

Homa Bay OR19-16 Test Site – Atmospheric Corrosivity

Site OR19-16

Installation: 07-12-2019



Homa Bay Test Site (Image by Geosun).

Background:

Homa Bay County nestles the southern shores of Lake Victoria, in the southern part of Nyanza, in Kenia [1] [2]. The test site is about 22-25 km east of the lake, close to Ruma National Park, and west-northwest of Nairobi, the latter located about 280 km away [1]. According to sources, the county's population is about 1.3 million people, with the primary urban area being Homa Bay, with a populace of about 118 000, although the town of Nyandiwa, to the west, has a more significant population, 188 136 [2] [3]. The economy of the region is based on agriculture and fishery activities [2] [3]. Homa Bay is elevated about 1166 m above sea level [4], and the test site, 1335 m.

From a general corrosivity perspective, the atmosphere is classified as tropical [4], with rainfall occurring throughout the year. The average yearly temperature for the site measures $20.7.1 \pm 1.0^{\circ}\text{C}$, fluctuating between 18.4°C and 23.5°C . The mean annual humidity level is near $93.7 \pm 5.3\%$, and the yearly precipitation level ~ 1591 mm. The climate is typically classified as Af per the Köppen-Geiger system [4], with the driest months being June to August, and the average wind speed at the site, 1.3 ± 0.3 m/s in a south-westerly direction.

Homa Bay OR19-16 Test Site – Atmospheric Corrosivity



Google Inc Map of Narok County [5].

GPS Coordinates of Site:	0°45'54.0"S 34°21'36.0"E	Elevation above Sea Level (m):	1335 m	Distance from Ocean (km):	~687 km
---------------------------------	-----------------------------	---------------------------------------	--------	----------------------------------	---------

ISO 9226 Corrosion Rates and ISO 9223 Corrosivity Classification

12-month R_{CORR} Mild steel (µm/yr)	3.5 ± 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)	0.6 ± 0.05 µm/yr
12-month R_{CORR} Copper (µm/yr)	0.8 ± 0.05 µm/yr
ISO 9223 Corrosivity Classification	Low (C2)
Typical surface contaminants	<testing still in progress>

Orytech (Pty) Ltd.

Homa Bay OR19-16 Test Site – Atmospheric Corrosivity



Mild steel – 12 months



Mild steel – 12 months



Aluminium – 12 months



Aluminium – 12 months

Homa Bay OR19-16 Test Site – Atmospheric Corrosivity



HDG – 12 months



HDG – 12 months



Copper – 12 months



Copper – 12 months

Homa Bay OR19-16 Test Site – Atmospheric Corrosivity

Works Cited

- [1] Google Inc, "Google Maps," 28 April 2021. [Online]. Available: <https://www.google.com/maps/place/0%C2%B045'54.0%22S+34%C2%B021'36.0%22E/@0.4276899,35.4848905,904992m/data=!3m1!1e3!4m5!3m4!1s0x0:0x0!8m2!3d-0.765!4d34.36>. [Accessed 28 April 2021].
- [2] County Assembly of Homabay, "Who we are," 2020. [Online]. Available: <https://www.homabayassembly.go.ke/who-we-are/>. [Accessed 28 April 2021].
- [3] Wikipedia, "Homa Bay County," 7 April 2021. [Online]. Available: https://en.wikipedia.org/wiki/Homa_Bay_County. [Accessed 28 April 2021].
- [4] Climate-Data.Org, "Homa Bay Climate - Kenia," 28 April 2021. [Online]. Available: <https://en.climate-data.org/africa/kenya/homa-bay/homa-bay-11159/>. [Accessed 28 April 2021].