



NIC GmbH

Caustic Soda

**Caustic Soda Solution
Sodium Hydroxide Solution**

Ethylene Dichloride (EDC)

Vinyl Chloride Monomer (VCM)

Hydrochloric Acid



Caustic Soda Solution (NaOH 50%) Sodium Hydroxide Solution

Product Description:

Caustic Soda Solution is a clear, colorless, odorless and slightly viscous liquid. It is miscible with water at any ratio. Caustic Soda Solution reacts strongly alkaline and is highly corrosive to various materials.

Processing and Applications:

Caustic Soda Solution is a strongly alkaline product, which is applied as a chemical reactant or neutralization agent in various areas, e.g. in chemical, pharmaceutical, textile, pulp and paper, metal and food industries, for agriculture, soap and detergent manufacturing or waste water treatment. Caustic Soda Solution reacts strongly alkaline and is highly corrosive and aggressive to various materials such as aluminium, magnesium, zinc, glass, emaille and many plastic products.

Typical data:

TYPICAL TEST	Unit	SPECIFICATION	Test method
NaOH	Wt%	48.5 Min.	Uhde A59.01.04/2.4.5.02
NaCl	ppm by wt	100 Max.	Uhde A59.02.01/2.4.5.04
Fe	ppm by wt	3 Max.	Uhde A59.09.01/2.4.5.06
Sp.Gr@15.6°C	-	1.515 Min.	Uhde A59.01.03/2.4.5.03
APPEARANCE	-	CLEAR	EDC Test Method 19
NaClO ₃	ppm by wt	50 Max.	Uhde A59.10.02/2.4.5.07.2.4.5.10

Packaging, Delivery and Storage:

Caustic Soda Solution is transported via railcar or road tanker. Above 25°C and for long storage times, Caustic Soda Solution should be kept away from air. If exposed to air, Caustic Soda Solution will pick up carbon dioxide to form sodium carbonate, which may cause haze of the solution.

In order to prevent carbonate formation, storage vessels should have minimized exposure to air, but a venting possibility to equilibrate pressure during unloading or transfer processes. Heatable storage containers for Caustic Soda Solution are recommended in order to prevent crystallization during the cold season. Caustic Soda Solution starts to freeze at temperatures as high as 10-12°C. When stored properly under the conditions recommended, Caustic Soda Solution has a virtually unlimited shelf life.



Ethylene Dichloride (EDC) *C₂H₂Cl₂*

Product Description:

Ethylene dichloride (EDC) is a colorless to yellowish liquid with a faint chloroform-type odour. EDC is used primarily in the production of vinyl chloride monomer (VCM).

Typical data:

<i>TYPICAL TEST</i>	<i>Unit</i>	<i>SPECIFICATION</i>	<i>Test method</i>
Ethylene Dichloride	Wt%	Min. 99.9	Uhde GC No:39
DENSITY@15.6°C	Kr/m ³	1253	-
Low Boils (< 83.5°C)	ppm by wt	Max.300	Uhde GC No:39
High Boils (> 83.5°C)	ppm by wt	Max.600	Uhde GC No:39
Total organic impurities	Wt%	0.1	Uhde GC No:39
Non Volatile Matter	ppm by wt	15	Uhde No:18
Hydrogen chloride	ppm by wt	Max.5	Uhde No:4
Water	ppm by wt	Max.15	Uhde No:13
Total Iron	ppm by wt	Max.0.5	Uhde No:25
Free Chlorine	ppm by wt	Max.2	Uhde No:10
Color (APHA)	ppm by wt	Max.10	Uhde No:19

Processing and Applications:

The largest use for ethylene dichloride is in the production of vinyl chloride monomer (VCM). More than half of the total VCM consumption is for construction-related applications, with pipe being the largest single product. Other products made from PVC resins include flooring, packaging film and sheet, and bottles.

Handling and Storage:

Supplying Company recommends that prior to installing EDC storage facilities, you contact all concerned local government agencies, i.e., fire department, health department, environmental quality, etc. Local requirements may vary and any EDC installation should meet the standards of these agencies.

Shipping:

Supplying Company loads EDC in ocean going vessels from storage in Persian Gulf. EDC is classified by the DOT as a highly flammable liquid.



Vinyl Chloride Monomer (vcm) C₂H₃Cl

Product Description:

Vinyl chloride monomer (VCM) is a colorless gas with a faint odor. It forms a liquid readily under increased pressure or at reduced temperatures. VCM is used primarily in the production of polyvinyl chloride (PVC) homopolymer and copolymer resins. Supplying Company VCM is produced by oxy chlorination and direct chlorination of ethylene at our petrochemical complex located in Persian Gulf.

Typical data:

TYPICAL TEST	Unit	SPECIFICATION	Test method
Vinyl chloride (water free basis)	Wt%	Min. 99.98	Uhde GC No:43
Methyl Chloride CH ₃ Cl	ppm by wt	Max.80	Uhde GC No:45
Acetylene	ppm by wt	Max.1	Uhde GC No:45
1,3 Butadiene	ppm by wt	Max.10	Uhde GC No:45
Ethane and ethane	ppm by wt	Max.2	Uhde GC No:45
Propene	ppm by wt	Max.4	Uhde GC No:45
1,2 EDC	ppm by wt	Max.2	Uhde GC No:45
Ethyl Chloride C ₂ H ₅ Cl	ppm by wt	Max.30	Uhde GC No:45
Monovinylacetylene C ₄ H ₄	ppm by wt	Max.5	Uhde GC No:45
Hydrogen chloride	ppm by wt	Max.1	Uhde GC No:45
CCL ₄	ppm by wt	Max.2	Uhde No:41
Hydroquinone	ppm by wt	Max.1	GC
Iron	ppm by wt	Max.0.5	Uhde GC No:27
Water	ppm by wt	Max.30	Uhde GC No:12
Non volatiles	ppm by wt	Max.15	Uhde GC No:16
Nitrogen	Free of dissolved N ₂		Uhde GC No:33
Color	Colorless		Uhde GC No:19
Appearance	Clear and free of suspended matter		

Processing and Applications:

The largest use for vinyl chloride monomer is in the production of polyvinyl chloride (PVC) homopolymer and copolymer resins. These PVC resins are converted to products for a number of end-use markets. More than half of the total VCM consumption is for construction related applications, with pipe being the largest single product. Other products made from PVC resins include flooring, packaging film and sheet, and bottles.

Handling and Storage:

Supplying Company recommends that prior to installing VCM storage facilities, you contact all concerned local government agencies, i.e., fire department, health department, environmental quality, etc. Local requirements may vary and any VCM installation should meet the standards of these agencies.



HYDROCHLORIC ACID
32% Hydrochloric Acid Solution

Product Description:

Hydrochloric acid (HCl) is a colourless to yellowish-green, clear corrosive liquid with a pungent, irritating odour. It is completely soluble in water and HCl gas mixed with water generate a violent exothermic reaction. Contact with most metals results in the formation of flammable hydrogen gas. HCl is used in numerous applications from water treatment to food processing.

Typical data:

TYPICAL TEST	Unit	SPECIFICATION	Test method
HCIPURITY	Wt%	30 Min	Uhde A60.01.01/2.4.6.01
Ca+Mg	ppm by wt	1 Max	Uhde A01.56.01/2.4.1.11
C12 Free Chlorine	ppm by wt	10 Max	-

Processing and Applications:

The uses for hydrochloric acid are numerous and include steel pickling, corn syrup production, brine treatment, oil well acidizing, calcium chloride production as well as swimming pool treatment.

Handling and Storage:

Hydrochloric acid is corrosive. It should be stored away from oxidizing agents and alkaline materials in a cool, dry, ventilated place. Although stable under normal conditions, hydrochloric acid reacts with metals to form explosive and flammable hydrogen gas. Adding water to hydrochloric acid produces a violent, exothermic reaction.

When fighting fires or acid spills, proper protective clothing and respiratory equipment should be utilised and unprotected personnel should be moved upwind of the area. Large spills must be reported to the PVC Supplying Company.