

**1. Product and Company Identification**

**Product name** UR series  
**Product identifier** Sigma UR series  
**Recommended uses and Restrictions** Polyurethane ink  
**Manufacturer or supplier's details** Sigma Inks (USA) 12800 Brookprinter place, Poway, CA  
 92064 USA Phone: (888) 424-9300  
 Website: www.sigmainks.com  
 Contact the Distributor: www.printexusa.com  
**Emergency telephone** Chemtrec (E.U.): (800) 424-9300  
 Chemtrec (Outside USA): (703) 527-3887 (Calls receivables accepted)

**2. Hazard Identification**

**Classification of the substance or mixture**

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

<b>Oral Toxicity</b>	2	Oral>5+<=50mg/kg
<b>Skin corrosive</b>	2	Reversible adverse effects in dermal tissue, Draize score: >= 2.3< 4.0 or persistent inflammation
<b>Eye corrosive</b>	2A	Eye irritant: Subcategory 2A, Reversible in 21 days
<b>Skin sensitizer</b>	1	Skin sensitizer
<b>Carcinogen</b>	2	Limited evidence of human or animal carcinogenicity
<b>Reproductive toxin</b>	1B	Presumed, Based on experimental animals

**GHS Label elements, including precautionary statements**

**Identification of the substance or mix  
 Hazard pictograms**

Sigma UR series



**Signal word  
 Hazards**

Danger

H300  
 H315  
 H317  
 H319  
 H351  
 H360

Fatal if swallowed  
 Causes skin irritation  
 May cause an allergic skin reaction  
 Causes serious eye irritation  
 Suspected of causing cancer  
 May damage fertility or the unborn child

**Precautions**  
 P201

Obtain special instructions before use

**SAFETY DATA SHEET**

P202	Do not handle until all safety precautions have been read and understood
P261	Avoid breathing dust/fume/gas/mist/vapors/spray
P264	Wash thoroughly after handling
P272	Contaminated work clothing should not be allowed out of the workplace
P280	Wear protective gloves/protective clothing/eye protection/face protection
P281	Use personal protective equipment as required
P321	Specific treatment (see on this label)
P362	Take off contaminated clothing and wash before reuse
P302+P352	IF ON SKIN: Wash with soap and water
P363	Wash contaminated clothing before reuse
P305+P351+P338	IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do continue rinsing
P308+P313	IF exposed or concerned: Get medical advice/attention
P332+P313	If skin irritation occurs: Get medical advice/attention
P333+P313	If skin irritation or a rash occurs: Get medical advice/attention
P337+P313	Get medical advice/attention
P405	Store locked up
P501	Dispose of contents/contained

**3. Composition/information on Ingredients**

Chemical identity of the substance	Common name or synonyms	CAS number	Impurities and additives	Percentage
Modified polyester Resin	---	---	--	75 – 85 %
Pigment	---	---	--	8 – 30 %
n-Butyl acetate	Acetic acid, butyl ester	123-86-4	--	15 – 20 %
Cyclohexanone	Cyclohexanone	108-94-1	--	2 – 4 %
Ethyl 3- Ethoxypropionate	EEP	763-69-9	--	2 – 4 %
Ethanol, 2-butoxy-, acetate	2- Butoxyethanol acetate	112-07-2	--	2 – 4 %

The range in the percentages is due to batch variation.

#### **4. First-aid Measures**

**First Aid Inhalation:** Remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

**First Aid Eye Contact:** If material gets into eyes, flush with water immediately for 15 minutes. Consult a physician

**First Aid Skin Contact:** Wash skin thoroughly with soap and water. In case of contact, immediately flush skin with plenty of water while removing contaminated clothing and shoes. If rash or irritation develops, consult a physician.

Launder clothing before reuse.

**First Aid Ingestion:** Due to possible aspiration into the lungs, DO NOT induce vomiting if ingested. Have the victim drink 8 to 10 ounces (240 -300 ml) of water to dilute the material in the stomach. If vomiting occurs naturally, have the victim lean forward to reduce the risk of aspiration. Consult a physician immediately. If ingested, drink 2 glasses of water. Immediately see a physician. Never give anything by mouth to an unconscious person.

All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

#### **5. Fire-Fighting Measures**

##### **Extinguishing media**

##### **Suitable extinguishing media**

Dry powder Dry sand

##### **Unsuitable extinguishing media**

Do NOT use water jet.

##### **Special hazards arising from the substance or mixture**

Carbon oxides.

##### **Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

##### **Further information**

Use water spray to cool unopened containers.

#### **6. Accidental release Measures**

##### **Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**Methods and materials for containment and cleaning up**

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.

**7. Handling and storage**

**Handling: Flammable liquid.**

Avoid heat, sparks and open flames. Avoid breathing vapor and contact with eyes, skin and clothing. Hazardous residue may remain in emptied container. Do not reuse empty containers without commercial cleaning or reconditioning. Use in well-ventilated area. Avoid heat, sparks and open flames. Avoid breathing dust. Material will accumulate static charges which may cause an electrical spark (ignition source). Use proper grounding procedures. To reduce potential for static discharge, bond and ground containers when transferring material.

**8. Exposure controls/ Personal protection**

**Components with environmental limit values of professional exposure**

Component	No. CAS	Value (exposure)	Control parameter	Base
		TWA	20 ppm	ACGIH limit value (TLV), USA
		STEL	50 ppm	ACGIH limit value (TLV), USA
		TWA	50 ppm 200 mg/m <sup>3</sup>	Occupational exposure Limits (OSHA), USA UU – Table Z-1 limits for air pollutants
Cyclohexanone	108-94-1			
		TWA	25 ppm 100 mg/m <sup>3</sup>	Recommended exposure limits of NOISH, U.S.A.
		PEL	25 ppm 100 mg/m <sup>3</sup>	Exposure limits of chemical contaminants allowed in California (Title 8, article 107)
		TWA	50 ppm	Professional exposure limit at Eastman Chemical Company: (12 2000)
Ethyl 3-Ethoxypropionate	763-69-9			
		STEL	100 ppm	Professional exposure limit at Eastman Chemical Company: (12 2000)
		PEL	150 ppm 710 mg/m <sup>3</sup>	OSHA PEL OSHA PEL
n-Butyl acetate	123-86-4			
		STEL	150 ppm	ACGIH TLV
		TWA	50 ppm	ACGIH TLV

**Exposure controls**

**Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**Personal protective equipment**

**Eye/face protection**

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Body Protection**

Impervious clothing, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**9. Physical and chemical properties**

Physical state and appearance	Viscous Liquid
Color	As marked on label
Odor	Acrylic-like
Odor threshold	No determined
Hydrogen potential, PH	No determined
Melting Point/freezing point	-78° C
Starting point and boiling range	126 °C (258.8 °F)
Flash point	Approx. 35° C
Evaporation Rate	No determined
Flammability	Flammable



Sigma Ink Inc.  
12800 Brookprinter Place  
Poway Ca, 92064

## SAFETY DATA SHEET

Upper/lower limits of flammability or explosiveness	Up = 10.4 % (V) Lo = 3.0 % (V)
Vapor pressure	11.5mmHg (25° C)
Vapor density	No determined
Relative density	1.05 @ 20° C (68° F)
Solubility	Not soluble
Partition coefficient	No determined
Spontaneous ignition temperature	No determined
Thermal decomposition	Stable up to boiling point
Viscosity	20 000 Cps
Molecular weight	No determined
VOC Content	40 %
Other data	No more relevant information available.

### 10. Stability and Reactivity

#### **Reactivity**

No data available

#### **Chemical stability**

Stable under recommended storage conditions.

#### **Possibility of hazardous reactions**

Vapors may form explosive mixture with air.

#### **Conditions to avoid**

Heat, flames and sparks.

#### **Incompatible materials**

Strong oxidizing agents, Strong reducing agents, Strong bases

#### **Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Other decomposition products - No data available

In the event of fire: see section 5

## 11. Toxicological Information

### Information on toxicological effects

#### Acute toxicity

##### Modified polyester Resin

Oral Toxicity LD50: 22mg/kg (rat)

Inhalation LC50: 483 mg/L (rat)

Dermal LD50: 2,000 mg/kg (rabbit)

##### n-Butyl acetate

D50 Oral - Rat - female - 10,760 mg/kg

Inhalation: No data available

LD50 Dermal - Rabbit - male and female - 14,112 mg/kg

##### Cyclohexanone

LD50 Oral - Rat - male - 1,620 mg/kg

LC50 Inhalation - Rat - male and female - 4 h - > 6.2 mg/l

LD50 Dermal - Rabbit - 1,100 mg/kg

##### Ethyl 3-ethoxypropionate

LD50 Oral - Rat - female - 4,309 mg/kg

LC50 Inhalation - Rat - male - 4 h - > 6.854 mg/l

LD50 Dermal - Rabbit - male - 4,080 mg/kg

LD50 Dermal - Rabbit - female - 4,680 mg/kg

##### n-Butyl acetate

LD50 Oral - Rat - 2,400 mg/kg

Inhalation: No data available

LD50 Dermal - Rabbit - 1,500 mg/kg

#### Skin corrosion/irritation

##### n-Butyl acetate

Skin - Rabbit

Result: No skin irritation - 4 h

**Cyclohexanone**

Skin - Rabbit

Result: irritating - 4 h

**Ethyl 3-ethoxypropionate**

Skin - Rabbit

Result: No skin irritation - 4 h

**Serious eye damage/eye irritation**

**n-Butyl acetate**

Eyes - Rabbit

Result: No eye irritation

**Cyclohexanone**

Eyes - Rabbit

Result: Irreversible effects on the eye

**Ethyl 3-ethoxypropionate**

Eyes - Rabbit

Result: No eye irritation - 1 s

**Butylglycol acetate**

Eyes - Rabbit

Result: Mild eye irritation - 24 h

**Respiratory or skin sensitization**

**Ethyl 3-ethoxypropionate**

Freund's complete adjuvant test - Guinea pig

Result: Does not cause skin sensitization.

**Germ cell mutagenicity**

Ames test

Escherichia coli/Salmonella typhimurium

Result: negative

Mutagenicity (mammal cell test): chromosome aberration.

Chinese hamster ovary cells

Result: negative



In vitro mammalian cell gene mutation test

Chinese hamster ovary cells

Result: negative

**Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**12. Ecological Information**

**Toxicity**

At the present state of knowledge, no negative ecological effects are expected.

**Fish toxicity**

Cyclohexanone:  
Data unavailable.

Ethyl 3-Etoxipropionato:  
LC50 – Fish – 90.9 mg/L – 96 H.

n-Butyl acetate:  
LC50 – Leuciscus idus – >100 mg/l – (96 h)

**Toxicity to Daphnia and other invertebrate animals:**

Cyclohexanone:  
EC50 – Daphnia Magna (Sea Flea) – 820 mg/L – 24 h.

Ethyl 3-Etoxipropionato:  
EC50 – Oleander – 873mg/L – 48 H.

## SAFETY DATA SHEET

n-Butyl acetate:  
EC50 – Daphnia magna – > 100 mg/l – 48 h – (Screening (style of OECD 202), static)

### Algae toxicity

Cyclohexanone:  
Data unavailable.

Ethyl 3-Etoxipropionato:  
EC50 – Alga – > 114.86 mg/L – 72 H.

N-Butyl acetate: No data available.

<b>Persistence and Degradability</b>	The polymer component of the product is poorly biodegradable.
<b>Bioaccumulation potential</b>	At the present state of knowledge, no negative ecological effects are expected.
<b>Ground mobility</b>	No information available.
<b>Other adverse effects</b>	No information available.

### 13. Disposal Considerations

#### **Waste disposal methods:**

Dispose of in accordance with all applicable local, state and federal regulations. Do not discharge into drains/surface waters/groundwater.

Recommend crushing, puncturing or other means to prevent unauthorized use of used containers. Dispose of in accordance with national, state and local regulations.

### 14. Transport Information

<b>No. UN</b>	1210
<b>UN official definition of transport</b>	Printing ink related material
<b>Class</b>	3
<b>Packaging Group</b>	III
<b>Environmental hazards</b>	No data available.
<b>Special precautions for the user</b>	CAUTION, flammable liquid.
<b>Bulk transport</b>	Does not apply.

**15. Regulatory information**

**Federal Regulations**

**Registration status:**

Chemical

DSL, CA

released / listed

**Tag elements:**

This product is classified and labeled according to the Globally Harmonized System (GHS).

**National regulations:**

This product is subject to classification according to the latest version of the Hazardous Substances Regulations.

**16. Another information**

**Additional information**

The information and recommendations in this safety sheet with, to our best know and understand, precise to the date of his expedition. At all of the here included will have to be considered to create guarantee, expresses or implicit and will not establish contractual relation legally validates. It is responsibility of the user determine the applicability of this information and the suitability of the material or product for any purpose in particular.