APPLIED TECHNOLOGY DEVELOPMENTS LIMITED

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MATERIAL SAFETY DATA SHEET

MSDS Ref: MSDS0022	EMERGENCY NUMBERS
Valid from: 1st March 2002	Tel: +44 1858 461014
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Section 1: PRODUCT IDENTIFICATION

Product Identifier: V300 Black Ink

Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

Description: Black glycol based ink with glycol ethers as co-solvents.

Component	CAS#	%	OSHA PEL	ACGIH TLV	NIOSH	German MAK	Symbol	R-Phrase
Triethylene glycol	112-27-6	40-60	N.E.*	N.E.	N.E.	N.E.	Xi	R36/37/38
Butoxytriglycol	143-22-6	20-30	N.E.	N.E.	N.E.	N.E.	Xi	R36/37/38
Triethylene Glycol Methyl Ether	112-35-6	10-20	N.E.	N.E.	N.E.	N.E.	Xi	R36/37/38
Direct Black 184	Proprietary	5-10	N.E.	N.E.	N.E.	N.E.	Xi	R36
Solvent Black 29***	Proprietary	1-5	N.E.	N.E.	N.E.	None	None	None

* Not established

*** trivalent chromium concentration in this complex is 5.8%.

Chromium is actually a necessary trace element both in the human body and in nature. Trivalent chromium compounds have very low orders of toxicity, are not carcinogenic, and are not very harmful to the environment. Hexavalent chromium compounds, on the other hand, are highly toxic, usually carcinogenic, and very damaging to the environment. The trivalent chromium in this ink is safe when used as intended.

Section 3: potential health effects. Section 11: available toxicity information. Section 15: regulatory information.

Section 3: HAZARDS IDENTIFICATION

Emergency Overview: This ink contains a component that is a severe eye irritant . Irritating to eyes, skin and respiratory tract. Avoid breathing vapours.

NFPA Hazard Ratings: Health: 1 Flammability: 1 Reactivity: 0

Potential Health Affects

Eye Contact: Testing has established that this ink is a moderate eye irritant. May cause redness and pain.

Skin Contact: Symptoms of over-exposure include redness, swelling, pain.

Ingestion: May cause nausea and vomiting

Inhalation: May cause coughing, nausea, sore throat

Chronic: Prolonged or widespread skin contact may result in the absorption of potentially harmful amounts of material. May cause skin burns and blisters. Chronic exposure may cause anemia and other blood effects. Ingestion of very large amounts of the ink may cause reproductive problems (see section 11).

Section 4: EMERGENCY AND FIRST AID MEASURES

Eye Contact: Do not remove contact lenses. Flush with copious amounts of water for 15 minutes. Seek medical advice immediately.

Skin Contact:	Wash with soap and water. Remove contaminated clothing and launder before reuse.
Ingestion:	Swallowing less than an ounce will not cause significant harm and does not require any emergency treatment. Nothing should be administered orally to a victim who is losing con sciousness, unconscious or convulsing. Do not induce vomiting. For larger amounts, give one or two glasses of water to drink to a conscious patient. Seek medical advice.
Inhalation:	If exposed to excessive levels of vapour or mist, remove to fresh air. For breathing difficulty, give oxygen. If cough or other symptoms develop, seek medical advice.
	In any case of persistent irritation, seek medical advice.

Section 5: FIRE & EXPLOSION HAZARD DATA

Flashpoint And Method:	>230°F (>110°C) PMCC (est.)
Flammable Limits:	None established.
Autoignition Temperature:	Not established
Extinguishing Media:	Dry chemical, Carbon dioxide, or regular foam.
Special Fire Fighting Procedures:	Wear self-contained breathing apparatus and full turn-out gear. Dyke liquids to prevent run-off to sewers and waterways. Collect for disposal.
Unusual Fire & Explosion Hazards:	Frothing may occur when a solid stream of water or foam is directed into hot burning pools.
Hazardous Decomposition Products:	Oxides of Carbon and Nitrogen.

Section 6: ACCIDENTAL RELEASE MEASURES

General:	Wear appropriate protective clothing and equipment. Ensure disposal is in compliance with local, state and federal requirements. Notify the appropriate authorities immediately. Take all additional action as necessary to prevent and remedy the adverse effects of the spill.
Spill:	Dike spill. Absorb with inert material and collect for disposal. Flush area with water, sensuring that none of it escapes into the waterways.

Section 7: HANDLING AND STORAGE

Keep away from children. Avoid contact with skin and eyes. Keep containers closed. Store in a cool [40-120°F (4-49°C)], dry place away from heat and light. Keep from freezing.

Section 8: EXPOSURE CONTROLS & PERSONAL PROTECTION

Exposure Limits:	No published exposure limits are available.
Engineering Controls(ventilation):	Normal room ventilation. Use local exhaust when application produces mists or aerosols.
Personal Protection:	
Eye Protection:	Wear chemical splash goggles or shielded safety glasses. An eye wash should also be available.
Skin Protection:	Wear impervious gloves for operations where contact can occur. Vinyl disposable gloves are acceptable for limited exposures.
Respiratory:	Not required in well ventilated area.
Other:	Wear proper protective clothing to limit skin contact if risk of contact is significant.

Section 9: PHYSICAL & CHEMICAL PROPERTIES

Appearance:	Black liquid with characteristic odour.	**Flammable Limits:**	None established.
Flashpoint And Method:	>230°F PMCC (est.)	**Autoignition Temperature:**	N.E.
Vapor Pressure:	<1.0 mm Hg	**Evaporation Rate(n-butyl Acetate = 1):**	<1.0
Specific Gravity:	1.09 approx	**Percent Volatiles:**	<90% est.
Solubility:	somewhat soluble	**Boiling Point:**	>300°F.
pH:	6.6 approx	**Vapor Density:**	Approximately 5.5 (est.)
Melting/freezing Point:	<-10°C	**Viscosity:**	58 cps @ 25°C

Section 10: STABILITY & REACTIVITY

Stability:	stable
Hazardous Polymerization:	Will not occur.
Conditions To Avoid:	Excessive heat or light.

Incompatibility: Strong oxidizing agents and strong alkalis

Hazardous Thermal Decomposition Products: Oxides of carbon and nitrogen.

Section 11: TOXICOLOGICAL INFORMATION

Acute Toxicity: This ink has not been tested for acute toxicological effects.

Components:		
Triethylene glycol:	Oral: LD50(rat)	>16.0 g/kg
Triethyleneglycol methyl ether:	Oral: LD50(rat)	>3.8g/kg
Butoxitriglycol	Oral: LD50(rat)	>5.3g/kg
Azoamine salt	Oral: LD50(rat)	>2g/kg
	Dermal: LD50(rat)	>2 g/kg
Solvent Black	Oral: LD50(rat)	>5g/kg
	Dermal: LD50(rat)	>2g/kg

No other oral toxicity data available on components of this ink.

Subchronic Effects: This ink has not been tested for subchronic toxicological effects.

Chronic effects/Carcinogenicity: This ink has not been tested for chronic effects.

Components: Rats fed 4% triethylene glycol over a period of 2 years showed no apparent effect.

Components Listed As Carcinogens By Regulatory Agencies:

OSHA: None Listed IARC: None Listed NTP: None Listed

Mutagenicity: This ink has not been tested for mutagenic effects.

Components: Solvent Black 29 Ames Tested: Positive

Hamster and mouse micronucleus – Non-mutagenic

Chinese hamster V79GHGPRT – Non-mutagenic

In a case like this where the Ames test was positive, but all the subsequent mammalian studies were negative, the chemical is not considered a human mutagen.

Reproductive Effects: This ink has not been tested for reproductive effects.

Components: Triethylene glycol mehtyl ether [TGME]

When laboratory animals were fed *large doses of TGME* in their water for 90 days, the chemicals caused testicular degeneration and atrophy in male animals. A similar study conducted to evaluate dermal exposure to TGME for 90 days did not produce similar findings.

According to the manufacturer, the size of the oral dose required to produce this effect makes it highly unlikely that the exposure during normal industrial handling and use would be sufficient to cause the effect.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicological Information: No data available for this ink.

Components	
Triethylene glycol	LC50>100mg/l
Solvent Black 29	LC50 [96 hrs., Carp] 2.0mg/l
	Daphinia toxicity: No signs of adverse effects @1000mg/l for 24hrs

Chemical Fate Information: No data available for this ink.

Components: Triethylene glycol ThOD = 1.6p/p BOD(20day) = 0.27p/p

Note: p/p = units of oxygen needed per unit of material. ThOD is Theoretical Oxygen Demand.

BOD is biological Oxygen Demand.

Section 13: DISPOSAL CONSIDERATIONS

Dispose of according to appropriate local, regional and national laws or regulations. Do not reuse "empty containers".

Section 14: TRANSPORT INFORMATION: (Not meant to be all inclusive)

Ground Transport: Not regulated

Air Transport: Not regulated

Ocean Transport: Not regulated

Section 15: REGULATORY INFORMATION (Not meant to be all inclusive)

UNITED STATES

This product does not contain any ozone depleting substances (ODS), nor were any ozone depleting substances used in the manufacture of this product.

Trident does not test for heavy metals covered under the various CONEG laws. However, raw materials used to make our inks do not contain mercury, lead, cadmium or hexavalent chromium and none are added during manufacture.

TSCA [Toxic Substances Control Act]: All components are in the TSCA inventory.

OSHA[Occupational Safety and Health Act]: Untested mixture with acute health hazards.

SARA [Superfund Amendments and Reauthorization Act] 1986 Title III:

40CFR355 Chemicals present requiring emergency planning based on Threshhold Plan-ning Quantities (TPQ) and release reporting based on Reportable Quantities (RQ)

None

40CFR372 Chemicals present that require submission of annual reports of release of toxic chemicals that appear in this section of SARA Title III.

--Solvent black 29 trivalent chromium complex 1-5% -------glycol ethers 30-40%

CAAA – This ink contains the following ingredients considered Hazardous Air Pollutants under the Clean Air Act of 1990.

----------Solvent Black 29 trivalent chromium complex -------glycol ethers 30-40%

State Regulations:

California Proposition 65: Components present in this product known by the state of California to cause birth defects or other reproductive harm:

thylene glycol monoethyl ether <0.01%

California SCMQAD: As defined by this statute, this ink is estimated to contain < 90% VOCs.

Massachusetts 105CMR670 Right to Know (MSL):

There are no components present, which require reporting under this statute.

Pennsylvania Right to Know Hazardous Substance list:

Components of this ink which could require reporting are:

Solvent Black 29 Chromium (+3) complex – 1-5% -------glycol ethers 30-40%

New Jersey Registration # TRDNTINTL-978005

CANADA

DSL/nDSL All components listed

WHMIS: D2B

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

EUROPEAN UNION

EINECS Status: All components are in compliance with European inventory requirements

CLASSIFICATION: This product is considered an irritant based on criteria found in EU Directives 67/548 and 88/379. [Xi,R36/37/38 S23,S51]

Section 16: OTHER INFORMATION.

Revision Summary: Revised Format, May 1996 to include Canadian and European information.
This SDS is written in compliance with Directive 93/112EC.

Revised August 1997. New information in sections 1,2,3,11,12 &15

Revised October 1997. New information in sections 2,4 (eye first aid),11

Revised April 29,1998. Corrected information in section 2.

Revised June 1998 to include Canadian WHMIS rating

Revised October 1998 to add information to sections 3 and 11.

Revised December 1998. Changes to sections 1,2,3,4,5,15 & 16 to comply with labeling and Canadian requirements.

The information contained and recommended in this document are based on data believed to be correct. However, no guarantee or warranty of any kind , expressed or implied, is made with respect to this information.