



Be Right™

SAFETY DATA SHEET

Product Name Buffer Solution pH 4.01 ± 0.02

Issue Date 25-Oct-2022

Revision Date 31-Oct-2022

Version 1.1

1. Identification

Product identifier

Product Name Buffer Solution pH 4.01 ± 0.02

Other names

Product Code(s) 2770020

Synonyms None.

Safety data sheet number M00368

Pure substance/mixture Mixture

Recommended use of the chemical and restrictions on use

Recommended Use Analytical reagent. Buffer.

Uses advised against No information available.

Manufacturer, importer or supplier name, address and telephone number

Manufacturer Address

Hach Company, P.O.Box 389, Loveland, CO 80539, USA, +1(970) 669-3050

Emergency telephone number

Taiwan

Emergency Telephone +1(303) 623-5716 - 24 Hour Service

2. Hazard(s) identification

Chemical hazard classification

Not a hazardous substance or mixture according to the Globally Harmonized System (GHS)

Label elements

Hazard statements

Not a hazardous substance or mixture according to the Globally Harmonized System (GHS)

Other hazards

No information available.

3. Composition/information on ingredients

Chemical Family Mixture

Substance
Not applicable.

Mixture

Chemical name	English chemical name	Formula	CAS No	Percent Range
1,2-Benzenedicarboxylic acid, monopotassium salt	1,2-Benzenedicarboxylic acid, monopotassium salt	C ₈ H ₅ KO ₄	877-24-7	1 - 5%
Formaldehyde	Formaldehyde	CH ₂ O	50-00-0	<0.1%
Methanol	Methanol	CH ₃ OH	67-56-1	<0.1%

4. First-aid measures

Different exposure routes and first aid procedures

Inhalation	Remove to fresh air.
Skin contact	Wash skin with soap and water.
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
Ingestion	Rinse mouth.
Most important symptoms and effects	No information available.
Self-protection of the first aider	No information available.
Note to physicians	Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Small Fire	Dry chemical or CO ₂ .
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.
Specific hazards arising from the chemical	No information available.
Hazardous combustion products	This material will not burn.
Specific/special fire-fighting measures	Fires need to be assessed to determine appropriate protocols and safety measures for firefighting, including establishing safe zones, extinguishing media to be used, firefighter protection, and actions to control or extinguish the fire.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

6. Accidental release measures

Personal precautions Ensure adequate ventilation.

Reference to other sections See section 8 for more information. See section 13 for more information.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions See Section 12 for additional Ecological Information.

Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. Handling and storage

Handling Handle in accordance with good industrial hygiene and safety practice.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible materials None known based on information supplied.

8. Exposure controls/personal protection

Engineering controls Showers
Eyewash stations
Ventilation systems.

Control parameters

Occupational exposure limits

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Chemical name	Taiwan	ACGIH TLV
Formaldehyde 50-00-0	TWA: 1 ppm TWA: 1.2 mg/m ³ STEL: 2 ppm STEL: 2.4 mg/m ³	STEL: 0.3 ppm TWA: 0.1 ppm

Legend

See section 16 for terms and abbreviations

Biological limit value This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Eye/face protection No special protective equipment required.

Hand protection No special protective equipment required.

Skin and body protection No special protective equipment required.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	aqueous solution	Odor	None
Physical state	Liquid	Odor threshold	No data available
Color	red		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Molecular weight	No data available	
pH	4.01	
Melting point / freezing point	~ 0 °C / 32 °F	
Initial boiling point and boiling range	~ 100 °C / 212 °F	
Evaporation rate	0.99 (water = 1)	
Vapor pressure	17.027 mm Hg / 2.27 kPa at 20 °C / 68 °F	
Relative vapor density	0.62	
Specific Gravity	1.002	
Partition coefficient	Not applicable	
Soil Organic Carbon-Water Partition Coefficient	Not applicable	
Autoignition temperature	No data available	
Decomposition temperature	No data available	
Dynamic viscosity	~ 1 cP (mPa s) at 20 °C / 68 °F	
Kinematic viscosity	~ 0.998 cSt (mm²/s) at 20 °C / 68 °F	

Solubility(ies)

Water solubility

<u>Water solubility classification</u>	<u>Water solubility</u>	<u>Water Solubility Temperature</u>
Completely soluble	> 10000 mg/L	25 °C / 77 °F

Solubility in other solvents

None reported	No information available	No data available	No information available
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Other information

Metal Corrosivity

Steel Corrosion Rate	No data available
Aluminum Corrosion Rate	No data available

Volatile Organic Compounds (VOC) Content
Not applicable See ingredients information below

Chemical name	CAS No	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
1,2-Benzenedicarboxylic acid, monopotassium salt	877-24-7	No data available	-
Formaldehyde	50-00-0	No data available	X
Methanol	67-56-1	100%	X

Explosive properties

Upper explosion limit	No data available
Lower explosion limit	No data available

Flammable properties

Flash point	No data available
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Flammability Limit in Air

Upper flammability limit:	No data available
Lower flammability limit:	No data available

Oxidizing properties

No data available.

Other information

VOC content	0.0539
Bulk density	No information available

10. Stability and reactivity

Stability Stable under normal conditions.

Reactivity No information available.

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Possibility of hazardous reactions None under normal processing.

Conditions to avoid None known based on information supplied.

Incompatible materials None known based on information supplied.

Hazardous Decomposition Products None known based on information supplied.

11. Toxicological information

Information on likely routes of exposure**Product Information**

Inhalation	Specific test data for the substance or mixture is not available.
Eye contact	Specific test data for the substance or mixture is not available.
Skin contact	Specific test data for the substance or mixture is not available.
Ingestion	Specific test data for the substance or mixture is not available.

Symptoms No information available.

Acute toxicity**Numerical measures of toxicity - Product Information****Substance**

Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%) CAS#: 877-24-7	Rat LD ₅₀	> 3200 mg/kg	None reported	None reported	RTECS
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat LD ₅₀	100 mg/kg	None reported	None reported	GESTIS

Dermal Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rabbit LD ₅₀	270 mg/kg	None reported	None reported	GESTIS

Inhalation (Dust/Mist) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat LC ₅₀	0.578 mg/L	4 hours	None reported	LOLI

Inhalation (Vapor) Exposure Route**Skin corrosion/irritation**

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%) CAS#: 877-24-7	OECD Test 404: Acute Dermal Corrosion/Irritation	Rabbit	500 mg	4 hours	Not corrosive or irritating to skin	ECHA
Formaldehyde (<0.1%) CAS#: 50-00-0	Standard Draize Test	Human	0.150 mg	72 hours	Corrosive to skin	RTECS
Methanol (<0.1%) CAS#: 67-56-1	OECD Test 439: In Vitro Skin Irritation: Reconstructed Human Epidermis	Rabbit	None reported	20 hours	Not corrosive or irritating to skin	ECHA

	(Rhe) Test Method					
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Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

Test data reported below.

Chemical name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%) CAS#: 877-24-7	EpiOcular™ Eye Irritation Test	Human	50.3 mg	6 hours	Data Source	ECHA
Formaldehyde (<0.1%) CAS#: 50-00-0	Rinse Test	Human	1 ppm	6 minutes	Corrosive to eyes	RTECS
Methanol (<0.1%) CAS#: 67-56-1	OECD Test 439: In Vitro Skin Irritation: Reconstructed Human Epidermis (Rhe) Test Method	Rabbit	0.05 mL	24 hours	Not corrosive or irritating to eyes	ECHA

Respiratory or skin sensitization

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

Test data reported below.

Skin Sensitization Exposure Route

Chemical name	Test method	Species	Results	Key literature references and sources for data
1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%) CAS#: 877-24-7	OECD Guideline 442D (In Vitro Skin Sensitisation: ARE-Nrf2 Luciferase Test Method)	None reported	Not confirmed to be a skin sensitizer	ECHA
Formaldehyde (<0.1%) CAS#: 50-00-0	Patch test	Human	Confirmed to be a skin sensitizer	ERMA
Methanol (<0.1%) CAS#: 67-56-1	OECD Test No. 406: Skin Sensitization	Guinea pig	Not confirmed to be a skin sensitizer	ECHA

Respiratory Sensitization Exposure Route

Chemical name	Test method	Species	Results	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	IgE Specific Immune Response Test	Guinea pig	Confirmed to be a respiratory sensitizer	CICAD

STOT - single exposure

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Human LD _{Lo}	70 mg/kg	None reported	Gastrointestinal Kidney, Ureter, or Bladder Liver Other changes Ulcerated stomach Other changes	RTECS
Methanol (<0.1%) CAS#: 67-56-1	Human LD _{Lo}	143 mg/kg	None reported	Lungs, Thorax, or Respiration Dyspnea	RTECS

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	Human TC _{Lo}	300 mg/L	None reported	Lungs, Thorax, or Respiration Other changes	RTECS

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	Monkey	2340 mg/kg	3 days	None reported	ECHA

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Human TC _{Lo}	0.017 mg/L	0.5 days	Eye Lungs, Thorax, or Respiration Lacrimation Other changes	RTECS

Carcinogenicity

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

Test data reported below.

Chemical name	CAS No	ACGIH	IARC	NTP	OSHA
1,2-Benzenedicarboxylic acid, monopotassium salt	877-24-7	-	-	-	-
Formaldehyde	50-00-0	A1	Group 1	Known	X
Methanol	67-56-1	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply
OSHA	Does not apply

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat	15 mg/L	78 weeks	Olfaction Tumors	RTECS

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Mixture *invitro* Data

No data available.

Substance *invitro* Data

Test data reported below.

Chemical name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%) CAS#: 877-24-7	OECD 471	<i>Salmonella typhimurium</i>	5 mg/plate	48 hours	Negative	ECHA
Methanol (<0.1%) CAS#: 67-56-1	DNA inhibition	Human lymphocyte	300 mmol/L	None reported	Positive test result for mutagenicity	RTECS

Mixture *in vivo* Data

No data available.

Substance *in vivo* Data

Test data reported below.

Oral Exposure Route

Chemical name	Test	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	DNA damage	Rat	0.405 mg/kg	None reported	Positive test result for mutagenicity	RTECS

Inhalation (Vapor) Exposure Route

Chemical name	Test	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
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Formaldehyde (<0.1%) CAS#: 50-00-0	Micronucleus test	Human	.000985 mg/L	8.5 years	Positive test result for mutagenicity	RTECS
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Reproductive toxicity

Based on available data, the classification criteria are not met.

Mixture

No data available.

Substance

Test data reported below.

Oral Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	Rat TD _{Lo}	4118 mg/kg	10 days	Effects on Embryo or Fetus Specific Developmental Abnormalities Ear Eye Fetotoxicity (except death e.g. stunted fetus) Urogenital System	RTECS

Inhalation (Dust/Mist) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Methanol (<0.1%) CAS#: 67-56-1	Rat TC _{Lo}	0.0026 mg/L	22 days	Effects on Embryo or Fetus Fetotoxicity (except death e.g. stunted fetus)	RTECS

Inhalation (Vapor) Exposure Route

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat TC _{Lo}	40 mg/L	14 days	Effects on Embryo or Fetus Fetotoxicity (except death e.g. stunted fetus)	RTECS

Aspiration hazard

Based on available data, the classification criteria are not met.

12. Ecological information

Ecotoxicity

The environmental impact of this product has not been fully investigated.

Unknown aquatic toxicity

0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment

Mixture**Aquatic Acute Toxicity**

No data available.

Aquatic Chronic Toxicity

No data available.

Substance**Aquatic Acute Toxicity**

Test data reported below.

Fish

Chemical name	Exposure	Species	Endpoint	Reported dose	Key literature references and
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	time		type		sources for data
1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%) CAS#: 877-24-7	96 hours	None reported	LC ₅₀	9323 mg/L	ECOSARS
Formaldehyde (<0.1%) CAS#: 50-00-0	96 hours	<i>Morone saxatilis</i>	LC ₅₀	6.7 mg/L	PEEN

Crustacea

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%) CAS#: 877-24-7	48 Hours	None reported	LC ₅₀	4859 mg/L	ECOSARS
Formaldehyde (<0.1%) CAS#: 50-00-0	48 Hours	<i>Daphnia pulex</i>	EC ₅₀	5.8 mg/L	PEEN

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%) CAS#: 877-24-7	96 hours	None reported	EC ₅₀	2538 mg/L	ECOSARS

Aquatic Chronic Toxicity

No data available.

Persistence and degradability**Mixture**

No data available.

Bioaccumulation**Mixture**

No data available.

Partition coefficient

Not applicable

Mobility**Soil Organic Carbon-Water Partition Coefficient**

Not applicable

Other adverse effects

No information available.

Chemical name	EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Endocrine disrupting potential
1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%) CAS#: 877-24-7	Group III Chemical	-	-

13. Disposal considerations**Disposal methods**

Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation. Do not reuse empty containers.

14. Transport information

<u>DOT</u>	Not regulated
<u>IMDG</u>	Not regulated
<u>IATA</u>	Not regulated
<u>China</u>	Not regulated

Additional information

15. Regulatory information

Regulatory information

National Regulations

See section 8 for national exposure control parameters

Applicable regulations:

Regulations for the Labeling and Materials Safety Data Sheets for Toxic and Concerned Chemical Substances
Labor Safety and Health Rules

Toxic and Concerned Chemical Substances Control Act

Toxic and concerned chemical substances: Formaldehyde

Chemical name	Class	Threshold limits
Formaldehyde	Class 2, Class 3	50 kg TRQ

International Inventories

TCSI	Contact supplier for inventory compliance status.
TSCA	Complies.
DSL/NDSL	Complies.
EINECS/ELINCS	Complies.
ENCS	Contact supplier for inventory compliance status.
IECSC	Complies.
KECL - Existing substances	Complies.
PICCS	Complies.
AICS	Complies.
NZIoC	-.

TCSI - Taiwan Chemical Substance Inventory

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

International Regulations**The Montreal Protocol on Substances that Deplete the Ozone Layer** Not applicable**The Stockholm Convention on Persistent Organic Pollutants** Not applicable**The Rotterdam Convention** Not applicable**16. Other information****Key or legend to abbreviations and acronyms used in the safety data sheet**

ACGIH	ACGIH (American Conference of Governmental Industrial Hygienists)
ATSDR	ATSDR (Agency for Toxic Substances and Disease Registry)
CCRIS	CCRIS (Chemical Carcinogenesis Research Information System)
CDC	CDC (Center for Disease Control)
CEPA	CEPA (Canadian Environmental Protection Agency)
CICAD	CICAD (Concise International Chemical Assessment Documents)
ECHA	ECHA (The European Chemicals Agency)
EEA	EEA (European Environment Agency)
EPA	EPA (Environmental Protection Agency)
ERMA	ERMA (New Zealand's Environmental Risk Management Authority)
ECOSARS	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
FDA	FDA (Food & Drug Administration)
GESTIS	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
HSDB	HSDB (Hazardous Substances Data Bank)
INERIS	INERIS (The National Industrial Environment and Risks Institute)
IPCS INCHEM	IPCS INCHEM (International Programme on Chemical Safety)
IUCLID	IUCLID (The International Uniform Chemical Information Database)
NITE	Japan National Institute of Technology and Evaluation (NITE)
NIH	NIH (National Institutes of Health)
NIOSH	NIOSH (National Institute for Occupational Safety and Health)
LOLI	LOLI (List of Lists - An International Chemical Regulatory Database)
NDF	no data
NICNAS	Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH IDLH	Immediately Dangerous to Life or Health
OSHA	OSHA (Occupational Safety and Health Administration of the US Department of Labor)
PEEN	PEEN (Pan European Ecological Network)
RTECS	RTECS (Registry of Toxic Effects of Chemical Substances)
SIDS	SIDS (Screening Information Dataset) for High Volume Chemicals
SYKE	The Finnish Environment Institute (SYKE)
USDA	USDA (United States Department of Agriculture)
USDC	USDC (United States Department of Commerce)
WHO	WHO (World Health Organization)

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Ceiling Limit Value	MAC	Maximum Allowable Concentration
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation

C	Carcinogen	R	Reproductive toxicant
M	mutagen		

Prepared By	Hach Product Compliance Department
Issue Date	25-Oct-2022
Revision Date	31-Oct-2022
Revision Note	None
Reference Sources for Section 11	See Section 11: TOXICOLOGICAL INFORMATION

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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End of Safety Data Sheet