

# ER2.0 Tigris Cyan

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 /

Monday, March 26, 2012 / Rules and Regulations

Date of Issue: 03/10/2014

Version: 1.0

**memjet**

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product Identifier

Product form : Mixtures  
Product name. : ER2.0 Tigris Cyan

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Inkjet printing

#### 1.3. Details of the supplier of the safety data sheet

Memjet Operations, Ltd. (aka Zamtec, Ltd.)

61-62 Fitzwilliam Lane

Dublin, Ireland

T +1-858-798-3000

F +1-858-798-3044

[msds@memjet.com](mailto:msds@memjet.com)

[www.memjet.com](http://www.memjet.com)

#### 1.4. Emergency telephone number

Emergency number : CHEMTREC, U.S. : 1-800-424-9300  
International: +1-703-527-3887

### SECTION 2: Hazards Identification

#### 2.1. Classification of the substance or mixture

Classification (GHS-US)

Eye Dam. 1 H318

#### 2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US)



GHS05

Signal word (GHS-US)

: Danger.

Hazard statements (GHS-US)

: H318 - Causes serious eye damage

Precautionary statements (GHS-US)

: P280 - Wear eye protection, protective gloves  
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P310 - Immediately call a POISON CENTER or doctor/physician

#### 2.3. Other hazards

Other hazards not contributing to the classification

: None under normal conditions.

#### 2.4. Unknown acute toxicity (GHS-US)

2 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Oral).

3 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Dermal).

3 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Dust/Mist)).

### SECTION 3: Composition/Information on ingredients

#### 3.1. Substances

Not applicable

Full text of H-phrases: see section 16

#### 3.2. Mixtures

Trade component name(s) and composition ranges may be used to protect Trade Secrets.

Name	Product Identifier	%	Classification (GHS-US)
Water	(CAS No) 7732-18-5	~60	Not classified

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Name	Product Identifier	%	Classification (GHS-US)
Sulfone	Withheld as Trade Secret	15-25	Acute Tox. 4 (Oral), H302
Proprietary Cyan Dye	Withheld as Trade Secret	<6	Eye Dam. 1, H318
Glycerol	(CAS No) 56-81-5	<10	Not classified. See Exposure Limit, section 8.
Ethoxylated acetylenic diols	Withheld as Trade Secret	<3	Acute Tox. 4 (Oral), H302 Eye Irrit. 2A, H319
2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate	(CAS No) 9014-85-1	<2	Eye Dam. 1, H318 Aquatic Acute 3, H402 Aquatic Chronic 3, H412

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

First-aid measures after inhalation

: If inhaled and if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

First-aid measures after skin contact

: Gently wash with plenty of soap and water.

First-aid measures after eye contact

: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

First-aid measures after ingestion

: Not expected to present a significant ingestion hazard under anticipated conditions of normal use.

#### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation

: Inhalation may cause: irritation, cough, shortness of breath.

Symptoms/injuries after eye contact

: Causes serious eye damage.

#### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media

: Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media

: None known.

#### 5.2. Special hazards arising from the substance or mixture

Fire hazard

: No specific fire or explosion hazard.

Explosion hazard

: Product is not explosive.

Reactivity

: Hazardous polymerization will not occur.

#### 5.3. Advice for firefighters

Firefighting instructions

: Exercise caution when fighting any chemical fire. Use extinguishing media appropriate for surrounding fire.

Protection during firefighting

: Do not enter fire area without proper protective equipment, including respiratory protection. Wear fire/flame resistant/retardant clothing. Use self-contained breathing apparatus.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

General measures

: Avoid all eyes and skin contact and do not breathe vapor and mist.

##### 6.1.1. For non-emergency personnel

Protective equipment

: Avoid contact with skin and eyes. Wear suitable gloves : butyl rubber or natural rubber gloves.

Emergency procedures

: Evacuate unnecessary personnel. Stop leak without risks if possible.

##### 6.1.2. For emergency responders

Protective equipment

: Avoid all eyes and skin contact and do not breathe vapor and mist. Wear suitable protective clothing and gloves : butyl rubber or rubber. Chemical goggles or safety glasses.

Emergency procedures

: Stop leak if safe to do so. If a major spill occurs, all personnel should be immediately evacuated and the area ventilated.

#### 6.2. Environmental precautions

Do not discharge into drains or the environment.

##### 6.2.1. Methods and material for containment and cleaning up

For containment

: Absorb and/or contain spill with inert material, then place in suitable container.

Methods for cleaning up

: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible.

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### 1. Reference to other sections

Section 7: safe handling.  
Section 8: personal protective equipment.  
Section 13: disposal information.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling

Avoid all eyes and skin contact and do not breathe vapor and mist. Use personal protective equipment as required. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

### 7.2. Conditions for safe storage, including any incompatibilities

No additional information available

### 7.3. Specific end use(s)

Inkjet printing.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

All applicable OELs are shown for chemicals listed in Section 3.

Glycerol (56-81-5)		
USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	15 mg/m <sup>3</sup> (total) 5 mg/m <sup>3</sup> (respirable fraction)

### 8.2. Exposure controls

Appropriate engineering controls

: Avoid splashing. Either local exhaust or general room ventilation is usually required.

Personal protective equipment

: Safety glasses. Gloves.



Hand protection

: Wear suitable gloves resistant to chemical penetration. butyl rubber gloves. natural rubber gloves.

Eye protection

: Use splash goggles when eye contact due to splashing is possible.

Respiratory protection

: No special respiratory protection equipment is recommended under normal conditions of use with adequate ventilation.

Other information

: When using, do not eat, drink or smoke.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state

: Liquid

Appearance

: Blue liquid.

Color

: Blue.

Odor

: No data available

Odor threshold

: No data available

pH

: 7.1

Relative evaporation rate (butyl acetate=1)

: No data available

Melting point

: No data available

Freezing point

: No data available

Boiling point

: No data available

Flash point

: No data available

Self ignition temperature

: No data available

Decomposition temperature

: No data available

mmability (solid, gas)

: No data available

Vapor pressure

: No data available

Relative vapor density at 20 °C

: > 1 (Air = 1)

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Relative density	: > 1 (≥ 1)
Relative density of saturated gas/air mixture	: ≥ 1
Solubility	: Soluble in water.
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Hazardous polymerization will not occur.

### 10.2. Chemical stability

The product is stable at normal handling and storage conditions.

### 10.3. Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

### 10.4. Conditions to avoid

None known.

### 10.5. Incompatible materials

None known.

### 6. Hazardous decomposition products

No additional information available

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### Acute toxicity

Not classified. Based on available data, the classification criteria are not met

<b>Sulfone</b>	
LD50 oral rat	2006 (2006 - 2130) mg/kg
LD50 dermal rat	> 2000 mg/kg
LC50 inhalation rat (mg/l)	12000 mg/l/4h
ATE (oral)	500.000 mg/kg body weight
ATE (vapors)	12000.000 mg/l/4h
ATE (dust, mist)	12000.000 mg/l/4h
<b>Ethoxylated acetylenic diols</b>	
LD50 oral rat	1230 mg/kg (Based on similar product)
ATE (oral)	1230.000 mg/kg body weight
<b>2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate (9014-85-1)</b>	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rat	> 2000 mg/kg
LC50 inhalation rat (mg/l)	> 2 mg/l/4h
<b>Glycerol (56-81-5)</b>	
LD50 oral rat	5570 mg/kg
ATE (oral)	5570.000 mg/kg body weight

in corrosion/irritation	: Not classified. Based on available data, the classification criteria are not met
Serious eye damage/irritation	: Causes serious eye damage.
Respiratory or skin sensitization	: Not classified. Based on available data, the classification criteria are not met.

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Am cell mutagenicity	: Not classified. Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified. Based on available data, the classification criteria are not met
<b>ER2.0 Tigris Cyan - components</b>	
IARC group	Not listed in carcinogenicity class
National Toxicology Program (NTP) Status	Not listed in carcinogenicity class

Reproductive toxicity	: Not classified. Based on available data, the classification criteria are not met
Specific target organ toxicity (single exposure)	: Not classified. Based on available data, the classification criteria are not met
Specific target organ toxicity (repeated exposure)	: Not classified. Based on available data, the classification criteria are not met

<b>2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate (9014-85-1)</b>	
NOAEL (subacute, oral, animal/male, 28 days)	200 mg/kg body weight

Aspiration hazard	: Not classified. Based on available data, the classification criteria are not met
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Potential Adverse human health effects and symptoms	
Symptoms/injuries after eye contact	: Causes serious eye damage.
Likely routes of exposure	: Skin and eyes contact.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general	: No ecotoxicological data about this product are known.
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<b>Sulfone</b>	
LC50 fish 1	> 100 mg/l <i>Oryzias latipes</i>
EC50 Daphnia 1	852 mg/l
ErC50 (algae)	> 1000 mg/l
NOEC chronic crustacea	171 mg/l
NOEC chronic algae	309 mg/l

<b>2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate (9014-85-1)</b>	
LC50 fish 1	52.5 mg/l juvenile <i>S. maximus</i>
EC50 Daphnia 1	166 mg/l
ErC50 (algae)	15 mg/l
NOEC chronic algae	1 mg/l

### 12.2. Persistence and degradability

<b>ER2.0 Tigris Cyan</b>	
Persistence and degradability	Not established.

<b>Sulfone</b>	
Persistence and degradability	Not readily biodegradable.

<b>2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate (9014-85-1)</b>	
Persistence and degradability	Not readily biodegradable.

<b>Proprietary Cyan Dye</b>	
Persistence and degradability	Product persists.

<b>Glycerol (56-81-5)</b>	
Persistence and degradability	Readily biodegradable.

### 12.3. Bioaccumulative potential

<b>ER2.0 Tigris Cyan</b>	
Bioaccumulative potential	Not established.

<b>Sulfone</b>	
Bioconcentration factor (BCF REACH)	< 13
Bioaccumulative potential	Not expected to bioaccumulate.

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### 2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate (9014-85-1)

Bioconcentration factor (BCF REACH) < 24

Bioaccumulative potential Not expected to bioaccumulate.

### Proprietary Cyan Dye

Bioaccumulative potential Not expected to bioaccumulate.

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

Other information : Avoid release to the environment.

## SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Waste treatment methods : Do not dispose in household garbage. Dispose in a safe manner in accordance with local/national regulations. Significant quantities of waste product residues should be processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

Ecology - waste materials : Avoid release to the environment.

## SECTION 14: Transport information

In accordance with DOT

No dangerous good in sense of transport regulations

Additional information

Other information : No supplementary information available.

TR

Transport document description

Transport by sea

No additional information available

Air transport

No additional information available

## SECTION 15: Regulatory information

#### 15.1. US Federal regulations

##### Listed on the United States TSCA (Toxic Substances Control Act) inventory

Sulfone

Ethoxylated acetylenic diols

2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate (9014-85-1)

Glycerol (56-81-5)

Proprietary Cyan Dye

#### 15.2. International regulations

##### CANADA

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WHMIS Classification Class D Division 2 Subdivision B - Toxic material causing other toxic effects

##### Listed on the Canadian DSL (Domestic Substances List) inventory.

Sulfone

Ethoxylated acetylenic diols

2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate (9014-85-1)

Glycerol (56-81-5)

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### U-Regulations

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) substances.

Sulfone

Ethoxylated acetylenic diols

2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate (9014-85-1)

Glycerol (56-81-5)

Proprietary Cyan Dye

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Eye Dam. 1 H318

Full text of H-phrases; see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

Xn; R22

Xi; R36

### 15.2.2. National regulations

**Sulfone**

Listed on the Inventory of Existing Chemical Substances Produced or Imported in China (IECSC).

Listed on the Japanese ENCS (Existing & New Chemicals Substances) inventory.

Listed on KECI (Chemical Inventory of Korea)

Listed on Inventory of Chemicals and Chemical Substances (PICCS)

Listed on the AICS (the Australian Inventory of Chemical Substances).

Listed on New Zealand - Inventory of Chemicals (NZIoC)

**Ethoxylated acetylenic diols**

Listed on the Japanese ENCS (Existing & New Chemicals Substances) inventory.

Listed on the AICS (the Australian Inventory of Chemical Substances).

Listed on New Zealand - Inventory of Chemicals (NZIoC)

Listed on KECI (Chemical Inventory of Korea)

Listed on Inventory of Chemicals and Chemical Substances (PICCS)

Listed on the Inventory of Existing Chemical Substances Produced or Imported in China (IECSC).

**2,4,7,9-Tetramethyl-5-decyne-4,7-diol ethoxylate (9014-85-1)**

Listed on Inventory of Existing Chemical Substances (IECSC)

Not listed on the Japanese ENCS (Existing & New Chemicals Substances) inventory.

Listed on KECI (Chemical Inventory of Korea)

Listed on Taiwan National Chemical Inventory

Listed on Inventory of Chemicals and Chemical Substances (PICCS)

Listed on the AICS (the Australian Inventory of Chemical Substances).

Listed on New Zealand - Inventory of Chemicals (NZIoC)

**Proprietary Cyan Dye**

Listed on the Inventory of Existing Chemical Substances Produced or Imported in China (IECSC).

Listed on KECI (Chemical Inventory of Korea)

Listed on Inventory of Chemicals and Chemical Substances (PICCS)

Listed on the AICS (the Australian Inventory of Chemical Substances).

Listed on New Zealand - Inventory of Chemicals (NZIoC)

**Glycerol (56-81-5)**

Listed on Inventory of Existing Chemical Substances (IECSC)

Listed on KECI (Chemical Inventory of Korea)

Listed on the Japanese ENCS (Existing & New Chemicals Substances) inventory.

Listed on Taiwan National Chemical Inventory

Listed on Inventory of Chemicals and Chemical Substances (PICCS)

Listed on the AICS (the Australian Inventory of Chemical Substances).

Listed on New Zealand - Inventory of Chemicals (NZIoC)

### 15.3. US State regulations

**Glycerol (56-81-5)**

11 S. - New Jersey - Right to Know Hazardous Substance List

i. - Minnesota - Hazardous Substance List

.S. - Washington - Permissible Exposure Limits - STELs

U.S. - Washington - Permissible Exposure Limits - TWAs

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### SECTION 16: Other information

Location of changes

Data sources

: Original Document.  
: ESIS (European chemical Substances Information System; accessed at: <http://esis.jrc.ec.europa.eu/index.php?PGM=cla>.  
Chemical Inspection & Regulation Service; accessed at: [http://www.cirs-reach.com/Inventory/Global\\_Chemical\\_Inventory.html](http://www.cirs-reach.com/Inventory/Global_Chemical_Inventory.html).  
European Chemicals Agency (ECHA) C&L Inventory database. Accessed at <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>.  
European Chemicals Agency (ECHA) Registered Substances list. Accessed at <http://echa.europa.eu/>  
Kristen Forsberg and S.Z. Mansdorf, "Quick Selection Guide to Chemical Protective Clothing", Fifth Edition.  
National Fire Protection Association; Fire Protection Guide to Hazardous Materials; 10th edition.  
REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.  
US National Library of Medicine National Institutes of Health Haz-Map. Accessed at <http://hazmap.nlm.nih.gov>.  
Vendor Safety Data Sheets for components.

Abbreviations and acronyms

: ATE: Acute Toxicity Estimate.  
CAS (Chemical Abstracts Service) number.  
GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).  
LD50: Lethal Dose for 50% of the test population.  
NOEC: No Observable Effect Concentration.  
OSHA: Occupational Safety & Health Administration.  
TSCA: Toxic Substances Control Act.

Other information

: None.

Full text of H-phrases: see section 16:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Skin Sens. 1	Skin sensitization Category 1
H302	Harmful if swallowed
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H402	Harmful to aquatic life
H412	Harmful to aquatic life with long lasting effects

NFPA health hazard

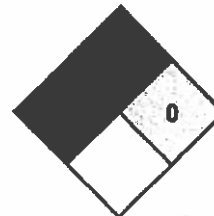
: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard

: 1 - Must be preheated before ignition can occur.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



SDS US (GHS HazCom 2012)

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