



HIBIT - 28

(AN EFFECTIVE INHIBITOR FOR HYDROCHLORIC ACID)

Description :

Hydrochloric acid is usually used as a cleaning agent in Industries, since it cleans easily, fast & economically.

The only problems caused during its use is that it causes corrosion to metals and also emits fumes which cause health problems. The above mentioned problems can be solved by using HIBIT - 28. HIBIT - 28 is a concentrated liquid product which is used as an additive to the Hydrochloric acid solution, with the following desirable properties:

1. Free from objectionable odor.
2. Flash point is greater than 100°C
3. Instant solubility in hydrochloric acid solution.
4. No precipitation in the presence of ferric ions.
5. Non-staining of metals and no deposit of film.
6. Upon use provides a thin foam blanket to prevent acid fuming and splattering.
7. Stops corrosion without minimizing its actions up to 100°C.
8. Inhibition of pitting action of hydrochloric acid on mild steel (SAE 1010), stainless 316 and 420, monel and bronze.

Replenishing of Inhibitor.

HIBIT – 28 is not used up during pickling. But there is a loss of inhibitor when metals are removed from the bath. It is suggested that as fresh acid is added to replenish the bath, HIBIT – 28 is also added to bring the inhibitor concentration to the required inhibiting level.

HIBIT – 28 Test Results.

Laboratory tests were made by exposing clean weighed coupons in 5%, 10% and 15% hydrochloric acid at various temperatures for six hours.

The effects of 0,3 % ferric chloride on the corrosion rates were also determined.

Visual observations were made for discoloration and pitting of surfaces.

Metal : Monel at 175°F (79°C)

| Acid Concentration % | % Inhibitor based on total solution | Corrosion Rate Lb/ ft ² / day | Visual Inspection after test |
|----------------------|-------------------------------------|--|------------------------------|
| 15 | Control (without Inhibitor) | 0.0720 | Black, pitting |
| | 0.10 | 0.0141 | Bright, no pitting |
| | 0.15 | 0.0114 | Bright, no pitting |
| | 0.25 | 0.0087 | Bright, no pitting |
| | 0.75 | 0.0029 | Bright, no pitting |
| 10 | Control (without Inhibitor) | 0.0362 | Dark, slight pitting |
| | 0.05 | 0.00942 | Bright, no pitting |
| | 0.08 | 0.0084 | Bright, no pitting |
| | 0.12 | 0.0069 | Bright, no pitting |
| | 0.36 | 0.0023 | Bright, no pitting |

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Metal : Brass at 200°F (94°C)

| Acid Concentration % | % Inhibitor based on total solution | Corrosion Rate Lb/ ft ² / day | Visual Inspection after test |
|----------------------|-------------------------------------|--|------------------------------|
| 15 | Control (without Inhibitor) | 0.0183 | Metal Stained |
| | 0.10 | 0.0165 | Stained, no pitting |
| | 0.15 | 0.0165 | Stained, no pitting |
| | 0.25 | 0.0114 | Stained, no pitting |
| | 0.75 | 0.0038 | Stained, no pitting |
| 10 | Control (without Inhibitor) | 0.0057 | Metal Stained |
| | 0.15 | 0.0034 | Stained, no pitting |
| | 0.24 | 0.0034 | Stained, no pitting |
| | 0.36 | 0.0024 | Stained, no pitting |

Metal : Mild Steel at 200°F (94°C)

| Acid Concentration % | % Inhibitor based on total solution | Corrosion Rate Lb/ ft ² / day | Visual Inspection after test |
|----------------------|-------------------------------------|--|------------------------------|
| 15 | Control (without Inhibitor) | 7.9000 | Disappeared in 4 hrs |
| | 0.10 | 0.0930 | Bright, no pitting |
| | 0.15 | 0.0780 | Bright, no pitting |
| | 0.25 | 0.0570 | Bright, no pitting |
| | 0.75 | 0.0190 | Bright, no pitting |
| 10 | Control (without Inhibitor) | 2.630 | Severe pitting |
| | 0.05 | 0.060 | Bright, no pitting |
| | 0.08 | 0.060 | Bright, no pitting |
| | 0.12 | 0.042 | Bright, no pitting |
| | 0.36 | 0.014 | Bright, no pitting |

NOTE : More information on other metals at various temperatures and concentrations are available upon request.

Use:

Used at a ratio of 0.5 – 2 % by volume on the basis of undiluted acid.

Caution:

Avoid contact with skin, eyes and clothing (see M.S.D.S)

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USES FOR INHIBITED HYDROCHLORIC ACID

One of the major industrial applications for hydrochloric acid is in metal cleaning operations. In such operations, HCl is used to remove scale and foreign deposits, which have deposited on metallic surfaces. Examples of such cleaning operations are industrial boiler systems, steel processing pickling baths, refinery process equipment and cleaning and fracturing of oil wells. HCl is effective in these operations, but extreme care must be taken to prevent attack on the base metals involved. HIBIT-28 is used to prevent hydrochloric acid from attacking dilute acid storage vessels and transportation equipment.

REFINERY AND INDUSTRIAL CLEANING

Hydrochloric acid is used for the removal of deposits in refinery equipment and boiler systems. As this equipment is exposed to repeated exposures of acid cleanings, it becomes imperative that efficient inhibitors are used to control corrosive effects during the process. HIBIT-28 has been shown to be a most successful material for this purpose.

STEEL PROCESSING

In the manufacture of sheet and rolled steel, the removal of mill scale is of prime importance. Economics of the operation require the use of a fast acting cleaning operation such as an acid bath. Inhibitors, which function at various processing temperatures, protecting the cleaned metal against excessive metal loss and/or pitting, are utilized. HIBIT-28 gives the necessary control at various temperatures in this operation, leaving the plate free from waxy deposits which interfere with subsequent coatings.

In the fracturing and acidizing of oil wells, dilute hydrochloric acid is used to dissolve the undesirable carbonate deposits or scales which interfere with the passage of oil tubing or in the formation itself. The lines and tubing must be protected during this operation from the corrosive attack of the acid. HIBIT-28 will successfully inhibit this corrosion or pitting without interfering with the desired effects required of the acid used.