

RODINE 213

1. INTRODUCTION

Rodine 213 is an organic, cationic, liquid inhibitor especially designed to inhibit the attack of hydrochloric acid on iron, steel, copper and brass during industrial cleaning operations.

The addition of **Rodine 213** to hydrochloric acid solution provides maximum protection for equipment during:

- (a) The removal of lime deposits or water scale from power plant boilers and pipework and from evaporating plants.
- (b) The removal of scale and deposits from equipment in refineries, paper mills, chemical plants, etc.

Rodine 213 meets the requirements of MIL-I-17433 and MIL-C-17434. It does not contain arsenic, lead, or chlorinated hydrocarbon compounds.

2. METHOD OF USE

(a) Make Up

For each 1,000 litres of 5-10% by weight hydrochloric acid solution, add at least the following amount of **Rodine 213**, with stirring or agitation; to either the diluted or the concentrated acid:

1 litre	for a cleaning temperature of 65°C
2 litres	for a cleaning temperature of 80°C
3 litres	for a cleaning temperature of 93°C

Note: A 5% by weight hydrochloric acid solution contains 13.75% by volume of 20° Be hydrochloric acid.

(b) Cleaning

- (i) The hydrochloric acid solution, inhibited with **Rodine 213**, is best circulated through the equipment to be cleaned. When circulation is not possible, the equipment should be filled with the inhibited acid and allowed to react for sufficient time to remove the objectionable deposits.
- (ii) To speed up the cleaning action, the equipment and/or the inhibited acid solution, should be heated to temperature prior to the start of the cleaning operation.

- (iii) For most efficient cleaning operations, samples of the deposits to be removed, can be tested in the laboratory to determine the optimum acid concentration, temperature and cleaning time.

3. CORROSION DATE

The exceptional strength and heat stability of **Rodine 213** gives the user a considerable safety factory in relation to temperature, acid strength and time.

The following graphs show the comparative weight loss data for various concentrations of **Rodine 213** in 5% and 10% by weight hydrochloric acid solutions respectively at three temperatures.

Test Metal	1010 hot rolled steel
Duration of Test	16 hours
Temperature	As shown on curves

4. STORAGE OF INHIBITED ACID

When inhibitors of the cationic type are added to concentrated hydrochloric acid containing ferric iron, precipitates of the oily deposits are often formed. **Rodine 213** has been especially designed to minimise this.

In order to assure retention of maximum inhibiting strength, **Rodine 213** should not be kept in concentrated hydrochloric acid longer than 2 or 3 weeks.

5. HANDLING PRECAUTIONS

Protective gloves, aprons, and goggles should be worn when handling **Rodine 213** to avoid contact with skin and eyes.

If splashed on skin, wash off immediately with soap and water and obtain medical attention.

If splashed into eyes, flush immediately with copious amounts of fresh water and obtain medical attention.

6. HENKEL PRODUCT REFERENCE

Rodine 213

DISCLAIMER

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RODINE SAVES ACID AND IRON

PICKLE LOG

DEPARTMENT : _____

WEEK OF : _____, 20

	SUNDAY		MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY		SATURDAY	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
TEMPERATURE	[Grid for Temperature]													
ACID	[Grid for Acid]													
IRON	[Grid for Iron]													
PERCENT	[Grid for Percent]													

ADDITIONS AND TONNAGE

	TURN	ADDITIONS AND TONNAGE					
		ACID	RODINE	OTHER	PICKLED	TONNES	
ACID	TURN 1						
	TURN 2						
	TURN 3						
	TOTAL						
RODINE	TURN 1						
	TURN 2						
	TURN 3						
	TOTAL						
OTHER	TURN 1						
	TURN 2						
	TURN 3						
	TOTAL						
PICKLED	TURN 1						
	TURN 2						
	TURN 3						
	TOTAL						

SUMMARY FOR WEEK

1	TOTAL ACID		Kg	5	TONNES PICKLED		Kg
2	ACID DUMPED		Kg	6	Kg ACID PER TONNE TOTAL, 1 ÷ 5 =		Kg
3	ACID CONSUMED, 1 - 2 =		Kg	7	Kg ACID CONSUMED PER TONNE, 3 ÷ 5 =		Kg
4	TOTAL RODINE ADDED		Kg or Litre	8	RODINE PER TONNE TOTAL, 4 ÷ 5 =		Kg or Litre

DIRECTIONS

Plot on chart at regular intervals acid concentrations, iron content and temperature of pickle bath.
 Keep an accurate record of additions of acid, Rodine, salt, Foaming Compound, etc., if added, and the tonnage pickled so the consumption of the acid and Rodine per tonne can be accurately calculated for each work week.
 To prevent wasting acid use Rodine and exhaust acid in the spent bath as far as possible before dumping it.

