited evidence of a carcinogenic effect.
- R61- May cause harm to the unborn child.
- R60- May impair fertility.
- R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
- R33- Danger of cumulative effects.
- R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases

- : S53- Avoid exposure - obtain special instructions before use.
- S36/37- Wear suitable protective clothing and gloves.
- S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

Contains

- : lead sulfochromate yellow 215-693-7
- lead chromate molybdate sulfate red 235-759-9
- 2-Ethoxyethyl acetate 203-839-2

Product use

- : Classification and labeling have been performed according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and the intended use.
- Industrial applications.

16. Other information**Full text of R-phrases referred to in sections 2 and 3 - Europe**

- : R15- Contact with water liberates extremely flammable gases.
- R10- Flammable.
- R40- Limited evidence of a carcinogenic effect.
- R61- May cause harm to the unborn child.
- R60- May impair fertility.
- R62- Possible risk of impaired fertility.
- R20- Harmful by inhalation.
- R20/21- Harmful by inhalation and in contact with skin.
- R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
- R22- Harmful if swallowed.
- R65- Harmful: may cause lung damage if swallowed.
- R36- Irritating to eyes.
- R36/38- Irritating to eyes and skin.
- R33- Danger of cumulative effects.
- R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Prepared by

- : GL Inks EHS

Notice to reader

This MSDS summarises at the date of issue our best knowledge of the health, safety and environmental hazard information related to the product and, in particular, how to safely handle, use, and transport the product in the workplace. Since GL Specialized inks (Pty) Ltd cannot anticipate or control the conditions under which the product may be handled, used, stored or transported, each user must, prior to usage, review the MSDS in the context of how the user intends to handle, use, store or transport the product in the workplace and beyond; and communicate such information to all relevant parties. If clarification, or further information is required to ensure that an appropriate assessment can be made, the user should contact the company.

We shall not assume any liability of the accuracy or completeness of the information contained herein, or any advice given, unless there has been gross negligence on our part. In such an event, or liability shall be limited only to direct damages suffered. Our responsibility for the product as sold is subject to our standard terms and conditions. All risk with possession and application of the product passes on delivery.