

Different Types of Corrosion

- Recognition, Mechanisms & Prevention

Season Cracking

Recognition of Season Cracking

What is season cracking? "Season Cracking" was the first term used to describe the environmental cracking phenomenon of brass cartridges stored in stables during the monsoon season.

In the late 19th century, British rule in India was at its strongest. During the wettest months of the monsoon season, military activity was diminished and ammunition was stored in the stables until dry weather returned. Many cartridges were found cracked.



It was not until 1921 that the "season cracking" phenomenon was satisfactorily explained by Moor, Beckinsale and Mallinson. Ammonia from horse urine, combined with the residual stress, caused the cracking of brass cartridges. This term was later replaced by "stress corrosion cracking" which in turn was replaced by a even more general term of "environmental cracking".

Mechanisms of Season Cracking

What causes season cracking? Season cracking results from the conjoint action of three components:

- (1) a susceptible material (copper and its alloys);
- (2) a specific chemical species (ammonia) and
- (3) tensile stress (residual).

The adsorption mechanism for environmental cracking applies to season cracking.

Prevention of Season Cracking

How to prevent season cracking? Season cracking can be prevented through:

- Stress relief
- Avoid ammonia.
- Use of materials known not to crack in the specified environment.

For more details on Season Cracking

Where can I learn more about season cracking? More details on season cracking are included in the following corrosion courses which you can take as in-house training courses, course-on-demand, online courses or distance learning courses:

Corrosion and Its Prevention (5-day module)

API 571 Damage Mechanisms Affecting Fixed Equipment in the Refining and Petrochemical Industries (5 days)

Corrosion, Metallurgy, Failure Analysis and Prevention (5 days)

Marine Corrosion, Causes and Prevention (2 days)
Materials Selection and Corrosion (5 days)

If you require corrosion expert witness or corrosion consulting service on season cracking corrosion, our NACE certified Corrosion Specialist is able to help. Contact us for a quote.
