

**Rust Removal Effectiveness of Enviro-D-Rust from Pre-Rusted Carbon steel****Introduction**

Quicklab was requested to perform dilution testing on Enviro-D-Rust solid concentrate to establish its effectiveness in rust removal at a selected range of concentrations in water at ambient conditions

Ten (10) solutions using different concentration of solid concentrate Enviro-D-Rust in distilled water were made up as set out in Table 1 and identically sized carbon steel\* test specimen prepared by being pre-rusted similarly were subsequently immersed in the different solutions and de-rusted at ambient temperatures for a period of 24 hours.

After 24 hours immersion the test specimens were removed from the test solution, rinsed clean with fresh water subsequently dried before the loss of the rust on the specimen was determined gravimetrically. This is expressed as a percentage mass loss from the test specimen involved. In each case the test specimen surface was also examined to see whether visible rust was present.

**Results**

In each case after de-rusting, rinsing and drying there was no visible evidence of rust present on the test specimen surfaces. See appendix A for photographs of the rusted and de-rusted test specimens.

Table 1 The Effectiveness of rust removal from pre-rusted steel test specimen using diluted Enviro-D-Rust

<b>Dilution ratio</b> (mass in grams of Enviro-D-Rust to volume in ml of distilled water)	<b>Mass Loss</b> (rust removed) (g)	<b>% mass loss</b>	<b>Ranking</b>
1:1	1.2558	14.32%	6
1:2	1.4696	16.88%	2
1:3	1.5527	19.75%	1
1:4	1.2768	14.73%	5
1:5	1.4264	16.35%	4
1:6	1.0507	16.44%	3
1:7	1.0064	10.78%	7
1:8	0.9146	10.43%	10
1:9	1.0115	11.52%	8

1:10	0.9378	11.32%	9
------	--------	--------	---

Directors: M P Mthimunye, G A Combrink BBEE Level 2 company T/A Corrosion Lab

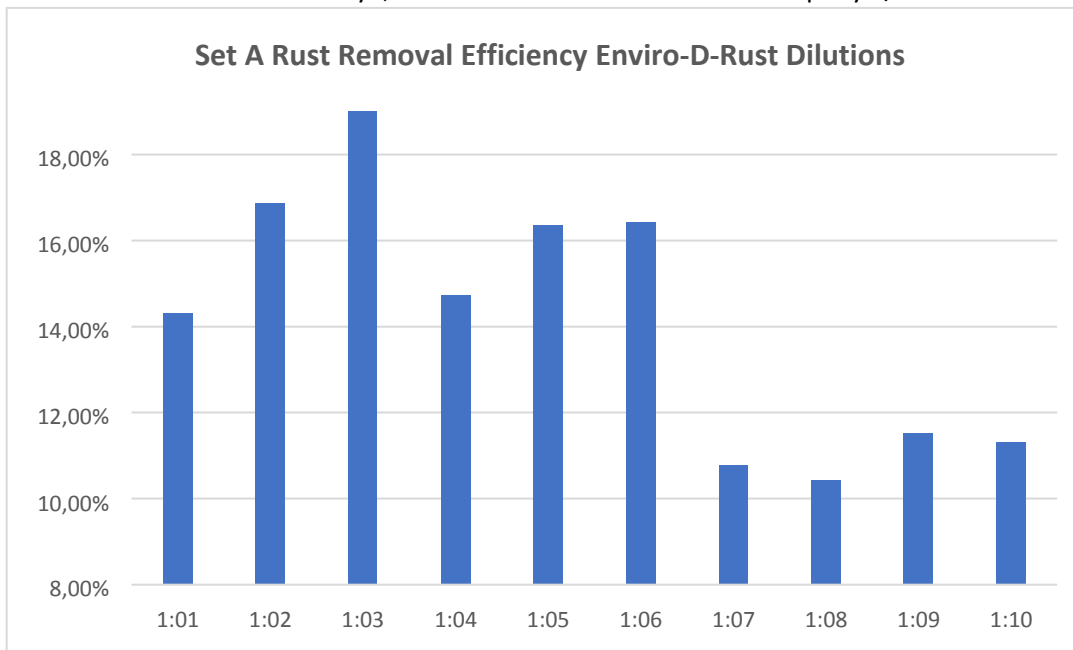


Fig 1 Graphical representation of Rust removal efficiency Pre-rusted carbon steel test specimen

**Outcome:**

- At room temperature Enviro-D-Rust is best effective at de-rusting rusted steel at a solution concentration of 1gram Enviro-D-Rust solid concentrate dissolved in 3 ml of distilled water.
- At room temperature Enviro-D-Rust works exceptionally well at de-rusting carbon steel at concentrations of up to 1gram solid Enviro-D-Rust Concentrate to up to 6 ml of distilled water.
- However even at concentrations of down to 1 to 10 Enviro-D-Rust is still very active at de-rusting rusted carbon steel.

M P Msibi  
 Lab Technologist: Corrosion Lab

dated

*27th October 2018*

G A Combrink B Eng (Chemical) M Sc (Corrosion Science & Engineering) M SAIT; M CorriSA  
 Corrosion Projects Manager

APPENDIX A

Rusted Test Specimen Photographs



De-Rusted Test Specimen Photographs

