SAFETY DATA SHEET

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ACCORDING TO OSHA HCS (29 CFR 1910.1200)

SECTION 1: IDENTIFICATION

Product identifier used on the label Gagekote 8

Other means of identification

Chemical Name	Mixture
CAS No.	Mixture
EINECS No.	Mixture

Recommended use of the chemical and restrictions on use

Recommended use	PC14 Metal surface treatment products, including galvanic and electroplating products
Restrictions on use	Anything other than the above.

Details of the supplier of the safety data sheet

Supplier	VISHAY MEASUREMENTS GROUP, INC.
Address of Supplier	Post Office Box 27777 Raleigh, NC 27611 USA
Telephone	+1 919-365-3800
Fax	+1 919-365-3945
E-Mail (competent person)	mm.us@vishaypg.com

Emergency telephone number 1-800-424-9300 CHEMTREC (24 hours)

SECTION 2: HAZARD(S) IDENTIFICATION

Classification of the substance or mixture in accordance with paragraph (d) of 29 CFR 1910.1200

Physical hazards	Flammable Liquid, Category 2
Health hazards	Aspiration hazard, Category 1 Skin corrosion/irritation, Category 2 Eye Irritation, Category 2 Specific target organ toxicity — single exposure, Category 3 Reproductive toxicity, Category 2 Specific target organ toxicity — repeated exposure, Category 2
Environmental hazards	Not classified

Hazard Symbol

Signal Word(s) DANGER

Hazard Statement(s)

Highly flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Causes serious eye irritation.
May cause drowsiness or dizziness.
Suspected of damaging the unborn child.
May cause damage to organs (Central nervous system) through prolonged or repeated exposure.

Precautionary Statement(s) Keep away from heat, hot surfaces, sparks, open flames and other ignition

sources. No smoking.
Do not breathe vapour.
Keep container tightly closed.
Wear protective gloves/protective clothing/eye protection/face protection.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
Do NOT induce vomiting.
IF ON SKIN: Wash with plenty of water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Store in a well-ventilated place. Keep cool.
Dispose of contents in accordance with local, state or national legislation.

Other hazards None known.

Percent of the mixture consists of ingredient(s) of unknown acute toxicity: 0%

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances Not applicable

Mixtures Substances in preparations / mixtures

Chemical identity of the substance	%W/W	CAS No.	EC No.	Hazard classification
Toluene	45-55	108-88-3	203-625-9	Flammable Liquid, Category 2 Aspiration hazard, Category 1 Skin corrosion/irritation, Category 2 Specific target organ toxicity — single exposure, Category 3 Reproductive toxicity, Category 2 Specific target organ toxicity — repeated exposure
Methyl ethyl ketone	10-20	78-93-3	201-159-0	Flammable Liquid, Category 2 Eye Irritation, Category 2 Specific target organ toxicity — single exposure

SECTION 4: FIRST AID MEASURES

Description of first aid measures

Self-protection of the first aider: Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Ensure adequate ventilation. Do not breathe vapour. Avoid all contact. Avoid exposure during pregnancy.

Inhalation: IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Apply artificial respiration if breathing has ceased or shows signs of failing. Immediately call a POISON CENTER/doctor.

Skin Contact: IF ON SKIN (or hair): After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of soap and water. If irritation (redness, rash, blistering) develops, get medical attention.

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation develops and persists, get medical attention.

Ingestion: IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting. If vomiting occurs turn patient on side. Do not give milk or alcoholic beverages. Rinse mouth with water but do not swallow. Never give anything by

	mouth to an unconscious person.
Most important symptoms and effects, both acute and delayed	May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness. Suspected of damaging the unborn child. - Inhalation. May cause damage to organs through prolonged or repeated exposure: Central nervous system - Inhalation.
Indication of any immediate medical attention and special treatment needed	Treat symptomatically.
Notes to a physician:	IF SWALLOWED: Consider use of charcoal as a slurry (240mL water/30 g charcoal). Usual dose: 25 to 100 g in adults. If determined necessary (and under qualified medical supervision), the stomach should be emptied by gastric lavage with the airway protected by endotracheal intubation.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media	
Suitable Extinguishing Media	As appropriate for surrounding fire. Extinguish preferably with foam, carbon dioxide or dry chemical.
Unsuitable extinguishing Media	Do not use water jet. Direct water jet may spread the fire.
Special hazards arising from the substance or mixture	Highly flammable liquid and vapour. May decompose in a fire giving off toxic fumes. Oxides of carbon and Nitrogen oxides. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.
Special protective equipment and precautions for fire fighters	Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Avoid all contact. Do not ingest. If swallowed then seek immediate medical assistance. Use personal protective equipment as required. Do not breathe vapour. Ensure adequate ventilation. Remove all ignition sources. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Remove clothing and wash thoroughly before use. Isolate the area and allow vapours to disperse. In confined spaces, sewers, etc., the vapours may collect to form explosive mixtures with air.
Large spillages:	Evacuate the area and keep personnel upwind.
Methods and material for containment and cleaning up	Use non-sparking equipment when picking up flammable spill. Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a container for disposal. Ventilate the area and wash spill site after material pick-up is complete. Dispose of this material and its container as hazardous waste
Large spillages:	Evacuate the area and keep personnel upwind. Notify police and fire brigade as soon as possible.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Take precautionary measures against static discharge. Do not use sparking tools. Ensure adequate ventilation. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid all contact. Do not breathe vapour. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.
Conditions for safe storage, including any incompatibilities	Ground/bond container and receiving equipment. Store in a well-ventilated place. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from direct sunlight.
Storage temperature	Ambient. 5 - 25°C
Incompatible materials	Stable under normal conditions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Toluene	108-88-3	100	375	150*	560*	NIOSH
		200	-	300	-	OSHA
		20	-	-	-	ACGIH, A4
Ethyl methyl ketone	78-93-3	200	590	300*	885*	NIOSH
		200	590	-	-	OSHA
		200	-	300	-	ACGIH

Note: OSHA PELs 1910.1000 TABLE Z-1, Z-2 / NIOSH RELs / ACGIH TLVs
* 15 minutes average value
A4: Not Classifiable as a Human Carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of the lack of data. In vitro or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories.

Biological Exposure Indices

SUBSTANCE	CAS No.	Determinant	Biological Exposure Indices	Sampling Time	Note
Toluene	108-88-3	Toluene in blood Toluene in urine o-Cresol in urine with hydrolosis	0.02 mg/l 0.03 mg/l 0.3 mg/g creatinine	Prior to last shift of workweek End of shift End of shift	- - B
Ethyl methyl ketone	78-93-3	Ethyl methyl ketone in urine	2 mg/L	End of shift	Ns

Source: 2015 ACGIH Biological Exposure Indicies (BEIs)
B – Background
Ns - Nonspecific

Appropriate engineering controls

Ensure adequate ventilation. or Use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems.

Individual protection measures, such as personal protective equipment (PPE)

General hygiene measures for the handling of chemicals are applicable. Avoid all contact. Do not breathe vapour. Wash hands before breaks and after work. Keep work clothes separately. Contaminated clothing should be thoroughly cleaned. Do not eat, drink or smoke at the work place.

Eye/face protection

Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection.

Skin protection

Hand protection:
Wear impervious gloves. Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Suitable materials:
Nitrile rubber (Minimum thickness: 0.45 mm)
Butyl rubber (Minimum thickness: 0.7 mm)

Body protection:

	Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Respiratory protection 	In case of inadequate ventilation wear respiratory protection. Open system(s): Wear suitable respiratory protective equipment. A suitable mask with filter type A (EN141 or EN405) may be appropriate.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Clear liquid with perceptible odour.
Odor	Aromatic.
Odor Threshold	Not available.
pH	Not established.
Melting Point/Freezing Point	Not established.
Initial boiling point and boiling range	82.2°C
Flash Point	-1°C [Closed cup]
Evaporation rate (Butyl acetate = 1)	3.62 (BuAC = 1)
Flammability (solid, gas)	Not applicable - Liquid
Upper/lower flammability or explosive limits	Flammable Limits (Lower) (%v/v): 1.6 (Air) Flammable Limits (Upper) (%v/v): 11.2 (Air)
Vapour pressure	45.4 mmHg
Vapour density	4 (Air = 1)
Relative density	0.88 g/cm^3 (H2O = 1)
Solubility(ies)	Water: 0.1%
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	Not available.
Other information	Volatile Organic Compound Content: 592 g/l

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	Highly flammable liquid and vapour. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from direct sunlight. Do not use sparking tools.
Incompatible materials	Keep away from: Aerosol, Flammable liquid, Oxidizing agents, Corrosive Substances, Acids and Alkalis.
Hazardous decomposition product(s)	May decompose in a fire giving off toxic fumes. Combustion products: Carbon monoxide, Carbon dioxide and Nitrogen oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects (Substances in preparations / mixtures)

Acute toxicity - Ingestion	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Acute toxicity - Inhalation	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 >20.0 mg/l.
Acute toxicity - Skin Contact	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg

	bw/day.
Skin corrosion/irritation	Skin corrosion/irritation, Category 2: Causes skin irritation.
Toluene:	Irritating to skin. (EU Method B.4)
Serious eye damage/irritation	Eye Irritation, Category 2: Causes serious eye irritation. Irritating to eyes. (OECD 405)
Respiratory or skin sensitization	Based upon the available data, the classification criteria are not met.
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met.
Carcinogenicity	Based upon the available data, the classification criteria are not met.
Reproductive toxicity	Reproductive toxicity, Category 2: Suspected of damaging the unborn child. - Inhalation.
Toluene:	Toxicity for reproduction: Positive 2000 ppm (Ono A, et al, 1996) Developmental Toxicity: NOAEC 500 ppm (OECD 414)
STOT - single exposure	Specific target organ toxicity — single exposure, Category 3: May cause drowsiness or dizziness.
Toluene:	NOAEC of 50 ppm (188mg/m3) can be determined for acute neurobehavioural effects. (Muttray A, et al, 2005)
STOT - repeated exposure	Specific target organ toxicity — repeated exposure, Category 2: May cause damage to organs through prolonged or repeated exposure: Central nervous system. - Inhalation.
Toluene:	LOAEC 600 ppm (OECD 453)
Methyl ethyl ketone:	No data. Harmonised Classification
Aspiration hazard	Aspiration hazard, Category 1: May be fatal if swallowed and enters airways.
Toluene:	Kinematic Viscosity; 0.55 cST

Information on likely routes of exposure

Inhalation	Possible – accidental exposure
Ingestion	Unlikely – accidental exposure
Skin Contact	Possible – accidental exposure
Eye Contact	Unlikely – accidental exposure

Early onset symptoms related to exposure

May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness.

Delayed health effects from exposure

Suspected of damaging the unborn child. May cause damage to organs through prolonged or repeated exposure. (Affected organs: Central nervous system).

Other information

NTP Report on Carcinogens	Not Listed
IARC Monographs	Toluene – Group 3: Not classifiable as to its carcinogenicity to humans
OSHA Designated Carcinogen	Not Listed

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity	Based upon the available data, the classification criteria are not met. Estimated Mixture LC50 >100 mg/l (Fish)
Persistence and degradability	Part of the components are poorly biodegradable.
Bioaccumulative potential	The product has low potential for bioaccumulation.
Mobility in soil	The product is predicted to have low mobility in soil. (The product is essentially insoluble in water.)
Other adverse effects	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	Dispose of this material and its container as hazardous wasteSend after pre-treatment to a appropriate hazardous waste incinerator facility according to legislation.
Additional Information	Dispose of contents in accordance with local, state or national legislation.

SECTION 14: TRANSPORT INFORMATION

	ADR/RID	IMDG	IATA
UN number	1263	1263	1263
UN proper shipping name	PAINT	PAINT	PAINT
Transport hazard class(es)	33	3	3
Packing group	II	II	II
Environmental hazards	Not classified	Not classified as a Marine Pollutant.	Not classified
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable		
Special precautions for user	See Section: 2		

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

US Federal Regulations

TSCA (Toxic Substance Control Act)	Toluene: Subject to 25,000 lb reporting threshold Ethyl methyl ketone: Subject to 25,000 lb reporting threshold
EPCRA/SARA Section 302 Extremely Hazardous Substances	Not Listed
EPCRA Section 313 Toxics Release Inventory (TRI) Program	Toluene: De Minimis limit: 1%
NIOSH Occupational Carcinogen List	Not Listed
OSHA List of highly hazardous chemicals, toxics and reactives	Not Listed
NTP Report on Carcinogens (RoC) List	Not Listed
Poison Prevention Packaging Act	Toluene: Substance requiring special packaging - Solvents for paint or other similar surface-coating material

US State Regulations

California State, Proposition 65 List	Toluene: Safe harbor level - MADL: 7000 ug/day
California State, Safer Consumer Products Regulations	Toluene: Initial Candidate Chemicals List Ethyl methyl ketone: Candidate Chemicals List
Maine State, Toxic Chemicals in Children's Products Act	Toluene: COC list. CHC list
New Jersey State Worker and Community RTK Act	Toluene: RTKHSL. SHHSL Ethyl methyl ketone: RTKHSL. SHHSL
Pennsylvania State, Worker and Community RTK Act	Toluene: Hazardous Substance List. Environmental Hazard List Ethyl methyl ketone: Hazardous Substance List. Environmental Hazard List
Rhode Island State, Hazardous Substances RTK Act	Toluene: Hazardous Substance List Ethyl methyl ketone: Hazardous Substance List

Non-Regional

IARC Monographs, List of Classifications	Toluene: Group 3 - Not classifiable as to its carcinogenicity to humans

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: New SDS Regulation compliant with HazCom 2012 format, all sections have been updated to include new information. Please review SDS with care.

Version	2.0
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References:

Existing Safety Data Sheet (SDS)

EU Data: Existing ECHA registration(s) for and Harmonised Classification(s) for Toluene (CAS No. 108-88-3) and Ethyl methyl ketone (CAS No. 78-93-3).

GHS Classification of the substance or mixture	Classification Procedure

Flammable Liquid, Category 2	Flash Point [Closed cup] Test Result/ Boiling Point (°C)
Aspiration hazard, Category 1	Expert judgement
Skin corrosion/irritation, Category 2	Threshold Calculation
Eye Irritation, Category 2	Threshold Calculation
Specific target organ toxicity — single exposure, Category 3	Threshold Calculation
Reproductive toxicity, Category 2	Threshold Calculation
Specific target organ toxicity — repeated exposure, Category 2	Threshold Calculation

LEGEND

ACGIH: American Conference of Governmental Industrial Hygienists
BEI: Biological Exposure Indices (ACGIH)
IARC: International Agency for Research on Cancer
Irr: Irritation
NIOSH: National Institute of Occupational Safety and Health
NTP: National Toxicology Program
OSHA: The Occupational Safety & Health Administration
PBT: Persistent, Bioaccumulative and Toxic
PEL: Permissible exposure limit
REL: Recommended exposure limit
SCL: Specific Concentration Limit
Skin": Risk of overexposure via dermal contact
STEL: Short Term Exposure Limit
TLV: Threshold Limit value
TSCA: Toxic Substance Control Act
TWA: Time Weighted Average
URT: Upper respiratory tract
vPvB: very Persistent and very Bioaccumulative

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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