

Galvanised pipes in sprinkler systems

Claas Baier Head of the Technical Testing Centre, VdS

[1] FM Global Property Prevention Data Sheets 2-1, October 2016, Interim Revision April 2018

[2] UFC 3-600-01, 8 August 2016, Change 1, 28 November 2016, Unified Facilities Criteria (UFC) - Fire Protection Engineering for facilities - Department of Defense, United States of America, p. 94, Section 9-7.6.1.2. Retrieved September 1st, 2020 from https://www.wbdg.org/FFC/DOD/UFC/ARCHIVES/ufc_3_600_01_2016_c1.pdf

[3] PBS-P100 Facilities Standards for the Public Buildings Service. Issued April 2017, p.232. Retrieved September 1st, 2020 from https://www.gsa.gov/cdnstatic/2017_Facilities_Standards_%28P100%29%02%A0.pdf

[4] Brennaktuelt.no: Synnove Haram, June 19th, 2020, Sprinkleranlegg eksploderte i Kristiansand: Hvordan kan dette skje? (Explosion in sprinkler system in Kristiansand: How can this happen?). Retrieved July 15th, 2020 from <https://brennaktuelt.no/brann-brannssikkerhet-eksplosjon/sprinkleranlegg-eksploderte-i-kristiansand-hvordan-kan-dette-skje/104191>

[5] CFPA Europe, Oktober 10th, 2016, Explosions in sprinkler system probably caused by hydrogen gas. Retrieved July 19th, 2020 from <http://cfpa-e.eu/explosions-in-sprinkler-system-probably-caused-by-hydrogen-gas/>

[6] Foreigner.fi, June 29th, 2020, Explosion in Helsinki City Theatre. Retrieved September 14th, 2020 from <https://www.foreigner.fi/articulo/news/explosion-in-helsinki-theatre-at-least-one-person-in-hospital/20200629150657006691.html>

[7] Brannfaglig Fellesorganisasjon: Report on sprinkler explosion in Kristiansand June 15th, 2020. Retrieved October 25th, 2021 from: [\[https://bfobrann.no/images/Report_on_sprinkler_explosion_in_Kristiansand_June_2020.pdf\]](https://bfobrann.no/images/Report_on_sprinkler_explosion_in_Kristiansand_June_2020.pdf)

[8] Finans Norge, December 18th, 2015, Bruk av innvendig galvaniserte og forsinkede rør i sprinkleranlegg (Use of galvanised pipes in sprinkler systems). Retrieved August 13th, 2020 from <https://www.krug.no/mediabank/store/3/3049/Orientering-fra-FG.pdf>

[9] Blücher, Knudsen (SINTEF) and Eliassen, Ellefskas (Tyco FPP): Corrosion in water filled galvanized pipes. Retrieved August 13th, 2020 from <https://www.fgsikring.no/siteassets/fg-sprinklerkonferanse/fg-sprinklerkonferansen-2015/03-blucher.pdf>

[10] Michael Pilgaard: September 11th, 2016: Zinc - Chemical Reactions. Retrieved April 4th, 2020 from <https://pilgaardelements.com/Zinc/Reactions.htm>

[11] Lenntech: Zinc and water - reactions, environmental and health effects. Retrieved March 28th, 2020 from <https://www.lenntech.de/pse/water/zinc/zinc-and-water.htm>

[12] coursera: Corrosion of zinc. Retrieved on March 28th, 2020 from <https://www.coursera.org/lecture/corrosion/corrosion-of-zinc-QndV9>

[13] W. Hein: On the corrosion behaviour of zinc in saline waters. Retrieved on March 10th, 2020 from https://izw.baw.de/publications/mitteilungsblaetter/0/mb42_Hein_Corrosion_behaviour_of_Zinc.pdf

[14] R. O. Ansell: Ionselective electrodes - Water hardness measurement. Retrieved August 29th, 2020 from <https://www.sciencedirect.com/topics/chemical-engineering/water-hardness>

[15] Stockholm Vatten och avfall: Drinking Water Quality at the Norsborg and Lovö Water Work in Stockholm 2019. Retrieved August 29th, 2020, from <http://www.stockholmvattenochavfall.se/globalassets/pdf/english/certificate-kval-dekl-no-lo-eng-2019.pdf>

[16] Nordic Galvanizers - Corrosion of zinc coatings. Retrieved September 1st, 2020, from <http://nordicgalvanizers.com/corrosion-of-zinc-coatings/>

[17] Total Materia: Corrosion of Zinc. Retrieved March 13th, 2020, from <https://www.totalmateria.com/Article40.htm>

[18] QRFS - Quick response fire supply: #223 - Fire Sprinkler System Pipe Material: NFPA Requirements and the Pros and Cons of Steel. Retrieved September 9th, 2020 from <https://www.qrfs.com/blog/223-fire-sprinkler-system-pipe-material-nfpa-requirements-and-the-pros-and-cons-of-steel/> Section: While effective for preventing corrosion in other uses, galvanised steel fails faster in fire sprinklers

[19] Jeffrey Kochelek, Galvanized Steel Sprinkler Piping in Sprinkler Age - Current Recommendations in the Fire Protection Industry. Retrieved August 16th, 2020 from <https://sprinklerage.com/galvanised-steel-sprinkler-piping/>