

## Data Set References

- [1] J. Brown, B. Graver, E. Gulbrandsen, A. Dugstad, and B. Morland, "Update of DNV Recommended Practice RP-J202 with Focus on CO<sub>2</sub> Corrosion with Impurities," *Energy Procedia*, vol. 63, pp. 2432–2441, Jan. 2014, doi: 10.1016/j.egypro.2014.11.265.
- [2] Y.-S. Choi and S. Nešić, "Effect Of Water Content On The Corrosion Behavior Of Carbon Steel In Supercritical CO<sub>2</sub> Phase With Impurities," presented at the CORROSION 2011, OnePetro, Mar. 2011. Accessed: Jul. 24, 2023. [Online]. Available: <https://dx.doi.org/>
- [3] Y.-S. Choi, S. Hassani, T. N. Vu, S. Nešić, and A. Z. B. Abas, "Effect of H<sub>2</sub>S on the Corrosion Behavior of Pipeline Steels in Supercritical and Liquid CO<sub>2</sub> Environments," *Corrosion*, vol. 72, no. 8, pp. 999–1009, Mar. 2016, doi: 10.5006/2026.
- [4] A. Dugstad, M. Halseid, and B. Morland, "Effect of SO<sub>2</sub> and NO<sub>2</sub> on Corrosion and Solid Formation in Dense Phase CO<sub>2</sub> Pipelines," *Energy Procedia*, vol. 37, pp. 2877–2887, Jan. 2013, doi: 10.1016/j.egypro.2013.06.173.
- [5] F. Farelas, Y. S. Choi, and S. Nešić, "Corrosion Behavior of API 5L X65 Carbon Steel Under Supercritical and Liquid Carbon Dioxide Phases in the Presence of Water and Sulfur Dioxide," *Corrosion*, vol. 69, no. 3, pp. 243–250, Oct. 2012, doi: 10.5006/0739.
- [6] Y. Zhang, K. Gao, and G. Schmitt, "Water Effect On Steel Under Supercritical CO<sub>2</sub> Condition," presented at the CORROSION 2011, OnePetro, Mar. 2011. Accessed: Jul. 21, 2023. [Online]. Available: <https://dx.doi.org/>
- [7] L. Wei, X. Pang, and K. Gao, "Effect of small amount of H<sub>2</sub>S on the corrosion behavior of carbon steel in the dynamic supercritical CO<sub>2</sub> environments," *Corrosion Science*, vol. 103, pp. 132–144, Feb. 2016, doi: 10.1016/j.corsci.2015.11.009.
- [8] Y. Hua, R. Barker, and A. Neville, "Effect of temperature on the critical water content for general and localised corrosion of X65 carbon steel in the transport of supercritical CO<sub>2</sub>," *International Journal of Greenhouse Gas Control*, vol. 31, pp. 48–60, Dec. 2014, doi: 10.1016/j.ijggc.2014.09.026.
- [9] Y. Hua, R. Barker, T. Charpentier, M. Ward, and A. Neville, "Relating iron carbonate morphology to corrosion characteristics for water-saturated supercritical CO<sub>2</sub> systems," *The Journal of Supercritical Fluids*, vol. 98, pp. 183–193, Mar. 2015, doi: 10.1016/j.supflu.2014.12.009.
- [10] Y. Hua, R. Barker, and A. Neville, "Understanding the Influence of SO<sub>2</sub> and O<sub>2</sub> on the Corrosion of Carbon Steel in Water-Saturated Supercritical CO<sub>2</sub>," *Corrosion*, vol. 71, no. 5, pp. 667–683, Nov. 2014, doi: 10.5006/1504.
- [11] Y. Hua, R. Barker, and A. Neville, "The influence of SO<sub>2</sub> on the tolerable water content to avoid pipeline corrosion during the transportation of supercritical CO<sub>2</sub>," *International Journal of Greenhouse Gas Control*, vol. 37, pp. 412–423, Jun. 2015, doi: 10.1016/j.ijggc.2015.03.031.
- [12] Y. Hua, R. Barker, and A. Neville, "Comparison of corrosion behaviour for X-65 carbon steel in supercritical CO<sub>2</sub>-saturated water and water-saturated/unsaturated supercritical CO<sub>2</sub>," *The Journal of Supercritical Fluids*, vol. 97, pp. 224–237, Feb. 2015, doi: 10.1016/j.supflu.2014.12.005.

- [13] Y. Hua, R. Barker, and A. Neville, "The effect of O<sub>2</sub> content on the corrosion behaviour of X65 and 5Cr in water-containing supercritical CO<sub>2</sub> environments," *Applied Surface Science*, vol. 356, pp. 499–511, Nov. 2015, doi: 10.1016/j.apsusc.2015.08.116.
- [14] Y. Hua, R. Jonnalagadda, L. Zhang, A. Neville, and R. Barker, "Assessment of general and localized corrosion behavior of X65 and 13Cr steels in water-saturated supercritical CO<sub>2</sub> environments with SO<sub>2</sub>/O<sub>2</sub>," *International Journal of Greenhouse Gas Control*, vol. 64, pp. 126–136, Sep. 2017, doi: 10.1016/j.ijggc.2017.07.012.
- [15] P. Sui *et al.*, "Effect of temperature and pressure on corrosion behavior of X65 carbon steel in water-saturated CO<sub>2</sub> transport environments mixed with H<sub>2</sub>S," *International Journal of Greenhouse Gas Control*, vol. 73, pp. 60–69, Jun. 2018, doi: 10.1016/j.ijggc.2018.04.003.
- [16] Y. Hua, R. Barker, and A. Neville, "Corrosion Behaviour of X65 Steels in Water-Containing Supercritical CO<sub>2</sub> Environments With NO<sub>2</sub>/O<sub>2</sub>," presented at the NACE Corrosion 2018 Conference and Expo, 2018. Accessed: Jul. 24, 2023. [Online]. Available: <https://onepetro.org/NACECORR/proceedings-abstract/CORR18/All-CORR18/NACE-2018-11085/126041>
- [17] X. Jiang, D. Qu, X. Song, X. Liu, and Y. Zhang, "Impact of Water Content on Corrosion Behavior of CO<sub>2</sub> Transportation Pipeline," presented at the CORROSION 2015, OnePetro, Mar. 2015. Accessed: Jul. 25, 2023. [Online]. Available: <https://dx.doi.org/>
- [18] B. Paschke and A. Kather, "Corrosion of Pipeline and Compressor Materials Due to Impurities in Separated CO<sub>2</sub> from Fossil-Fuelled Power Plants," *Energy Procedia*, vol. 23, pp. 207–215, Jan. 2012, doi: 10.1016/j.egypro.2012.06.030.
- [19] J. Sun *et al.*, "Effect of O<sub>2</sub> and H<sub>2</sub>S impurities on the corrosion behavior of X65 steel in water-saturated supercritical CO<sub>2</sub> system," *Corrosion Science*, vol. 107, pp. 31–40, Jun. 2016, doi: 10.1016/j.corsci.2016.02.017.
- [20] J. Sun, C. Sun, and Y. Wang, "Effects of O<sub>2</sub> and SO<sub>2</sub> on Water Chemistry Characteristics and Corrosion Behavior of X70 Pipeline Steel in Supercritical CO<sub>2</sub> Transport System | Industrial & Engineering Chemistry Research," *American Chemical Society: Industrial & Engineering Chemistry Research*, vol. 57, no. 6, pp. 2365–2375, Jan. 2018, doi: <https://doi.org/10.1021/acs.iecr.7b04870>.
- [21] P. Sui, C. Sun, Y. Hua, J. Sun, and Y. Wang, "The Influence of Flow Rate on Corrosion Behavior of X65 Carbon Steel in Water-Saturated Supercritical CO<sub>2</sub>/H<sub>2</sub>S System," presented at the CORROSION 2019, OnePetro, Mar. 2019. Accessed: Jul. 24, 2023. [Online]. Available: <https://dx.doi.org/>
- [22] C. Sun, J. Liu, J. Sun, X. Lin, and Y. Wang, "Probing the initial corrosion behavior of X65 steel in CCUS-EOR environments with impure supercritical CO<sub>2</sub> fluids," *Corrosion Science*, vol. 189, p. 109585, Aug. 2021, doi: 10.1016/j.corsci.2021.109585.
- [23] Y. Tang, X. P. Guo, and G. A. Zhang, "Corrosion behaviour of X65 carbon steel in supercritical-CO<sub>2</sub> containing H<sub>2</sub>O and O<sub>2</sub> in carbon capture and storage (CCS) technology," *Corrosion Science*, vol. 118, pp. 118–128, Apr. 2017, doi: 10.1016/j.corsci.2017.01.028.

- [24] W. Wang, K. Shen, S. Tang, R. Shen, T. Parker, and Q. Wang, "Synergistic effect of O<sub>2</sub> and SO<sub>2</sub> gas impurities on X70 steel corrosion in water-saturated supercritical CO<sub>2</sub>," *Process Safety and Environmental Protection*, vol. 130, pp. 57–66, Oct. 2019, doi: 10.1016/j.psep.2019.07.017.
- [25] Y. Xiang, Z. Wang, C. Xu, C. Zhou, Z. Li, and W. Ni, "Impact of SO<sub>2</sub> concentration on the corrosion rate of X70 steel and iron in water-saturated supercritical CO<sub>2</sub> mixed with SO<sub>2</sub>," *The Journal of Supercritical Fluids*, vol. 58, no. 2, pp. 286–294, Sep. 2011, doi: 10.1016/j.supflu.2011.06.007.
- [26] Y. Xiang, Z. Wang, X. Yang, Z. Li, and W. Ni, "The upper limit of moisture content for supercritical CO<sub>2</sub> pipeline transport," *The Journal of Supercritical Fluids*, vol. 67, pp. 14–21, Jul. 2012, doi: 10.1016/j.supflu.2012.03.006.
- [27] Y. Xiang, Z. Wang, Z. Li, and W. Ni, "Long term corrosion of X70 steel and iron in humid supercritical CO<sub>2</sub> with SO<sub>2</sub> and O<sub>2</sub> impurities," *Corrosion Engineering, Science and Technology*, vol. 48, no. 5, pp. 395–398, Aug. 2013, doi: 10.1179/1743278213Y.0000000099.
- [28] Y. Xiang, Z. Wang, Z. Li, and W. D. Ni, "Effect of Exposure Time on the Corrosion Rates of X70 Steel in Supercritical CO<sub>2</sub>/SO<sub>2</sub>/O<sub>2</sub>/H<sub>2</sub>O Environments," *Corrosion -Houston Tx-*, vol. 69, pp. 251–258, Oct. 2013, doi: 10.5006/0769.
- [29] Y. Xiang, Z. Wang, Z. Li, and W. D. Ni, "Effect of temperature on corrosion behaviour of X70 steel in high pressure CO<sub>2</sub>/SO<sub>2</sub>/O<sub>2</sub>/H<sub>2</sub>O environments," *Corrosion Engineering, Science and Technology*, vol. 48, no. 2, 2013, doi: 10.1179/1743278212Y.0000000050.
- [30] M. Xu, W. Li, Y. Zhou, X. Yang, Z. Wang, and Z. Li, "Effect of pressure on corrosion behavior of X60, X65, X70, and X80 carbon steels in water-unsaturated supercritical CO<sub>2</sub> environments," *International Journal of Greenhouse Gas Control*, vol. 51, pp. 357–368, Aug. 2016, doi: 10.1016/j.ijggc.2016.06.002.
- [31] O. Yevtushenko, R. Bäßler, and I. Carrillo-Salgado, "Corrosion Stability of Piping Steels in a Circulating Supercritical Impure CO<sub>2</sub> Environment," presented at the CORROSION 2013, OnePetro, Mar. 2013. Accessed: Jul. 24, 2023. [Online]. Available: <https://dx.doi.org/>
- [32] O. Yevtushenko and R. Bäßler, "Water Impact on Corrosion Resistance of Pipeline Steels in Circulating Supercritical CO<sub>2</sub> with SO<sub>2</sub>- and NO<sub>2</sub>- Impurities," presented at the CORROSION 2014, OnePetro, Mar. 2014. Accessed: Jul. 24, 2023. [Online]. Available: <https://dx.doi.org/>
- [33] Y. Zeng, X. Pang, C. Shi, M. Arafat, R. Zavadil, and J. Collier, "Influence of Impurities on Corrosion Performance of Pipeline Steels in Supercritical Carbon Dioxide," presented at the CORROSION 2015, OnePetro, Mar. 2015. Accessed: Jul. 24, 2023. [Online]. Available: <https://dx.doi.org/>
- [34] K. Li and Y. Zeng, "Advancing the mechanistic understanding of corrosion in supercritical CO<sub>2</sub> with H<sub>2</sub>O and O<sub>2</sub> impurities," *Corrosion Science*, vol. 213, p. 110981, Apr. 2023, doi: 10.1016/j.corsci.2023.110981.
- [35] C. Sun *et al.*, "Synergistic effect of O<sub>2</sub>, H<sub>2</sub>S and SO<sub>2</sub> impurities on the corrosion behavior of X65 steel in water-saturated supercritical CO<sub>2</sub> system," *Corrosion Science*, vol. 107, pp. 193–203, Jun. 2016, doi: 10.1016/j.corsci.2016.02.032.

- [36] C. Sun *et al.*, "Effect of impurity on the corrosion behavior of X65 steel in water-saturated supercritical CO<sub>2</sub> system," *The Journal of Supercritical Fluids*, vol. 116, pp. 70–82, Oct. 2016, doi: 10.1016/j.supflu.2016.05.006.
- [37] C. Sun, J. Sun, S. Liu, and Y. Wang, "Effect of water content on the corrosion behavior of X65 pipeline steel in supercritical CO<sub>2</sub>-H<sub>2</sub>O-O<sub>2</sub>-H<sub>2</sub>S-SO<sub>2</sub> environment as relevant to CCS application," *Corrosion Science*, vol. 137, pp. 151–162, Jun. 2018, doi: 10.1016/j.corsci.2018.03.041.
- [38] K. Li, Y. Zeng, and J.-L. Luo, "Influence of H<sub>2</sub>S on the general corrosion and sulfide stress cracking of pipelines steels for supercritical CO<sub>2</sub> transportation," *Corrosion Science*, vol. 190, p. 109639, Sep. 2021, doi: 10.1016/j.corsci.2021.109639.
- [39] Y. Xiang, C. Li, W. Hesitao, Z. Long, and W. Yan, "Understanding the pitting corrosion mechanism of pipeline steel in an impure supercritical CO<sub>2</sub> environment," *The Journal of Supercritical Fluids*, vol. 138, pp. 132–142, Aug. 2018, doi: 10.1016/j.supflu.2018.04.009.
- [40] M. G. R. Mahlobo, K. Premllal, and P. A. Olubambi, "Effect of exposure time with SO<sub>2</sub> as an impurity on the corrosion behaviour of pipeline steel in CCS transportation," *Corrosion Engineering, Science & Technology*, vol. 57, no. 1, pp. 44–54, Feb. 2022, doi: 10.1080/1478422X.2021.1982113.
- [41] K. Li and Y. Zeng, "Long-term corrosion and stress corrosion cracking of X65 steel in H<sub>2</sub>O-saturated supercritical CO<sub>2</sub> with SO<sub>2</sub> and O<sub>2</sub> impurities," *Construction and Building Materials*, vol. 362, p. 129746, Jan. 2023, doi: 10.1016/j.conbuildmat.2022.129746.