Dodoma OR19-10 Test Site – Atmospheric Corrosivity

Site OR19-10

Dodoma Test Site (Image by Geosun).

Background:

Dodoma City, positioned approximately 395-453 km to the west-northwest of Dar es Salaam, in the centre of Tanzania [1], has a population of more than 400 000 [2]. It is the national capital city of the country and headquarters of the Dodoma Region [2]. The region exhibits a semi-arid climate [3], which, per the Köppen-Geiger system, is classified as BSh (Mid-Latitude Steppe and Desert Climate) [4]. The economy is mainly agriculture-based [5].

The corrosion monitoring test site is positioned on the western side of the city, towards Lake Sulunga (Bahi Swamp), near a large power plant [2]. The average yearly temperature for the site is 23.0 ± 1.6ºC, fluctuating between 17.4ºC and 27.0ºC, and the mean annual humidity level, near 80.4 ± 11.9%. The yearly precipitation level is ~986 mm, with the driest months spanning from May to October. The average wind speed at the site is 2.5 ± 1.0 m/s, with gusts of 4.5 m/s, in a predominant southerly direction.

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Google Inc Map of Dodoma in Tanzania [2].

GPS Coordinates of Site:	6°10'48.0"S 35°42'00.0"E	**Elevation above Sea Level (m):**	1141 m	**Distance from Ocean (km):**	~350 km

ISO 9226 Corrosion Rates and ISO 9223 Corrosivity Classification	
12-month R_{CORR} Mild steel (µm/yr)	5.8 ± 0.2 µm/yr
12-month R_{CORR} Aluminium (µm/yr)	<0.1 µm/yr (Negligible)
12-month R_{CORR} Hot Dip Galvanised Steel (µm/yr)	0.5 ± 0.1 µm/yr
12-month R_{CORR} Copper (µm/yr)	0.5 ± 0.1 µm/yr
ISO 9223 Corrosivity Classification	Low (C2)
Typical surface contaminants	<testing still in progress>

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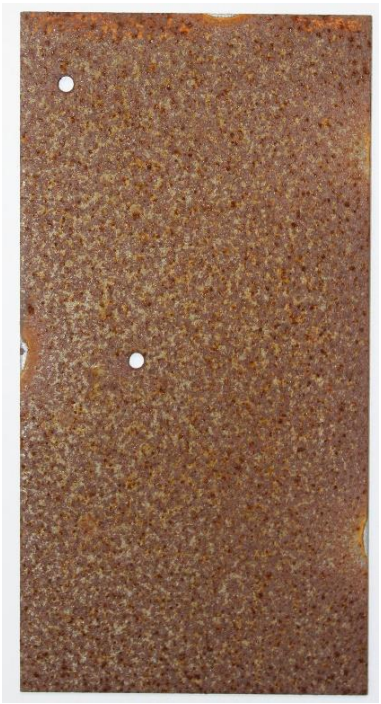
Mild steel – 12 months



Mild steel – 12 months

Aluminium – 12 months

Aluminium – 12 months

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HDG – 12 months

HDG – 12 months

Copper – 12 months

Copper – 12 months

Works Cited

[1] Google Inc, "Google Maps," 28 April 2021. [Online]. Available: https://www.google.com/maps/place/6%C2%B010'48.0%22S+35%C2%B042'00.0%22E/@-6.1766236,35.7129234,28118m/data=!3m1!1e3!4m5!3m4!1s0x0:0x0!8m2!3d-6.18!4d35.7. [Accessed 28 April 2021].

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