

# • S P E C I F I C A T I O N S •

## SODIUM BICARBONATE, GRADE 2, U.S.P., F.C.C.

Effective April 1, 2006

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	United States Pharmacopoeia	Food Chemicals Codex
Description	Sodium Bicarbonate contains not less than 99.0 percent and not more than 100.5 percent of NaHCO <sub>3</sub> calculated on a dry basis.	A white crystalline powder. It is stable in dry air, but slowly decomposes in moist air. Its solutions, when freshly prepared with cold water, without shaking, are alkaline to litmus. The alkalinity increases as the solutions stand, are agitated or are heated.
Identification	A solution of it responds to the tests for sodium and bicarbonate.	A 1 in 10 solution gives positive tests for sodium and for bicarbonate.
Loss on Drying	Not more than 0.25% of its weight.	Not more than 0.25% by weight
Insoluble Substances	Dissolve 1 g in 20 ml of water; the resulting solution is complete and clear.	Passes test
Normal Carbonate	Meets test.	-
Chloride	150 ppm as Cl Max.	-
Limit of Sulfur Compounds	150 ppm as SO <sub>4</sub> Max.	-
Arsenic	2 ppm Max.	-
Heavy Metals	5 ppm Max.	-
Limit of Ammonia	Meets requirements.	Passes test
Organic Volatile Impurities	Meets requirements.	-
Assay – dry basis	Not less than 99.0% nor more than 100.5% of NaHCO <sub>3</sub>	Not less than 99% NaHCO <sub>3</sub> after drying
Lead	-	Not more than 2 mg/Kg

### Granulation (Fine Granular)

Sieve Size (USS)	Microns	Ro-Tap Cumulative % Retained	
		Minimum	Maximum
80	177	0	1
100	149	0	2
200	74	70	100
325	44	90	100

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General Properties (Not specifications)

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Empirical Formula	NaHCO <sub>3</sub>
CAS Number	144-55-8
Other Names	Bicarbonate of Soda Sodium Acid Carbonate Baking Soda
Chemical Abstract Name	Carbonic acid monosodium salt
Appearance	White crystalline powder
Taste	Slightly alkaline, salty
Molecular Weight	84.01
Thermal Decomposition	Decomposes without melting into Na <sub>2</sub> CO <sub>3</sub> , H <sub>2</sub> O and CO <sub>2</sub> . See Figure 1.
Bulk Density	63 lb / ft <sup>3</sup> , 1.007g / cc
Crystal Density	137.3 lb /ft <sup>3</sup> , 2.2 g / cc
Solubility in water	See Figure 2.
Solubility in Alcohol	Insoluble
Specific Gravity of Aqueous Solutions	See Figure 3.
Alkali Equivalent	1 lb NaHCO <sub>3</sub> = 0.369 lb Na <sub>2</sub> O
Acid Equivalent	1 lb NaHCO <sub>3</sub> = 0.435 lb HCl
Carbon Dioxide Equivalent	1 lb NaHCO <sub>3</sub> = 0.524 lb CO <sub>2</sub>
pH 1% aqueous soln at 77°F	Approximately 8.3. See Figure 4.

FIGURE 1 THERMAL DECOMPOSITION

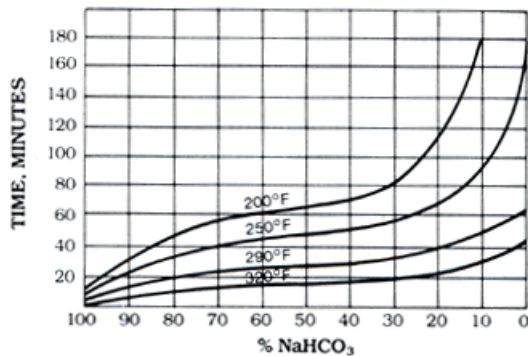


FIGURE 2 SOLUBILITY IN WATER

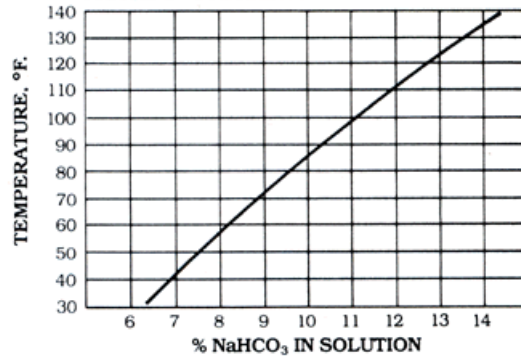


FIGURE 3 SPECIFIC GRAVITY OF AQUEOUS SOLUTIONS

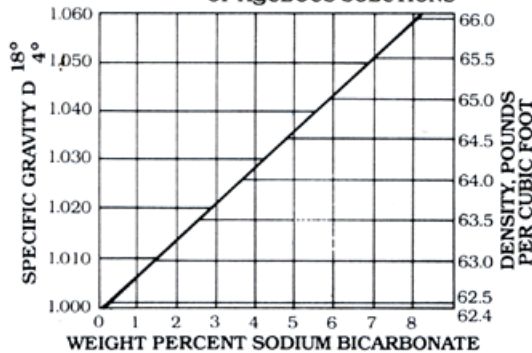


FIGURE 4 pH

