MATERIAL SAFETY DATA SHEET

SABUTOL

1 IDENTIFICATION OF THE PRODUCT AND THE COMPANY

1.1 IDENTIFICATION OF THE SUBSTANCE / PREPARATION:

Product name : Sabutol
Synonym : Not Available
Trade name : SABUTOL
Material Uses : Coatings: paints, lacquer thinners, liquid printing inks, flexographic printing and dyes in the foundry industry. Derivative manufacture: acetates, phthalates, resins, etc.

1.2 IDENTIFICATION OF THE COMPANY:

RAR Resin & Chemical Industries JLT
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2 CHEMICAL COMPOSITION OF PIGMENT YELLOW 34

NAME	CAS#	% by weight	Exposure limits
Butan-1-ol	**71-36-3**	**60-69**	ACGIH TLV (United States, 2002) STEL: 50ppm 15 minutes(s) STEL: 152 mg/m³ 15minute(s) NIOSH (United States,2002) CEIL: 50 ppm CEIL: 150 mg/m³
2-Pentanol	6032-29-7	17	NIOSH (United States,2002) STEL: 125 ppm 15 minute(s) STEL: 450 mg/m³ 15 minute(s)
2- Methylpropan-1-ol	78-83-1	9	OSHA PEL Z-1 (United States,2002) TWA: 100ppm 8 hour(s) TWA: 300 mg/m³ 8 hours(s)
2- Methylbutan-2-0l	75-85-4	2	Not available

3. HAZARDS IDENTIFICATION

Physical state and appearance : Liquid
Emergency overview : FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. RISK OF SERIOUS DAMAGE TO EYES. HARMFUL IS SWALLOWED. IRRITATING TO RESPIRATORY SYSTEM AND SKIN.

: Keep away from heat, sparks and flame. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry : Absorbed through skin. Eye contact. Inhalation. Ingestion.
Potential acute health effects

Eyes:	Risk of serious damage to eyes.
Skin:	Irritationg to skin
Inhalation:	Irritating to respiratory system.
Ingestion:	Harmful if swallowed.

Potential chronic health effects
:CARCINOGENIC EFFECTS: Classified None. by NIOSH [Butan-1-ol]. Classified D

Health effects
:(Not classified for human or animal.) by EPA [Butan-1-ol]. Classified None. by NIOSH [2-Methylpropan-1-ol. Classified None. by NIOSH [2-Methylbutan-2-ol]. Classified None. by NIOSH [2-Pentanol]. Classified 4 (Probably not for human.) by IARC, None. by NIOSH [Butan-2-ol].
: MUTAGENIC EFFECTS: Not listed.
TERATOGENIC EFFECTS: Not listed.

Medical conditions aggravated by overexposure: No data available

Overexposure signs/symptoms: No data available

See toxicological information (section 11)

4. FIRST AID MEASURE

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with running water for atleast 15minutes keeping eyelids open. Cold water may be used. Get medical attention immediately.

Skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt, or waistband. Call a physician immediately.

Notes to Physician

: Support respiratory and cardiovascular function.

5 FIRE FIGHTING MEASURES

Flammability of the product	: Flammable
Autoignition temperature	: 343°C (649.9 deg°F)
Flash points	: CLOSED CUP: 32°C (89.6°F)
Flammable limits	: LOWER: 1.4 % UPPER: 11.2 %
Products of combustion	: These products are carbon oxides (CO, CO2)
Fire hazards in presence of various substance	: Flammable in presence of open flames and sparks, of oxidizing materials, of reducing materials, of combustile materials.
Explosion hazards in presence of various substances	: No data available
Fire fighting media and instruction	: SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water of fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.
Protective clothing (fire)	: Wear MSHA/ NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.
Speacial remarks on fire	: No additional remark.
Special remarks on explosion hazards.	: No additional remark.

6. ACCIDENTAL RELEASE MEASURES

Small spill and leak: Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large spill and leak: Stay upwind. Keep away from heat. Stop leak if without risk. Keep away from sources of ignition. Absorb with DRY earth, sand or other non- combustible material. Do not touch spilled material. Prevent entry sewers, basements or confined areas; dike if needed.

7. HANDLING AND STORAGE

Handling: Avoid breathing vapors or spray mists. Wear suitable protective clothing. Keep container closed. Use only with adequate ventilation. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion- proof electrical (ventilating, lighting and material handling) equipment.

Storage: Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

8 EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering controls: Provide exhaust ventilation or other engineering controls to keep airborne concentrations of vapors below their respective occupation exposure limits. ENsure that eyewash stations and safely showers are proximal to the work- station location.

Personal protection

Eyes : Splash goggles
Body : Chemical resistant protective suit.
Respiratory : Vapor respirator. wear appropriate respirator when ventilation is inadequate.
Hands : Butyl rubber gloves
Feet : Chemical resistant safety boots.

Protective clothing: (pictograms)

Personal protection in case of a large spill: Splash goggles. Full suit. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficeint; consult a specialist BEFORE handling this product.

NAME	Exposure limits
Butan-1-ol	ACGIH TLV (United States, 2002) STEL: 50ppm 15 minutes(s) STEL: 152 mg/m³ 15minute(s) NIOSH (United States,2002) CEIL: 50 ppm CEIL: 150 mg/m³
2-Pentanol	NIOSH (United States,2002) STEL: 125 ppm 15 minute(s) STEL: 450 mg/m³ 15 minute(s)
2- Methylpropan-1-ol	OSHA PEL Z-1 (United States,2002) TWA: 100ppm 8 hour(s) TWA: 300 mg/m³ 8 hours(s)
2- Methylbutan-2-ol	Not available

9 PHYSICAL AND CHEMICAL

Physical state and appearance : Liquid
Color : Color, colourless (Light)
Odor : Alcohol like (Slight)
Taste : No data available
Molecular weight : Not applicable
Molecular formula : 7 [Neautral]
pH (1% soln/ water) : 117°C (242.6°F)

Boiling/condensation point	:117°C (242.6°F)
Melting/freezing point	: - 89°C (-128.2°F)
Critical temperature	: The lowest known value is 289.8°C (553.6°F) (n-Butanol)
Specific gravity	: 0.81 (Water= 1)
Vapor pressure	: The highest known value is 8.8 mm of Hg (@ 20°C) (Isobutyl alcohol. Weighted average: 3.98 mm of Hg (@ 20°C)
Vapor density	: The highest known value is 3.04 (Air=1) (Pentanol-3). Weighted average: 2.65 (Air=1)
Volatility	: 100% (v/v). (n- Butanol.) 100 % (w/w). (n-Butanol)
Odor threshold	: The highest known value is 40 ppm (Isobutyl alcohol) Weighted average: 26.78 ppm
Evaporation rate	: 0.45 (n-Butanol). [Butyl acetate]
VOC	: 100 %
Viscosity	: The highest known value is 36.1 cP (n-Butanol) Weighted average 35.16 cP
LogK ow	: The product is equally soluble in oil and water.
Ionicity (in water)	: no data available
Dispersion properties	: See solubility in water, methanol, diethyl ether, n-octanol
Solubility	: Easily soluble in methanol, diethyl ether. Soluble in water Partially soluble in cold water, n-octanol.
Physical chemical comments	: No additional remark.

10 STABILITY AND RECTIVITY

Stability and rectivity	: The product is stable.
Conditions of instability	: Sparks, open flames, heat and other ignition sources.
Incompatibility with various substances	: Reactive with oxidizing agents, reducing agents, organic materials, acids, alkalis.
Hazardous decomposition products	: When heated emits acrid smoke and fumes. Usually carbon monoxide is released.
Hazardous polymerization	: Will not occur.

11 TOXICOLOGICAL INFORMATION

Toxicity to animals	: Acute oral toxicity (LD50) : 790 mg/kg [Rat]. (Butan-1-ol) Acute dermal toxicity (LD50) : 2520 mg/kg [Rabbit]. (2-Methylbutan-2-ol) Acute toxicity of the vapor (LC50) 8000 ppm 4 hour(s) [Rat]. (Butan-1-ol)
Chronic effects on humans	: No additional remark.
Other toxic effects on humans	: No additional remarks.
Special remarks on toxicity to animals	: No additional remarks
Special remarks on chronic effects on humans	: can cause gastrointestinal disturbances (n-Butanol)
Special remarks on other toxic effects on humans	: Exposure can cause nausea, headache and vomiting (n-Butanol)

12 ECOLOGICAL INFORMATION

Ecotoxicity : No data available.
BOD and COD : No data available.
Biodegradable/OECD : No data available.
Mobility : No data available
Products of degradation : These products are carbon oxides (CO, CO_2) and water.
Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself
Special remarks on the products of biodegradation : No additional remark.

13 DISPOSAL CONSIDERATION

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations.
Waste stream : No data available.

Consult your local or regional authorities.

14 TRANSPORT INFORMATION

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Class	UN1987	ALCOHOLS N.O.S (n-Butanol)	DOT CLASS 3: Flammable liquid	II		No additional remark.
TDG Class	UN1987	ALCOHOLS N.O.S (n-Butanol)	TDG CLASS 3: Flammable liquid	II		
IMDG Class	UN1987	ALCOHOLS N.O.S (n-Butanol)	IMDG CLASS 3: Flammable liquid	II		
IATA-DGR Class	UN1987	ALCOHOLA N.O.S (n-Butanol)	IATA CLASS 3: Flammable liquid	II		

15. REGULATORY INFORMATION

HCS classification : Flammable liquid irritating material

U.S Federal : TSCA 4(a) proposed test rules: Butan-2-ol
TSCA 5(e) substance consent order: 2-Methylpropan-1-ol
TSCA6(a) PAIR: 2-Methylpropan-1-ol; Butan-2-ol
TSCA8(a) IUR: BUTAN-1-ol; 2-Methylpropan-1-ol
TSCA8(b) inventory: Butan-1-ol; 2-Methylpropan-1-ol; 2-Methylpropan-2-ol; 2-Pentanol; Butan-2-ol
TSCA8(d) H and S data reporting: Butan-2-ol

SARA 302/304/311/312 extremely hazardous substances No products were found
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Butan-1-ol; 2-methylpropan -1-ol; 2-Methylbutan-2-ol; 2-Pentanol; Butan-2-ol
SARA 311/312 MSDS distribution- chemical inventroy- hazard identification: Butan-1-ol: Fire hazard, immediate (Acute) health hazard, delayed (Chronic) Health Hazard; 2-Methylpropan-1-ol: Fire hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; 2-Methylbutan-2-ol: Fire hazard, Immediate (Acute) Health Hazard; 2-Pentanol: Fire hazard, Immediate (Acute) Health Hazard; Butan-2-ol: Fire hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

SARA 313 toxic chemical notification and release reporting: Butan-1-ol 67%

Clean Water Act (CWA) 307: No products were found

Clean Water Act (CWA) 311: No products were found

Clean air act (CAA) 112 accidental release prevention: No products were found
Clean air act (CAA) 112 regulated flammable substances: No products were found
Clean air act (CAA) 112 regulated toxic substances: No products were found

State regulation : Rhode island RTK hazardous substances: Butan -1-ol; 2-Methylpropan-1-ol Butan-2-ol
Pennsylvania RTK: Butan-1-ol: (environmental hazard, generic environmental hazard); 2-Methylpropan-1-ol: (environmental hazard, generic environmental hazard; 2-Methylbutan-2-ol: (genetic environmental hazard, generic environmental hazard)
Florida: Butan-1-ol; 2- Methylpropan-1-ol; 2-Methylbutan-2-ol; 2-Pentanol; Butan-2-ol
Minnesota: Butan-1-ol; 2-Methylpropan-1-ol; Butan-2-ol
Massachusetts RTK: Butan-1-ol; 2-Methylpropan-1-ol; 2-Methylbutan-2-ol ;2-Pentanol; Butan-2-ol
New Jersey: Butan-1-ol; 2-Methylpropan-1-ol; Butan-2-ol
New Jersey spill list: Butan-1-ol; 2-Methylpropan-1-ol; Butan-2-ol

California prop. 65: No products were found.

EU Regulations

Hazards symbol(s) :

Classification : Harmful

Rish Phrases	: R10- Flammable R22- Harmful if swallowed R37/38 - irritating to respiratory system and skin R41- Risk of serious damage to eyes R67- Vapors may cause drowsiness and dizziness.
Safety Phrase	: S24- Avoid contact with skin. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S37- Wear suitable gloves S39- Wear eye/face protection S60- This material and its container must be disposed of as hazardous waste.
EINECS number	: 200-751-6 (n-Butanol), 227-907-6 (2-pentanol), 201-148-0 (Isobutyl alcohol, 209-526-7 (3-Pentanol)

16. OTHER INFORMATION

National Fire Association (U.S.A.)

References: - LOLI Database: The regulated Chemicals List of Lists. - CHEMINFO: Canadian Centre for Occupational Health and Safety, Issue: 97-3 (August, 1997).- BDH; Hazard Data Disk, Version 3.- CESARS: Chemical Evaluation and Retrieval System, Produced by: Ontario Ministry of Environment and Michigan Department of Natural Resouces, Issue:97-3 (August, 1997).- TOMES Plus System: Toxicology, Occupational Medicine & Environmental Series: incorporating:- MEDITEX, HAZARDTEXT, 1st Medical Response Protocols, INFOTEXT, HSDB, CHRIS, OHM/TADS, IRIS, NIOSH Pocket Guide, RTECS, NJ Fact Sheets, North American Emergency Response Guides, REPROTEXT, REPROTOX, TERIS, Shepard's Catalog of Teratogenic Agents.

Other special: considerations No additional remark.

Verified by: Dr Thembakazi Mali.

Notice to reader

This MSDS summarises at the date of issue our best knowledge of the health, safety and environmental hazard information related to the product, and in particular how to safely handle, use, store and transport the product in the workplace. Since RAR Resin & Chemical Industries and its subsidiaries cannot anticipate or control the conditions under which the product may be handled, used, stored or transported, each user must, prior to usage, review this MSDS in the context of how the user intends to handle, use, store or transport the product in the workplace and beyond, and communicate such information to all relevant parties.If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact this company.

We shall not assume any liability for the accuracy or completeness of the information contained herein or any advice given unless there has been gross negligence on our part. In such event our liability shall be limited only to direct damages suffered. Our responsibility for product as sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available upon request. All risk associated with the possession and application of the product passes on delivery.