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

Catalogue Number	CS-T-00115
Product Name	2,4-Pentanedione
CAS No.	123-54-6
Category	Fine Chemicals
Synonyms	pentane-2,4-dione
Brand	Clearsynth Labs Ltd.
Identified uses	Laboratory Chemicals
Uses advised against	Not available
Company	Clearsynth Labs Ltd. Mumbai, India
Emergency Phone #	+91-22-245045900
REACH No.	Not available

SECTION 2: Hazards identification

Disclaimer: This is sample MSDS. Please email **sales@clearsynth.com** for more details.

2.1 Classification of the substance or mixture-Regulation (EC) No 1272/2008:

Acute toxicity (Category 4)

2.2 Label Elements

Signal Word: Warning

Hazard Statement(s)

Code	Statement
H226	Not available
H302	Harmful if swallowed.
H311+H331	Not available
H311	Not available

H331	Not available
H320	Not available
H335	Not available
H341	Not available
H370	Not available
H402	Not available
H412	Not available
H336	Not available
H373	Not available
H312	Harmful in contact with skin.

Precautionary Statement(s)

Code	Statement
P210	Not available
P233	Not available
P240	Not available
P241	Not available
P242	Not available
P243	Not available
P264	Wash hands thoroughly after handling.
P270	Not available
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P317	Not available
P303+P361+P353	Not available
P330	Not available
P370+P378	Not available
P403+P235	Not available
P501	Dispose of contents/container in accordance with local/regional/national/international regulatio
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P262	Not available

P271	Use only outdoors or in a well-ventilated area.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316	Not available
P321	Specific treatment (see … on this label).
P361+P364	Not available
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P203	Not available
P260	Not available
P264+P265	Not available
P273	Not available
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if presen
P308+P316	Not available
P318	Not available
P319	Get medical help if you feel unwell.
P337+P317	If eye irritation persists: Get medical help.
P317	Not available
P362+P364	Take off contaminated clothing and wash it before reuse.

SECTION 3: Composition / information on ingredients

3.1 Substance

Component : 2,4-Pentanedione
CAS Number : 123-54-6
Molecular Formula : C5H8O2
Molecular Weight : 100.12
Parent Chemical : -
Synonyms : pentane-2,4-dione
Concentration : Not available

SECTION 4: First aid measures

Not available

SECTION 5: Firefighting measures

Not available

SECTION 6: Accidental release measures

Not available

SECTION-7: Handling and storage

Not available

SECTION 8: Exposure controls / personal protection

Not available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Test	Result
Appearance	No data available
IR spectrum	No data available
pH	No data available
Solubility	No data available

Property	Value
a) Physical State	No data available
b) Color	No data available
c) Odor	No data available
d) pH	No data available
e) Vapour Pressure	No data available
f) Viscosity	No data available
g) Initial Boiling Point and boiling range	No data available
h) Melting Point / Freezing Point	No data available

Property	Value
i) Auto Ignition Temperature	No data available
j) Flash Point	No data available
k) Explosion Limit, Lower	No data available
l) Explosion Limit, Upper	No data available
m) Decomposition Temperature	No data available
n) Loss on Drying	No data available
o) Relative Density	No data available
p) Solubility (in DMSO)	No data available
q) Oxidizing Properties	No data available

SECTION 10: Stability and reactivity

Not available

SECTION 11: Toxicological information

11.1 Information on toxicological effects
- Acute toxicity: IDENTIFICATION AND USE: Acetyl acetone is a colorless or slightly yellow liquid. It forms organometallic complexes which are used as gasoline additives, lubricant additives, driers for varnishes and printer's inks. HUMAN STUDIES: Acetly acetone (2 to 14 ppm) was reported to produce nausea and headaches in several persons. A case was reported involving an individual who had developed contact dermatitis to Cu(II)-acetyl acetonate and who also showed a cross reaction to acetyl acetone. The skin sensitizing properties of acetyl acetate were examined in a human patch test. Of the 12 persons tested three showed no reaction, seven doubtful, and two had a positive reaction after an exposure period of 24 hr. No skin reactions were evident after 48 and 72 hr, respectively. The results observed in the human patch test were interpreted as an irritating rather than a sensitizing effect. ANIMAL STUDIES: Acetyl acetone was not irritating to the skin of rabbits. In a rabbits eye irritation test, exposure to acetyl acetone resulted in minor transient irritation with no corneal involvement. After oral administration to rats, signs of toxicity were characterized by sluggishness, tremors, kyphosis, lacrimation, unsteady gait, comatose appearance and prostration. In another oral study, doses given by gavage to rats were 0, 100, 500 and 1,000 mg/kg bw given for 1 to 15 days in 1 to 11 applications. In the highest dose group all animals died within 1 hour after dosing. In the 500 mg/kg bw group 3/5 animals died and 2/5 were sacrificed due to poor condition after four applications. Various substance related systemic effects were observable in this dose group such as distended bladder, congested lungs, clouding of cornea, thymic necrosis, hepatocyte swelling and congestion, nephrosis, lymphadenitis of mesenteric lymph nodes and inflammation of the heart. After inhalation in rats (4 hr; 628, 919, 1231 and 1508 ppm) mortalities were observed in animals of the two highest dose groups. Signs of toxicity included reduced reflexes, respiratory difficulties, tremor as well as periocular, perioral and perinasal wetness and encrustation. Acetyl acetate was neurotoxic in rats. In rat developmental test reduced fetal body weight per litter was seen at 398 ppm and 202 ppm. Partial fetal atelectasis was increased at 398 ppm, and the increased incidence of 17 skeletal variants (out of 79 observed) indicated a consistent pattern of fetotoxicity at 398 ppm. Acetylacetone

demonstrated a strong mutagenic effect on Salmonella typhimurium (TA-104). In Chinese hamster ovary cells acetyl acetate produced a statistically significant increase in the number of sister chromatid exchanges per cell in the presence and absence of a metabolic activation system. /LABORATORY ANIMALS: Acute Exposure/ ... 30 min was the maximum time that rats could be exposed to a saturated atmosphere of 2,4-pentanedione vapor before death occurred. The same level was lethal to all animals exposed for 1 hr.
- Skin corrosion/irritation: /LABORATORY ANIMALS: Acute Exposure/ 2,4-Pentanedione applied to the depilated abdomens of guinea pigs under an occlusive wrap for 24 hr produced moderate skin irritation ... Four guinea pigs receiving 20 mL/kg under a wrap died within 24 to 72 hr of application but only one of five guinea pigs showed a weak sensitization reaction.
- Serious eye damage/eye irritation: IDENTIFICATION AND USE: Acetyl acetone is a colorless or slightly yellow liquid. It forms organometallic complexes which are used as gasoline additives, lubricant additives, driers for varnishes and printer's inks. HUMAN STUDIES: Acetly acetone (2 to 14 ppm) was reported to produce nausea and headaches in several persons. A case was reported involving an individual who had developed contact dermatitis to Cu(II)-acetyl acetonate and who also showed a cross reaction to acetyl acetone. The skin sensitizing properties of acetyl acetate were examined in a human patch test. Of the 12 persons tested three showed no reaction, seven doubtful, and two had a positive reaction after an exposure period of 24 hr. No skin reactions were evident after 48 and 72 hr, respectively. The results observed in the human patch test were interpreted as an irritating rather than a sensitizing effect. ANIMAL STUDIES: Acetyl acetone was not irritating to the skin of rabbits. In a rabbits eye irritation test, exposure to acetyl acetone resulted in minor transient irritation with no corneal involvement. After oral administration to rats, signs of toxicity were characterized by sluggishness, tremors, kyphosis, lacrimation, unsteady gait, comatose appearance and prostration. In another oral study, doses given by gavage to rats were 0, 100, 500 and 1,000 mg/kg bw given for 1 to 15 days in 1 to 11 applications. In the highest dose group all animals died within 1 hour after dosing. In the 500 mg/kg bw group 3/5 animals died and 2/5 were sacrificed due to poor condition after four applications. Various substance related systemic effects were observable in this dose group such as distended bladder, congested lungs, clouding of cornea, thymic necrosis, hepatocyte swelling and congestion, nephrosis, lymphadenitis of mesenteric lymph nodes and inflammation of the heart. After inhalation in rats (4 hr; 628, 919, 1231 and 1508 ppm) mortalities were observed in animals of the two highest dose groups. Signs of toxicity included reduced reflexes, respiratory difficulties, tremor as well as periocular, perioral and perinasal wetness and encrustation. Acetyl acetate was neurotoxic in rats. In rat developmental test reduced fetal body weight per litter was seen at 398 ppm and 202 ppm. Partial fetal atelectasis was increased at 398 ppm, and the increased incidence of 17 skeletal variants (out of 79 observed) indicated a consistent pattern of fetotoxicity at 398 ppm. Acetylacetone demonstrated a strong mutagenic effect on Salmonella typhimurium (TA-104). In Chinese hamster ovary cells acetyl acetate produced a statistically significant increase in the number of sister chromatid exchanges per cell in the presence and absence of a metabolic activation system. /LABORATORY ANIMALS: Acute Exposure/ After inhalation in Wistar rats (4 hr; 628, 919, 1231 and 1508 ppm, respectively, corresponding to 2,619; 3,832; 5,133 and 6,288 mg/cu m) mortalities were observable in animals of the two highest dose groups. Signs of toxicity included reduced reflexes, respiratory difficulties, tremor as well as periocular, perioral and perinasal wetness and encrustation. The combined LC50-value ... was determined to be 1224 ppm (5.1 mg/L/4hr) ...
- Respiratory or skin sensitization: IDENTIFICATION AND USE: Acetyl acetone is a colorless or slightly yellow liquid. It forms organometallic complexes which are used as gasoline additives, lubricant additives, driers for varnishes and printer's inks. HUMAN STUDIES: Acetly acetone (2 to 14 ppm) was reported to produce nausea and headaches in several persons. A case was reported involving an individual who had developed contact dermatitis to Cu(II)-acetyl acetonate and who also showed a cross reaction to acetyl acetone. The skin sensitizing properties of acetyl acetate were examined in a human patch test. Of the 12 persons tested three showed no reaction, seven doubtful, and two had a positive reaction after an exposure period of 24 hr. No skin reactions were evident after 48 and 72 hr, respectively. The results observed in the human patch test were interpreted as an irritating rather than a

sensitizing effect. ANIMAL STUDIES: Acetyl acetone was not irritating to the skin of rabbits. In a rabbits eye irritation test, exposure to acetyl acetone resulted in minor transient irritation with no corneal involvement. After oral administration to rats, signs of toxicity were characterized by sluggishness, tremors, kyphosis, lacrimation, unsteady gait, comatose appearance and prostration. In another oral study, doses given by gavage to rats were 0, 100, 500 and 1,000 mg/kg bw given for 1 to 15 days in 1 to 11 applications. In the highest dose group all animals died within 1 hour after dosing. In the 500 mg/kg bw group 3/5 animals died and 2/5 were sacrificed due to poor condition after four applications. Various substance related systemic effects were observable in this dose group such as distended bladder, congested lungs, clouding of cornea, thymic necrosis, hepatocyte swelling and congestion, nephrosis, lymphadenitis of mesenteric lymph nodes and inflammation of the heart. After inhalation in rats (4 hr; 628, 919, 1231 and 1508 ppm) mortalities were observed in animals of the two highest dose groups. Signs of toxicity included reduced reflexes, respiratory difficulties, tremor as well as periocular, perioral and perinasal wetness and encrustation. Acetyl acetate was neurotoxic in rats. In rat developmental test reduced fetal body weight per litter was seen at 398 ppm and 202 ppm. Partial fetal atelectasis was increased at 398 ppm, and the increased incidence of 17 skeletal variants (out of 79 observed) indicated a consistent pattern of fetotoxicity at 398 ppm. Acetylacetone demonstrated a strong mutagenic effect on Salmonella typhimurium (TA-104). In Chinese hamster ovary cells acetyl acetate produced a statistically significant increase in the number of sister chromatid exchanges per cell in the presence and absence of a metabolic activation system. /HUMAN EXPOSURE STUDIES/ The skin sensitizing properties of 2,4-pentanedione were examined in ... a human patch test consisting of 12 volunteers. In the patch test study with human volunteers no information was available concerning gender and health status as well as a possible allergic predisposition of the test persons. Of the 12 persons tested three of them showed no, seven doubtful and two a positive reaction after an exposure period of 24 hr. No skin reactions were evident after 48 and 72 hr, respectively. The results observed in the human patch test were interpreted as an irritating rather than a sensitizing effect and it was concluded ... that sensitization might occur more frequently due to prolonged and close skin contact of pads containing the substance

- Germ cell mutagenicity: IDENTIFICATION AND USE: Acetyl acetone is a colorless or slightly yellow liquid. It forms organometallic complexes which are used as gasoline additives, lubricant additives, driers for varnishes and printer's inks. HUMAN STUDIES: Acetly acetone (2 to 14 ppm) was reported to produce nausea and headaches in several persons. A case was reported involving an individual who had developed contact dermatitis to Cu(II)-acetyl acetonate and who also showed a cross reaction to acetyl acetone. The skin sensitizing properties of acetyl acetate were examined in a human patch test. Of the 12 persons tested three showed no reaction, seven doubtful, and two had a positive reaction after an exposure period of 24 hr. No skin reactions were evident after 48 and 72 hr, respectively. The results observed in the human patch test were interpreted as an irritating rather than a sensitizing effect. ANIMAL STUDIES: Acetyl acetone was not irritating to the skin of rabbits. In a rabbits eye irritation test, exposure to acetyl acetone resulted in minor transient irritation with no corneal involvement. After oral administration to rats, signs of toxicity were characterized by sluggishness, tremors, kyphosis, lacrimation, unsteady gait, comatose appearance and prostration. In another oral study, doses given by gavage to rats were 0, 100, 500 and 1,000 mg/kg bw given for 1 to 15 days in 1 to 11 applications. In the highest dose group all animals died within 1 hour after dosing. In the 500 mg/kg bw group 3/5 animals died and 2/5 were sacrificed due to poor condition after four applications. Various substance related systemic effects were observable in this dose group such as distended bladder, congested lungs, clouding of cornea, thymic necrosis, hepatocyte swelling and congestion, nephrosis, lymphadenitis of mesenteric lymph nodes and inflammation of the heart. After inhalation in rats (4 hr; 628, 919, 1231 and 1508 ppm) mortalities were observed in animals of the two highest dose groups. Signs of toxicity included reduced reflexes, respiratory difficulties, tremor as well as periocular, perioral and perinasal wetness and encrustation. Acetyl acetate was neurotoxic in rats. In rat developmental test reduced fetal body weight per litter was seen at 398 ppm and 202 ppm. Partial fetal atelectasis was increased at 398 ppm, and the increased incidence of 17 skeletal variants (out of 79 observed) indicated a consistent pattern of fetotoxicity at 398 ppm. Acetylacetone

demonstrated a strong mutagenic effect on Salmonella typhimurium (TA-104). In Chinese hamster ovary cells acetyl acetate produced a statistically significant increase in the number of sister chromatid exchanges per cell in the presence and absence of a metabolic activation system.
- Carcinogenicity: No data available.
- Reproductive toxicity: IDENTIFICATION AND USE: Acetyl acetone is a colorless or slightly yellow liquid. It forms organometallic complexes which are used as gasoline additives, lubricant additives, driers for varnishes and printer's inks. HUMAN STUDIES: Acetly acetone (2 to 14 ppm) was reported to produce nausea and headaches in several persons. A case was reported involving an individual who had developed contact dermatitis to Cu(II)-acetyl acetonate and who also showed a cross reaction to acetyl acetone. The skin sensitizing properties of acetyl acetate were examined in a human patch test. Of the 12 persons tested three showed no reaction, seven doubtful, and two had a positive reaction after an exposure period of 24 hr. No skin reactions were evident after 48 and 72 hr, respectively. The results observed in the human patch test were interpreted as an irritating rather than a sensitizing effect. ANIMAL STUDIES: Acetyl acetone was not irritating to the skin of rabbits. In a rabbits eye irritation test, exposure to acetyl acetone resulted in minor transient irritation with no corneal involvement. After oral administration to rats, signs of toxicity were characterized by sluggishness, tremors, kyphosis, lacrimation, unsteady gait, comatose appearance and prostration. In another oral study, doses given by gavage to rats were 0, 100, 500 and 1,000 mg/kg bw given for 1 to 15 days in 1 to 11 applications. In the highest dose group all animals died within 1 hour after dosing. In the 500 mg/kg bw group 3/5 animals died and 2/5 were sacrificed due to poor condition after four applications. Various substance related systemic effects were observable in this dose group such as distended bladder, congested lungs, clouding of cornea, thymic necrosis, hepatocyte swelling and congestion, nephrosis, lymphadenitis of mesenteric lymph nodes and inflammation of the heart. After inhalation in rats (4 hr; 628, 919, 1231 and 1508 ppm) mortalities were observed in animals of the two highest dose groups. Signs of toxicity included reduced reflexes, respiratory difficulties, tremor as well as periocular, perioral and perinasal wetness and encrustation. Acetyl acetate was neurotoxic in rats. In rat developmental test reduced fetal body weight per litter was seen at 398 ppm and 202 ppm. Partial fetal atelectasis was increased at 398 ppm, and the increased incidence of 17 skeletal variants (out of 79 observed) indicated a consistent pattern of fetotoxicity at 398 ppm. Acetylacetone demonstrated a strong mutagenic effect on Salmonella typhimurium (TA-104). In Chinese hamster ovary cells acetyl acetate produced a statistically significant increase in the number of sister chromatid exchanges per cell in the presence and absence of a metabolic activation system.
- STOT-single exposure: No data available.
- STOT-repeated exposure: No data available.
- Aspiration hazard: No data available.

Likely routes of exposure
- IDENTIFICATION AND USE: Acetyl acetone is a colorless or slightly yellow liquid. It forms organometallic complexes which are used as gasoline additives, lubricant additives, driers for varnishes and printer's inks. HUMAN STUDIES: Acetly acetone (2 to 14 ppm) was reported to produce nausea and headaches in several persons. A case was reported involving an individual who had developed contact dermatitis to Cu(II)-acetyl acetonate and who also showed a cross reaction to acetyl acetone. The skin sensitizing properties of acetyl acetate were examined in a human patch test. Of the 12 persons tested three showed no reaction, seven doubtful, and two had a positive reaction after an exposure period of 24 hr. No skin reactions were evident after 48 and 72 hr, respectively. The results observed in the human patch test were interpreted as an irritating rather than a sensitizing effect. ANIMAL STUDIES: Acetyl acetone was not irritating to the skin of rabbits. In a rabbits eye irritation test, exposure to acetyl acetone resulted in minor transient irritation with no corneal involvement. After oral administration to rats, signs of toxicity were characterized by sluggishness, tremors, kyphosis, lacrimation, unsteady gait, comatose appearance and prostration. In another oral study, doses given by gavage to rats were 0, 100, 500 and 1,000 mg/kg bw given for 1 to 15 days in 1 to 11 applications. In the highest dose group all animals died within 1 hour after dosing. In the 500

mg/kg bw group 3/5 animals died and 2/5 were sacrificed due to poor condition after four applications. Various substance related systemic effects were observable in this dose group such as distended bladder, congested lungs, clouding of cornea, thymic necrosis, hepatocyte swelling and congestion, nephrosis, lymphadenitis of mesenteric lymph nodes and inflammation of the heart. After inhalation in rats (4 hr; 628, 919, 1231 and 1508 ppm) mortalities were observed in animals of the two highest dose groups. Signs of toxicity included reduced reflexes, respiratory difficulties, tremor as well as periocular, perioral and perinasal wetness and encrustation. Acetyl acetate was neurotoxic in rats. In rat developmental test reduced fetal body weight per litter was seen at 398 ppm and 202 ppm. Partial fetal atelectasis was increased at 398 ppm, and the increased incidence of 17 skeletal variants (out of 79 observed) indicated a consistent pattern of fetotoxicity at 398 ppm. Acetylacetone demonstrated a strong mutagenic effect on Salmonella typhimurium (TA-104). In Chinese hamster ovary cells acetyl acetate produced a statistically significant increase in the number of sister chromatid exchanges per cell in the presence and absence of a metabolic activation system.

Symptoms related to the physical, chemical and toxicological characteristics
- IDENTIFICATION AND USE: Acetyl acetone is a colorless or slightly yellow liquid. It forms organometallic complexes which are used as gasoline additives, lubricant additives, driers for varnishes and printer's inks. HUMAN STUDIES: Acetly acetone (2 to 14 ppm) was reported to produce nausea and headaches in several persons. A case was reported involving an individual who had developed contact dermatitis to Cu(II)-acetyl acetonate and who also showed a cross reaction to acetyl acetone. The skin sensitizing properties of acetyl acetate were examined in a human patch test. Of the 12 persons tested three showed no reaction, seven doubtful, and two had a positive reaction after an exposure period of 24 hr. No skin reactions were evident after 48 and 72 hr, respectively. The results observed in the human patch test were interpreted as an irritating rather than a sensitizing effect. ANIMAL STUDIES: Acetyl acetone was not irritating to the skin of rabbits. In a rabbits eye irritation test, exposure to acetyl acetone resulted in minor transient irritation with no corneal involvement. After oral administration to rats, signs of toxicity were characterized by sluggishness, tremors, kyphosis, lacrimation, unsteady gait, comatose appearance and prostration. In another oral study, doses given by gavage to rats were 0, 100, 500 and 1,000 mg/kg bw given for 1 to 15 days in 1 to 11 applications. In the highest dose group all animals died within 1 hour after dosing. In the 500 mg/kg bw group 3/5 animals died and 2/5 were sacrificed due to poor condition after four applications. Various substance related systemic effects were observable in this dose group such as distended bladder, congested lungs, clouding of cornea, thymic necrosis, hepatocyte swelling and congestion, nephrosis, lymphadenitis of mesenteric lymph nodes and inflammation of the heart. After inhalation in rats (4 hr; 628, 919, 1231 and 1508 ppm) mortalities were observed in animals of the two highest dose groups. Signs of toxicity included reduced reflexes, respiratory difficulties, tremor as well as periocular, perioral and perinasal wetness and encrustation. Acetyl acetate was neurotoxic in rats. In rat developmental test reduced fetal body weight per litter was seen at 398 ppm and 202 ppm. Partial fetal atelectasis was increased at 398 ppm, and the increased incidence of 17 skeletal variants (out of 79 observed) indicated a consistent pattern of fetotoxicity at 398 ppm. Acetylacetone demonstrated a strong mutagenic effect on Salmonella typhimurium (TA-104). In Chinese hamster ovary cells acetyl acetate produced a statistically significant increase in the number of sister chromatid exchanges per cell in the presence and absence of a metabolic activation system.

SECTION 12: Ecological information

Not available

SECTION 13: Disposal considerations

Not available

SECTION 14: Transport information

Not available

SECTION 15: Regulatory information

Not available

SECTION 16: Other information

Not available

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