



STABILITY OF NISIN

**NISIN IS MOST STABLE UNDER ACIDIC CONDITIONS.
THE ACTIVITY IS LOST IN HIGHLY ALKALINE CONDITIONS.**

Refer the Table below

MEDIUM	REMARK
pH = 2.0	It can keep the activity intact after the treatment at 121 °C temp. for 30 Min. at pH = 2.0
pH = 3.0	Nisin is dissolved in HCL by 121 °C to sterilize for 15 Minutes. No activity is lost.
pH = 5.0	At 115.6 °C temp. to Sterilize. 40% activity is lost.
pH = 6.5	Nisin is dissolved in skimmed milk by 85° C temp. to pasteurize for 15 Minutes. 15 % Activity is lost.
pH = 7.0	At this period , 90 % activity is lost.
pH = 11.0	Activity is lost completely in 30 Minutes at 63 °C temp. in pH = 11.0

The Relations of pH Value and NISIN Activities

pH	IU / mg
02.4	1032
03.0	995
04.0	944
05.0	608
06.0	475
07.0	355
08.0	242
09.0	195
10.0	125
11.0	21
12.0	00

Note : Above Results obtained after 24 hrs of adjusting pH.

Notes :

NISIN product itself is Acidic with its pH Range, 2.8 to 3.8.

So, with increase of pH, its Heat Treatment stability Decreases.

So, the stability of NISIN is closely related to pH value of the process solution.

For example :

- When NISIN was dissolved in Skimmed Milk with pH = 6.5, then after pasteurization at 85°C Temp., for 15 minutes, only 15% of its Activity was lost.
- When NISIN was dissolved in Dilute Hydrochloric Acid (Dil. HCL) with pH=3, it remained 100% Active, even after high pressure sterilization at 121°C Temp.

SOLUBILITY AND ACTIVITY

SOLVENT	SOLUBILITY	ACTIVITY
Distilled Water (pH = 5.9)	50.0 (mg. / ml.)	2.0×10^6
Domestic Water (pH = 7.10)	49.0 (mg. / ml.)	1.96×10^6
HCL Solution (0.02 N)	118.0 (mg. / ml.)	4.72×10^6
NaCl Solution (2%)	47.9 (mg. / ml.)	1.91×10^6
Non – Fat Milk	87.5 (mg. / ml.)	3.5×10^6

- NOTES :**
1. Nisin can be dissolved in Aqueous solution.
 2. It is Insoluble in non-polar solvents.
 3. The solubility decreases within increase of pH, and it increases with the rise of temp.

SOLUBILITY IN WATER

pH Value	Solubility
Less than 2.5	50 mg/ml
2.5	12%
5.0	4%
7.0	Almost Insoluble
More than 8.0 (Alkaline)	Almost Insoluble

Note :

- Solubility of NISIN increases with the decrease of pH value.
- Water solution of NISIN is slightly Turbid due to the presence of milk protein.



**R & D Packing
100 Gms**



**Commercial Packing
500 gms / 1000 gms**