

EARTHQUAKE-RESILIENT CONSTRUCTION WITH VANADIUM

To avoid the high economic and social consequences of earthquakes, researchers and material scientists are continually exploring how the addition of vanadium can improve the seismic performance of steels used in the construction industry.



Adding a small amount of vanadium to steel means less steel is required in the same load-bearing capacity.

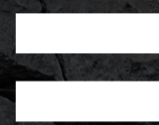
1 metric ton of unalloyed rebar could be replaced by **0.7 metric tons** of vanadium microalloyed rebar.

**Based on Grade 3, 400 MPa yield strength steel.*

Vanadium rebar carbon savings

136
million tons

of global CO₂ saved
from using rebar



CO₂ emissions from about

30 million
cars

driven for a year



40%

of global vanadium is consumed in Chinese rebar - supported by Chinese construction standards mandating high-quality construction materials.

Adding 0.01% of vanadium per ton of steel increases the yield strength of the steel by 15 MPa, making vanadium essential for the seismic performance of buildings, tunnels, bridges and suspension ropes.



Yield strengths as high as 1,000 MPa are possible from vanadium microalloying, resulting in better seismic performance of steel in structural applications.

Noteworthy use cases of vanadium in construction:



The Wembley Stadium - London



Bird's Nest - Beijing



Central Plaza - Hong Kong



Willis Tower - Chicago, US



One World Trade Centre - New York City, US



Burj Khalifa - Dubai