Handling Information

Bromine derivatives, such as GeoBrom® HG520 or HG400, require diligent stewardship practices and engineering because of properties such as density and salt concentration. Storage tanks should be constructed of 316 Stainless Steel, carbon steel, lined-carbon steel or lined-fiberglass reinforced plastic. ATLAC 382-05A or similar polyester resins represent one type of potential lining material. Another example of lining materials that are suitable for NaBr or $CaBr_2$ solutions are Plasite 9570, Plasite 9571, or Plasite 9573. These are high solids epoxy or epoxy-phenolic resins which are low temperature bake and cured with amine. Lined storage units will have better corrosion resistance and will reduce the incursion of iron and color into the product during long term storage. Equipment and lining manufacturers should be consulted to ensure that the proper lining material is chosen for operational and environmental conditions for a specific plant site. Best engineering practices should be applied when designing a bromide solution storage unit.

Environmental conditions should also be taken into consideration when constructing a storage unit for bromide salt fluids. Temperature conditions should be accounted for to avoid freezing or precipitation of the bromide salts from solution. In colder climates, storage in a heated area, insulation of tanks, circulated heating systems, or product recirculation systems should be considered.

Fluid contact points for pumps should be constructed of stainless steel 316. Piping can be SS 316, lined carbon steel, or suitable plastics, such as polypropylene. Plastic piping should be configured and supported to prevent any strain that could potentially crack or break the plastic pipe when under load. Hoses should be a braided steel covered PTFE construction equipped with carbon steel flanges. The flange gaskets should be a PTFE sandwich. Valves can be a ball, plug or diaphragm type.

GeoBrom® HG400 and HG520 are brine solutions which are hygroscopic. If skin contact occurs, the contact area will be dehydrated. All operators handling these products should wear skin tight chemical splash goggles, a face shield, slicker suits, natural or synthetic rubber gloves, and rubber steel-toe boots. The area where these materials are stored should be equipped with freeze proof safety showers.

Great Lakes SOLUTIONS
A Chemtura Business

Great Lakes Solutions
1801 U.S. Highway 52 West
West Lafayette, Indiana 47906

1-765-497-6011 **tel**
1-765-497-5941 **fax**

GeoBrom® (Calcium Bromide Solution) Physical Properties

Density at 60°F (lbm/ gal)	Specific Gravity (water = 1)	$CaBr_2$ (%)	Crystallization Temperature (°F)	Crystallization Temperature (°C)
12.0	1.441	37.98	-50	**-45.6**
12.2	1.465	39.44	-61	**-51.7**
12.4	1.489	40.84	-73	**-58.3**
12.6	1.513	42.22	-88	**-66.7**
12.8	1.537	43.54	-96	**-71.1**
13.0	1.561	44.84	-78	**-61.1**
13.2	1.585	46.09	-63	**-52.8**
13.4	1.609	47.31	-43	**-41.7**
13.6	1.633	48.50	-34	**-36.7**
13.8	1.657	49.66	-20	**-28.9**
14.0	1.681	50.78	-7	**-21.7**
14.2	1.705	51.88	10	**-12.2**
14.4	1.729	52.95	23	**-5**
14.6	1.753	53.98	36	**2.2**
14.8	1.777	54.99	50	**10**
15.0	**1.801**	**55.97**	**61**	**16.1**

Data from Completion and Workover Fluids by Kenneth Bridges, SPE Monograph Series, Vol. 19, Henry L. Doherty Series, p. 42.

GeoBrom® (Sodium Bromide Solution) Physical Properties

Density at 60°F (lbm/ gal)	Specific Gravity (water = 1)	NaBr (%)	Crystallization Temperature (°F)	Crystallization Temperature (°C)
10.1	1.212	23.60	13	**-10.6**
10.3	1.236	25.75	11	**-11.7**
10.5	1.261	27.85	9	**-12.8**
10.7	1.285	29.95	3	**-16.1**
10.9	1.309	31.90	-2	**-18.9**
11.1	1.333	33.80	-6	**-21.1**
11.3	1.357	35.70	-10	**-23.3**
11.5	1.381	37.55	-14	**-25.6**
11.7	1.405	39.25	-19	**-28.3**
11.9	1.429	40.80	-13	**-25**
12.1	1.453	42.35	5	**-15**
12.3	1.477	43.80	27	**-2.8**
12.5	1.501	45.40	-	**-**
12.7	**1.525**	**46.80**	**-**	**-**

Data from Completion and Workover Fluids by Kenneth Bridges, SPE Monograph Series, Vol. 19, Henry L. Doherty Series, p. 36.

Great Lakes SOLUTIONS
A Chemtura Business

Great Lakes Solutions
1801 U.S. Highway 52 West
West Lafayette, Indiana 47906

1-765-497-6011 **tel**
1-765-497-5941 **fax**