Sigma Ink Inc.
12800 Brookprinter Place
Poway Ca, 92064

SAFETY DATA SHEET

1. Product and Company Identification

Product Name	Sigma C-Solv
Product Identifier	Sigma C-Solv
Recommended uses and restrictions	Printing inks Thinner
Manufacturer data	Sigma Inks (US) 12800 Brookprinter place, Poway, CA 92064 US Phone: (888) 424-9300 Website: www.sigmainks.com Contact to the distributor: www.printexusa.com
Emergency number	Chemtrec (And.Or.): (800) 424-9300 Chemtrec (Out of And.Or.): (703) 527-3887 (Collect calls)

2. Hazard identification

2.1 Classification of the substance or mixture

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

Flammable liquids (Category 2), H225

Eye irritation (Category 2A), H319

Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336

2.2 GHS Label elements, including precautionary statements

Pictogram	
Signal word	Danger
Hazard statement(s)	
H225	Highly flammable liquid and vapor.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.

P280	Wear protective gloves/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P370 + P378	In case of fire: Use dry sand, dry chemical, or alcohol-resistant foam to extinguish.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Repeated exposure may cause skin dryness or cracking.

3. Composition/information on components

Chemical identity of the substance	Common name or synonyms	CAS number	Impurities and additives	Percentage
Propanone	Acetone	67-64-1	-	90 – 100
Methylbenzene	Toluene	108-88-3	-	1- 5
n-butyl acetate	Ester n-butyric of the acetic acid, ethanoate of butyl	123-86-4	-	1-5

4. First Aid

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Dry powder Dry sand

Unsuitable extinguishing media

Do NOT use water jet.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

6. Accidental release measures

6.1 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. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 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 (see section 13).

6.4 Reference to other sections

For disposal see section 13.

7. Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.
Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8. Exposure controls/Personal protection

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Acetone	67-64-1	TWA	250 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		STEL	500 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	250 ppm 590 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	1,000 ppm 2,400 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		STEL	750 ppm 1,780 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		C	3,000 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		PEL	500 ppm 1,200 mg/m3	California permissible exposure limits for chemical

				contaminants (Title 8, Article 107)
Toluene	108-88-3	TWA	100 ppm 375 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		STEL	150 ppm 560 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	200 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
	Remarks	Z37.12-1967		
		CEIL	300 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Z37.12-1967		
		Peak	500 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Z37.12-1967		
		TWA	20 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Visual impairment Female reproductive Pregnancy loss 2019 Adoption Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	100 ppm 375 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	150 ppm 560 mg/m3	USA. NIOSH Recommended Exposure Limits
n-Butyl acetate	123-86-4	TWA	150 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Upper Respiratory Tract irritation Eye irritation Adopted values or notations enclosed are those for which changes are proposed in the NIC See Notice of Intended Changes (NIC)		
		STEL	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation Adopted values or notations enclosed are those for which changes are proposed in the NIC See Notice of Intended Changes (NIC)		
		TWA	150 ppm 710 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	200 ppm 950 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	150 ppm 710 mg/m3	USA. Occupational Exposure

				Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		PEL	150 ppm 710 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		STEL	200 ppm 950 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		TWA	50 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation		
		STEL	150 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation		

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Acetone	67-64-1	Acetone	25 mg/l	Urine	ACGIH -Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			
Toluene	108-88-3	Toluene	0.02 mg/l	In blood	ACGIH -Biological Exposure Indices (BEI)
	Remarks	Prior to last shift of workweek			
		Toluene	0.03 mg/l	Urine	ACGIH – Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			
		o-Cresol	0.3mg/g Creatinine	Urine	ACGIH – Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			

8.2 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.

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 30 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

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	Colorless liquid
Color	Transparent
Odor	Without available data
Odor threshold	Value no determinate
Hydrogen Potential, pH	Value no determinate
Melting point / range	< -70 °C (< -94 °F)
Boiling point/ range	5 6 – 125 °C (133 – 257 °F)
Flashpoint	-20 °C (-4 °F)
Evaporation rate	Value no determinate
Flammability	Value no determinate
Upper/lower limits of flammability or explosiveness	Value no determinate
Vapor pressure	230.969 mmHg (2 5 °C)
Vapor density	Value no determinate
Relative density	0.792 (20 °C)
Solubility	Soluble
Partition coefficient	Without available data
Auto-ignition temperature	Without available data

Thermal Decomposition	Without available data
Viscosity	Value no determinate
Molecular weight	Value no determinate
Other data	Without available data

10. Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Vapors may form explosive mixture with air.

10.4 Conditions to avoid

Heat, flames, and sparks.

10.5 Incompatible materials

Bases, oxidizing agents, reducing agents, Acetone reacts violently with phosphorous oxychloride. Strong oxidizing agents

10.6 Hazardous decomposition products

Other decomposition products - No data available
Hazardous decomposition products formed under fire conditions. - Carbon oxides
In the event of fire: see section 5

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acetone
LD50 Oral - Rat - female - 5,800 mg/kg
Remarks: (ECHA)
LC50 Inhalation - Rat - 4 h - 76 mg/l
Remarks: Unconsciousness Drowsiness Dizziness
LD50 Dermal - Rabbit - 20,000 mg/kg
Remarks: (IUCLID)
No data available

Toluene
LD50 Oral - Rat - male - 5,580 mg/kg
(Tested according to Directive 92/69/EEC.)
LC50 Inhalation - Rat - male and female - 4 h - 25.7 mg/l
(OECD Test Guideline 403)

LD50 Dermal - Rabbit - > 5,000 mg/kg
Remarks: (ECHA)
No data available

n-butyl acetate
LD50 Oral - Rat - female - 10,760 mg/kg
(OECD Test Guideline 423)
Inhalation: No data available
LD50 Dermal - Rabbit - male and female - 14,112 mg/kg
(OECD Test Guideline 402)
No data available

Skin corrosion/irritation

Acetone
Skin - Rabbit
Result: Mild skin irritation - 24 h
(Draize Test)
Remarks: (RTECS)

Toluene
Skin - Rabbit
Result: irritating - 4 h
Remarks: (ECHA)

n-butyl acetate
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)
Drying-out effect resulting in rough and chapped skin.

Serious eye damage/eye irritation

Acetone
Eyes - Rabbit
Result: Eye irritation - 24 h
(Draize Test)
Remarks: (RTECS)
Risk of corneal clouding.

Toluene
Eyes - Rabbit
Result: slight irritation
(OECD Test Guideline 405)

n-butyl acetate
Eyes - Rabbit
Result: No eye irritation
(OECD Test Guideline 405)

Respiratory or skin sensitization

Acetone

Maximization Test - Guinea pig
Result: negative
Remarks: (ECHA)
Chronic exposure may cause dermatitis.

Toluene
Maximization Test - Guinea pig
Result: negative
(Regulation (EC) No. 440/2008, Annex, B.6)

Germ cell mutagenicity

Acetone
Mutagenicity (mammal cell test): chromosome aberration.
Chinese hamster ovary cells
Result: negative
Ames test
Salmonella typhimurium
Result: negative
In vitro mammalian cell gene mutation test
Mouse lymphoma test
Result: negative

Toluene
In vitro mammalian cell gene mutation test
Mouse lymphoma test
Result: negative
Ames test
S. typhimurium
Result: negative
Rat - Bone marrow
Result: negative
(ECHA)

n-butyl acetate
Ames test
Escherichia coli/Salmonella typhimurium
Result: negative
OECD Test Guideline 474
Mouse - male and female - Red blood cells (erythrocytes)
Result: negative

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

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

Toluene
Suspected of damaging the unborn child.

Specific target organ toxicity - single exposure

Acetone
May cause drowsiness or dizziness.
Acute oral toxicity - Stomach/intestinal disorders, Risk of aspiration upon vomiting., Pulmonary failure possible after aspiration of vomit.
Acute inhalation toxicity - mucosal irritations

Toluene
May cause drowsiness or dizziness. - Central nervous system

n-butyl acetate
May cause drowsiness or dizziness. - Central nervous system
Acute oral toxicity - Risk of aspiration upon vomiting. Aspiration may cause pulmonary oedema and pneumonitis.

Specific target organ toxicity - repeated exposure

Toluene
May cause damage to organs through prolonged or repeated exposure. - Central nervous System

Aspiration hazard

Toluene
Aspiration hazard, Aspiration may cause pulmonary edema and pneumonitis.

Additional Information

RTECS: AL3150000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Kidney - Irregularities - Based on Human Evidence
Skin - Dermatitis - Based on Human Evidence
Kidney - Irregularities - Based on Human Evidence
Skin - Dermatitis - Based on Human Evidence

12. Ecological information

12.1 Toxicity

Acetone

Toxicity to fish	flow-through test LC50 - *Pimephales promelas* (fathead minnow) - 6,210 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test LC50 - *Daphnia pulex* (Water flea) - 8,800 mg/l - 48 h Remarks: (ECHA)

Toxicity to algae	static test NOEC - *M.aeruginosa* - 530 mg/l - 8 d (DIN 38412) Remarks: (maximum permissible toxic concentration) (IUCLID)
Toxicity to bacteria	static test EC50 - activated sludge - 61.15 mg/l - 30 min (OECD Test Guideline 209))

Toluene

Toxicity to fish	flow-through test LC50 - *Oncorhynchus kisutch* (coho salmon) - 5.5 mg/l - 96 h Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates	EC50 - *Ceriodaphnia dubia* (water flea) - 3.78 mg/l - 48 h (US-EPA)
Toxicity to bacteria	static test EC50 - Bacteria - 84 mg/l - 24 h Remarks: (ECHA)

n-butyl acetate

Toxicity to fish	flow-through test LC50 - *Pimephales promelas* (fathead minnow) - 18 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - *Daphnia magna* (Water flea) - 44 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - *Pseudokirchneriella subcapitata* (green algae) - 397 mg/l - 72 h (OECD Test Guideline 201) Remarks: (in analogy to similar products)
Toxicity to bacteria	static test IC50 - Tetrahymena pyriformis - 356 mg/l - 40 h Remarks: (ECHA)

12.2 Persistence and degradability

Acetone

Biodegradability	aerobic - Exposure time 28 d Result: 91 % - Readily biodegradable. (OECD Test Guideline 301B)
Biochemical Oxygen Demand (BOD)	1,850 mg/g Remarks: (IUCLID)
Chemical Oxygen Demand (COD)	2,070 mg/g Remarks: (IUCLID)
Theoretical oxygen demand	2,200 mg/g Remarks: (Lit.)

Toluene

Biodegradability	aerobic - Exposure time 20 d Result: 86 % - Readily biodegradable. Remarks: (IUCLID)

n-butyl acetate

Biodegradability	aerobic - Exposure time 28 d Result: 83 % - Readily biodegradable. (OECD Test Guideline 301D)
Ratio BOD/ThBOD	7 - 46 % Remarks: (Lit.)
Theoretical oxygen demand	2,207 mg/g Remarks: (Lit.)

12.3 Bio accumulative potential

Acetone

Does not bioaccumulate.

Toluene

Bioaccumulation: Leuciscus idus (Golden orfe) - 3 d - 0.05 mg/l(Toluene) Bioconcentration factor (BCF): 90

n-butyl acetate

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not Conducted

12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.
Discharge into the environment must be avoided.
Toxic to aquatic life.

13. Disposal Considerations

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. Transport Information

No. UN	1263
Official definition of transport of the UN	Paint related material

Class	3
Group of container/packaging	II
Environmental risks	Information not available.
Special cautions for the user	Information not available.
Transport to gravel	Information not available.

1. Regulatory information

Disposals specify

SARA 304 extremely dangerous Substances Quantity Reportable
This material does not contain any component in the section 304 EHS RQ.

SARA 311/312 Dangers
Danger of Fire
Acute danger for the Health
Danger for the Chronic Health

SARA 302
This material does not contain chemical products subjects to the requirements reported by SARA Title III, section 302.

SARA 313
The following components are subject to the levels of reference established by SARA Title III, Section 313:

108-88-3	Toluene	1.7338 %

Dangers OSHA
Flammable liquid, irritant moderated in contact with the eyes, teratogen, danger for the reproduction, toxicity specifies only, toxic specific in determinate organs – only exhibition, specific toxicity in determinate organs – exhibitions repeated.

WHMIS Classification
B2: flammable Liquid
D2To: Material Very Toxic Causing Other Toxic Effects
D2B: Toxic Material Causing Other Toxic Effects

EPCRA - Record for the Right to Know Community and of Planning of Emergencies

CERCLA Quantity Reportable

Components	No. CAS	Components RQ (lbs)	Product RQ calculated (lbs)
Acetone	67-64-1	5000	***

*The RQ calculated exceeds the maximum limit realistic.

Law of the Clean Air

The (The) following(s) product(s) chemical(s) are cataloged like HAP according to the Record of the Clean Air of the USA Section 12 (40 CFR 61):

108-88-3	Toluene	1.7338 %

This product does not contain any chemical product that appear in the Record of Clean Air of the USA Section 112(r) for the Prevention of Accidental Release (40 CFR 68.130, Sub-part F).

The following(s) product(s) chemical(s) enumerates (n) in the Record of Clean Air of the USA Section 111 SOCMI COVs intervals or finals (40 CFR 60.489):

67-64-1	Acetone	96.9318 %
108-88-3	Toluene	1.7338 %
123-86-4	n-butyl Acetate	1.3344 %

Law of the Clean Water

The following Dangerous Substances enumerate in the Law of the Clean Water of USA, Section 311 of the table 116.4To:

108-88-3	Toluene	1.7338 %
123-86-4	n-butyl Acetate	1.3344 %

The following Dangerous Chemists enumerate in the Law of the Clean Water of EE.UU, Section 311 of the Table 117.3:

108-88-3	Toluene	1.7338 %
123-86-4	n-butyl Acetate	1.3344 %

This product contains the following contaminants toxic enumerated in the section 307 of the Law of clean water of the USA

108-88-3	Toluene	1.7338 %

2. Other information on the preparation and updating of safety data sheets

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 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.