Rockwell Medical SDS

CAC-100 --50% Citric Acid Solution

Section 1. Product and Company Identification

Product Name:	50% Citric Acid Solution—CAC-100 Cleaning Agent
Company Identification:	Rockwell Medical 30142 Wixom Rd Wixom, MI. 48393 800-449-3353 248-960-9009

Section 2. Hazards Identification

Warning. Irritating to eyes. Corrosive to metals. May cause irritation to respiratory tract.

Appearance:	Clear light yellow to brown
Physical State:	Liquid
Odor:	Odorless

This product IS classified as hazardous according to 29 CFR1910.1200 (known as CS 2012) amended to conform to the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Depending on the intended use, this product is classified as hazardous according to the criteria contained in the Hazardous Products regulations (SOR/2015-17) also known as WHMIS 2015.

NOTE: *Certain products covered under other Canadian legislation, including but not limited to cosmetics, devices, drugs or food (as defined in the Food and Drugs Act), pest control products (as defined in the Pest Control Products Act), consumer products (as defined in the Canada Consumer Product Safety Act), and Hazardous waste (being a hazardous product that is sold for recycling or recovery and is intended for disposal), are NOT subject to the label and SDS requirements of the Hazardous Products Regulations (SOR/2015-17), also known as WHMIS 2015.*

Serious Eye Damage / Eye Irritation	Category 2
Corrosive to Metals	Category 1

Signal Word:	Warning
GHS Hazard Pictograms:	
Hazard Statements:	H319 Causes serious eye irritation H290 May be corrosive to metals

Prevention Precautionary Statements:
Wash hands and exposed skin thoroughly with water for several minutes. Wear eye/face protection. Keep only in the original container.

Response Precautionary Statements:
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice. Absorb spillage to prevent material damage.

Storage Precautionary Statements:
Keep only in the original container.

Section 3. Composition/Information on Ingredients

Chemical nature of the preparation Mixture

Chemical Family Acids

The following components in this product are considered hazardous under applicable OSHA (USA) regulations.

Component	CAS#	Weight %	North American Substance Hazard Class
Citric Acid	77-92-9	50	Eye Irrit. 2

Nonhazardous Components

Component	CAS#	Weight %	North American Substance Hazard Class
RO Water	N/A	50	None known

Section 4. First Aid Measures

Eye Contact: Immediately flush with plenty of water. After initial flushing, remove contact lenses and continue flushing for at least 15 minutes. If symptoms persist, call a physician.

Skin: According to GHS hazard classification criteria, the product is not considered as being a skin irritant. Based on available data, not or only slightly irritating.

Inhalation: May cause irritation to the respiratory tract, resulting in a higher cough response as inhalation exposure concentration was increased.

Ingestion: Oral exposure is not anticipated under normal working conditions. Health injuries are not known or expected under normal use.

Main Symptoms: Itching. Redness. Burning sensation.

Indications of any immediate medical attention and special treatment needed.

Notes to Physician: Treat symptomatically.

Section 5. Fire Fighting Measures

Flammable Properties

Based on composition, the material is not expected to present a flammability hazard.

Extinguishing media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media No information available

Special Hazards Arising from the substance or mixture

Hazardous Combustion Products Thermal decomposition can lead to release of irritating gases and vapors, Carbon monoxide (CO) and Carbon dioxide (CO_2).

Specific Hazards Arising from the Chemical	None known
Sensitivity to mechanical impact	No
Sensitivity to static discharge	No

Advice for firefighters

Protective Equipment and Precautions for Firefighters As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	2	Stability and Reactivity	0
Flammability	1	Physical hazard	None known

Section 6. Accidental Release Measures

Personal Precautions, Protective Equipment, and Emergency Procedures

Avoid contact with the skin and eyes. Ensure adequate ventilation. Use personal protective equipment. For personal protection see section 8.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system. Prevent product from entering drains.

Methods and Materials for Containment and Cleaning Up

Dam up. Neutralize. If liquid has been split in large quantities clean up promptly by scoop or vaccum. After cleaning, flush away traces with water. For disposal see section 13.

Section 7. Handling and Storage

Handling

Avoid contact with skin, eyes, and clothing. Wear personal protective equipment. Remove and wash contaminated clothing before re-use. Do not use if the container is breached or damaged.

Storage

Keep in properly labelled containers. Keep container tightly closed in a dry and well-ventilated space. Keep away from metals. Keep away from oxidizing agents. Keep away from strong bases. Keep away from amines.

Section 8. Exposure Controls/Personal Protection

Exposure Limits
Specific exposure limits have not been identified for this product. However, as an irritant, it is advisable to limit worker exposure to the greatest extent possible.

Biological Limit Values
No biological limit values have been listed for the component(s) in this product.

Appropriate Engineering Controls
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

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

Personal Protective Equipment

Eye/Face Protection	If splashes are likely to occur, wear goggle or face-shield.
Skin and Body Protection	Long sleeved clothing. Boots. Apron. Impervious gloves. Appropriate body protection should be selected based on activity and possible exposure.
Respiratory Protection	In case of mist, spray or aerosol exposure, wear suitable personal respiratory protection.

Section 9. Physical and Chemical Properties

Appearance:	Clear Light yellow to Brown
Physical state:	Liquid
Odor:	Odorless
Odor Threshold	No information available
pH:	Approx. 0.5

Flashpoint	No information available
Auto-ignition Temperature	No information available
Boiling Point	105°C / 221°F
Melting/Freezing Point	-15 to -10°C / 5 to 14°F
Decomposition Temperature	No information available
Oxidizing Properties	No information available

Water Solubility	Completely miscible
Evaporation rate	No information available
Vapor pressure	No information available
Vapor Density	No information available

Specific Gravity/Relative Density	1.24 – 1.26 (H_20 = 1)
Viscosity (kinematic)	10-12 cps
Partition Coefficient (N-octanol/water)	No information available

Section 10. Stability and Reactivity

Stability	Stable under normal conditions
Possibility of Hazardous Reactions	Gives off hydrogen by reaction with metals
Conditions to Avoid	Incompatible products
Incompatible Materials	Amines. Heavy metals. Strong oxidizing agents. Strong bases.
Hazardous Decomposition Products	No information available

Section 11. Toxicological Information

Information on toxicological effects

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

Chemical Name	Weight %	LD50 Oral	LD50 Dermal	LC50 Inhalation
Citric acid	50	5400 mg/kg Mouse 11700 mg/kg Rat	>2000 mg/kg bw Rat	

Skin corrosion/irritation	Based on available data, not, or only slightly irritating.
Serious eye damage/eye irritation	Irritant causes serious eye irritation.
Method Species Results	OECD Guideline 405 (Acute Eye Irritation / Corrosion) Rabbit (New Zealand White) Test data is not provided for 50% solution, but results for 30% solution indicate significant irritation score. [Overall irritation score for 30% solution: 16 of max. 110 (mean (of 3 animals)) (Time point: at 1, 24, 48 or 72 h) (not fully reversible within: 14 days) (fully reversible in 14-21 days) (expert opinion) (score achieved at 1 h)]
Respiratory or skin sensitization	Based on available data, not expected to be a skin or respiratory sensitizer.
Germ cell mutagenicity	Based on available data, negative to test/non-mutagenic.
Carcinogenicity	Based on available data, no evidence of carcinogenicity. There are no known carcinogenic chemicals in this product.
Reproductive toxicity	Based on available data, no evidence of reproductive toxicity.
STOT - single exposure	Based on available data, no toxicity identified at highest exposure levels.
STOT - repeated exposure	Based on available data, no toxicity identified at highest exposure levels [NOAEL(rats) 4000mg/kg bw/d].
Aspiration hazard	Based on available data, no known aspiration hazard.

Potential health effects

Eyes — Avoid contact with eyes. Irritating to eyes.

Skin	According to GHS hazard classification criteria, the product is not considered as being a skin irritant. Based on available data, not, or only slightly irritating.
Inhalation	May cause irritation of respiratory tract. Avoid breathing vapors or mists. Based on the low pH, citric acid would be expected to cause irritation to the respiratory tract, resulting in a higher cough response as the inhalation exposure concentration was increased.
Ingestion	Oral exposure is not anticipated under normal working conditions. Health injuries are not known or expected under normal use.
Main Symptoms	Itching. Redness. Burning sensation.

Section 12. Ecological

Ecotoxicity

Not classified for aquatic toxicity. Contains no substances known to be hazardous to the environment. Contains no substances known to be not degradable in waste water treatment plants.

Chemical Name	Fresh Water Algae	Acute Fish Toxicity	Daphnia (Water flea)	Effects on micro-organisms	Other
Citric acid	NOEC(8d): 425mg/l (nominal)*	LC50(48h):440mg/L (Leuciscus idus) (nominal)	EC50(24h): 1535mg/L (Daphnia magna) (nominal)		

**Determined by extrapolation (testing of intrinsic toxicity to algae impractical due to nutrient complexing behaviour of citric acid)*

Predicted No Effect Concentrations (PNEC) - Determined by extrapolation

Chemical Name	Aqua (fresh water)	Aqua (marine)	Sewage Treatment Plant	Sediment (fresh water)	Sediment (marine)	Soil
Citric acid	0.44mg/l	0.044mg/l	>1000mg/l	34.6mg/kg sediment dw	3.46mg/kg sediment dw	33.1mg/kg

BCF Bioaccumulation is unlikely. [Logkow < 0].

Chemical Name	log Kow	BCF
Citric acid	-0.2 to -1.8	BCF ~ 3.2 (estimated)

Persistence/Degradability	Readily biodegradable inherently biodegradable 97% and 100% biodegradability in 28d and19d, respectively (protocols OECD 301E and OECD 301A, respectively)
Mobility	Soluble in water.
PBT and vPvB assessment	The components of this product are not considered to be persistent, bioaccumulating nor toxic (PBT).
Other adverse effects	Nothing specific known.

Section 13. Disposal Consideration

Whenever possible, as rules and regulations allow, please recycle or manage materials to minimize waste.

.

Waste Disposal Methods	Hazardous as supplied. The classification and disposal method of waste material resulting from this product should be determined by the user at the time of disposal. Dispose of in compliance with the laws and regulations pertaining to this product in your jurisdiction. Taking into account local regulations the product may be disposed of as waste water after neutralization. Solutions with low pH-value should be neutralized before discharge.
Contaminated Packaging	Triple rinse containers. Empty containers should be decontaminated and taken for local recycling, recovery or waste disposal.

Section 14. Transport Information

Domestic transport regulations (USA)

DOT

DOT Shipping Description	UN1760 Corrosive liquid, n.o.s (Citric acid), 8, PG III
UN-No	UN1760
Proper Shipping Name	Corrosive liquid, n.o.s. (Citric acid)
Hazard Class	8
Packing Group	III
Special Provisions	IB3, T7, TP1, TP28
Transport Symbol(s)	

Special Notes / Exemptions: *Refer to 49 CFR 173.154 (d)*

Domestic transport regulations (Canada)

TDG

UN-No	UN1760
Proper Shipping Name	Corrosive liquid, n.o.s. (Citric acid)
Hazard Class	8
Packing Group	III

Domestic transport regulations (Mexico)

MEX	Not regulated.
UN-No	UN1760
Proper Shipping Name	Líquido corrosivo, n.e.p (Acido Cítrico)
Hazard Class	8
Packing Group	III

International transport regulations

ICAO

UN-No	UN1760
Proper Shipping Name	Corrosive liquid, n.o.s. (Citric acid)
Hazard Class	8
Packing Group	III

IATA

UN-No	UN1760
Proper Shipping Name	Corrosive liquid, n.o.s. (Citric acid)
Hazard Class	8
Packing Group	III
ERG Code	8L
Special Provisions	A3

IMDG/IMO

UN-No	UN1760
Proper Shipping Name	Corrosive liquid, n.o.s. (Citric acid)
Hazard Class	8
Packing Group	III
EmS No.	F-A, S-B

Section 15. Regulatory Status

International Inventories

The components of this product are reported in the following inventories:

Chemical Name	TSCA	DSL	NDSL	ICL	EINECS	ELINCS	AICS
Citric acid	Yes	Yes	No	No	Yes 201-069-1	No	Yes

Chemical Name	ENCS ISHL	CHINA	PICCS	KECL	Taiwan	Turkey	NZIoC
Citric acid	Yes (2)-1318	Yes	Yes	Yes KE-20831	Yes	Yes 201-069-1	No

USA

Federal Regulations

Ozone Depleting Substances:

No Class I or Class II material is known to be used in the manufacture of, or contained in, this product.

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 372.

CERCLA/SARA 103-302

Sections 103-302 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 103-302.

SARA 311/312 Hazardous Categorization

Refer to the OSHA hazard classification(s) provided in section 2 of this SDS.

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 63)

This product is not known to contain any HAPS.

State Regulations

State Right-to-Know

No known components subject to "Right-To-Know" legislation.

Canada

(NPRI) Canadian National Pollutant Release Inventory

No known component is listed on NPRI.

Mexico

Mexico - Grade Moderate risk, Grade 2

Section 16. Other Information

Abbreviations and acronyms

A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
A4 - Not classifiable as a human carcinogen
ACGIH TLV - American Conference of Governmental Industrial Hygienists Threshold Limit Values
CAS - Chemical Abstract Service
Ceiling - Ceiling Limit Value: Concentrations that should never be exceeded at any given time (instantaneous)
CHINA - Chinese Inventory of Existing Chemical Substances (China)
CLP - Classification, Labelling and Packaging, Regulation (EC)1272/2008
CSA - Chemical Safety Assessment
CSR - Chemical Safety Report
Delisted - Substances Delisted from Report on Carcinogens
DNEL - Derived No Effect Level
DOT - U.S. Department of Transportation
DSL - Domestic Substance List (Canada)
EC - European Commission
EC No. - European Community number
EC50 - Half maximal effective concentration
EINECS - European Inventory of Existing Commercial Chemical Substances (EU)
ELINCS - European List of Notified Chemical Substances (EU)
ENCS - Existing and New Chemical Substances (Japan) / ISHL - Industrial Health and Safety Law (Japan)
EPCRA - Emergency Planning and Community Right-to-Know Act of 1986 (USA)
FOSFA - The Federation of Oils, Seeds and Fats Associations
GHS - Globally Harmonized System of Classification and Labelling of Chemicals

Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
Group 3 - Not Classifiable
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association Dangerous Goods Regulations
IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO - International Civil Aviation Organization
ICL - In Commerce List (Canada)
IDLH - Immediately Dangerous to Life or Health
IMDG - International Maritime Dangerous Goods Code
IMO - International Maritime Organization
IUB - International Union of Biochemistry and Molecular Biology
KECL - Korean Existing and Evaluated Chemical Substances (Korea)
Known - Known Carcinogen
LC50 - Lethal concentration that produces fatalities in 50% of a given test population
LD50 - Median lethal dose of a given test population
Marpol - International Convention for the Prevention of Pollution From Ships
MEPC - Marine Environment Protection Committee
MEX - NOM-002-SCT/2003 List of Hazardous Substances and Materials Most Commonly Transported
MEXICO - Mexico Occupational Exposure Limits
NDSL - Non Domestic Substances List (Canada)
NFPA - National Fire Protection Association
NIOSH - National Institute of Occupational Safety and Health
NOAEL - No Observed Adverse Effect Level
NTP - National Toxicology Program
NZIoC - New Zealand Inventory of Chemicals (New Zealand)
OECD - Organization for Economic Co-operation and Development
OSHA - Occupational Safety & Health Administration
OSHA PEL - Occupational Safety and Health Administration Permissible Exposure Limits
PICCS - Inventory of Chemicals and Chemical Substances (Philippines)
PNEC - Predicted No-Effect Concentration
Present - Carcinogen or potential carcinogen to be identified under OSHA's Hazard Communication Standard
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
SEN - Sensitizer notation. May reflect risk of dermal and/or inhalation sensitization (consult ACGIH documentation).
Skin notation - Potential for cutaneous absorption
STEL - Short Term Exposure Limit: Concentrations that should not be exceeded except for short periods of time (usually 15-minutes)
STOT - Specific Target Organ Toxicity
STV - Short Term Value (same as STEL)
TDG - Transportation of Dangerous Goods (Transport Canada)
TSCA - Toxic Substances Control Act, Section 8(b) Inventory (USA)
TWA - Time Weighted Average: Average concentration that should not be exceeded during a work day (usually 8hr)
Under Consideration - Under Consideration by the National Toxicology Program
vPvB - Very Persistent and Very Bioaccumulative
WHMIS - Workplace Hazardous Materials Information System

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of sheet