

Madison Industries, Inc.

Zinc Chloride Solution (ZnCl₂)

TYPICAL ANALYSIS

		<u>50.0%</u>	<u>62.5%</u>	<u>65.0%</u>	<u>67.5%</u>
ZnCl ₂	%	50.0	62.5	65.0	67.0
°Baume	60°F	52.3	63.8	66.1	68.5
Specific Gravity	60°F	1.57	1.78	1.84	1.895
NH ₄ Cl Maximum	%	0.1	0.1	0.1	0.1
Fe Maximum	%	0.005	0.005	0.005	0.005
Cu Maximum	%	0.0001	0.0001	0.0001	0.0001
Pb Maximum	%	0.0002	0.0002	0.0002	0.0002
Ca Maximum	%	0.1	0.1	0.1	0.1
Mg Maximum	%	0.1	0.1	0.1	0.1
Mn Maximum	%	0.01	0.01	0.01	0.01
SO ₄ (Sulfates) Max	%	0.01	0.01	0.01	0.01
pH		*	*	*	*
Basicity as ZnO	%	*	*	*	*
Color		Water White	Water White	Water White	Water White

May be tailored to meet customer's requirements.*

PHYSICAL PROPERTIES

		<u>50.0%</u>	<u>62.5%</u>	<u>65.0%</u>	<u>67.5%</u>
Weight per gallon	Lbs.	13.08	14.88	15.33	15.78
ZnCl ₂ per gallon	Lbs.	6.54	9.30	9.96	10.65
Zinc per gallon	Lbs.	3.14	4.46	4.78	5.11
Viscosity (60°F)	centipoises	3.60	9.00	14.00	21.00

		<u>50.0%</u>	<u>62.5%</u>	<u>65.0%</u>	<u>67.5%</u>
Freezing Point		-70°F	-50°F	-40°F	10°F
		-57°C	-45.5°C	-40°C	-12°C
Boiling Point		239°F	253°F	259°F	264°F
		115°C	123°C	126°C	129°C
Specific Heat	Cal/g°C	.56	.44	.42	.39

USES

DRY CELL BATTERIES - Zinc Chloride is commonly used in dry cell batteries as an electrolyte where it also acts as a moisture absorbent and corrosion inhibitor. Madison Industries provides a Battery Grade in both a 50% and 62.5% solution.

FLUX - Zinc Chloride is used in fluxes for galvanizing, soldering and tinning. Its ability to remove oxides and salts from metal surfaces insures good metal to metal bonding.

AGRICULTURE - Zinc Chloride may be reacted with chelating agents to form solutions of zinc that are biologically available to plants and animals. Zinc is one of the essential elements for plant and animal life.

PETROLEUM - Zinc Chloride is an excellent emulsion breaker and is used to separate oil from water. It is also an effective packer fluid in oil and gas wells due to its high specific gravity.

WATER TREATMENT - Zinc Chloride is used in specialty corrosion inhibitors in cooling towers, potable water, and in gas and oil wells.

MISCELLANEOUS - Zinc Chloride has been used as a catalyst in production of methylene chloride from methyl alcohol. In the textile industry it has found use in resin systems to impart durable press to cotton and synthetic fabrics. It has been used in reclaiming rubber where it dissolves rayon cord. In conjunction with sodium dichromate it has made an excellent wood preservative. Zinc Chloride has found use in the manufacture of glue, diazo dyes, paper, cosmetics, rayon, synthetic fibers, disinfectants and fire fighting foam. In ore refining it has been used as a flotation agent. Zinc Chloride is an excellent source of zinc as a starting material in the production of other zinc chemicals and is an effective catalyst for removing molecules of water, ammonia or mercaptans.

STORAGE

Zinc Chloride Solution slowly corrodes steel. Madison Industries recommends rubber-lined steel tanks or the more economical fiber glass reinforced polyester tanks for storage. Since solutions of Zinc Chloride above 67 percent crystallize at 40°F, it should not be stored outside unless heating coils and insulation are provided. Coils should be fabricated from Monel, Inconel or Teflon. Alternately an electrical heating tape may be affixed to the outside of the tank.

Centrifugal pumps constructed of type 316 stainless steel, rubber-lined steel, FRP, glass-filled epoxy resins or other high quality engineering plastics are suggested for transfer of Zinc Chloride Solution.

SAFE HANDLING

Zinc Chloride Solutions are acidic, astringent and may cause skin irritation or even burns. Contact with skin or eyes should be avoided through the use of face shields, rubber aprons and rubber gloves. Protective clothing should be employed in cases where contact with the solution is probable. In case of contact, flush eyes and skin with water for 15 minutes. Remove contaminated clothing and consult a physician. A paste of baking soda can be applied to help neutralize acid remaining on the skin. Obtain prompt medical attention for eyes. Contaminated clothing should be thoroughly laundered prior to reuse.

Do not take internally. If Zinc Chloride Solution is ingested, administer large quantities of water or milk. Do not induce vomiting. Avoid inhaling mist or fumes. The Threshold Limit Value (TLV) of Zinc Chloride is 1 milligram per cubic meter of air for a 8 hour work-day. Exposure to fumes can be minimized by adequate ventilation or exhaust fans. In case of spills, flush area with plenty of water to chemical sewers. Zinc Chloride Solution is non-flammable.

PACKAGING

Madison Industries ships Zinc Chloride in tank trucks (2,400 to 3,100 gallon capacity) with a net weight of approximately 42,000 pounds and tankcars up to a 12,000 gallon capacity with a net weight of 150,000 to 180,000 pounds. It is available in 55-gallon plastic drums.

SHIPPING INFORMATION

Department of Transportation (DOT) freight classification: Corrosive Liquid, UN1840, 8, PGIII, ERG 154

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