

Cleaning up Acid Spills

pH is a scale from 0 – 14 that is used in chemistry to determine whether a chemical is an acid, a base, or neither. Specifically, pH tells us how acidic a substance is with 0 being the



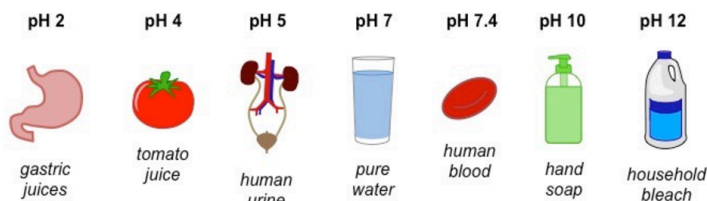
Symbol for acid corrosion

most acidic. A chemical with a pH of 7 is neutral. Pure water, for example, has a pH of 7. An acid is a chemical with a pH below 7 and a base has a pH above 7. Combining an acid and a base causes neutralization to occur where the resulting pH moves towards neutrality (7). Acids are very corrosive, meaning that they cause rapid deterioration of things that they come into contact with.

Some acids are flammable while others are toxic if inhaled. Because of these properties, if an acid is spilled, it can be very dangerous to humans, animals, structures, and the environment.



Examples of pH Conditions:



How is an acid spill cleaned up?

First, it is imperative that proper personal protective equipment (PPE) be worn when cleaning up an acid spill. This includes goggles, a lab coat or apron, gloves, and an air-purifying respirator if inhalation is dangerous. The spill must be contained using an absorbent material so that it doesn't spread. Special spill pillows and pads are available, made specifically for chemical spills, but any inert, non-combustible absorbent, such as cat litter, will do. Once contained, the acid must be neutralized by adding a weak



Hazmat suit

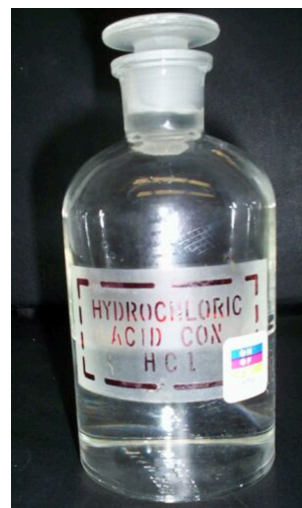
Ecobottle Sample



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Large-scale acid cleanups

Case Study #1: In Stillwater, Oklahoma, in August of 2016, one gallon of hydrochloric acid fell off a truck and burst in the road. The local fire department responded, first testing the pH of the acid, and then treating it with soda ash. They repeated the process until the pH again was neutralized. They then washed the neutralized chemical off the roadway.



Ecobottle Sample



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The local emergency management team closed off both ends of the road on which the spill occurred to keep motorists from driving through the cloud. Hazmat crews responded soon after, working to neutralize the acid with sodium bicarbonate. Because of the size of the spill, it took five days to clean up.

Reading Comprehension Questions:

1. If
2. If complete neutralization occurs, what will be the resultant pH?
3. Why
4. What
5. What pH range needs to be reached during neutralization to be considered safe to be cleaned up with water and disposed of?
6. What

Ecobottle Sample



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TWF SAMPLE

References

- Ahrens, T. (2016, Aug 19). Clean up: SFD responds to acid spill on Perkins Road. *Stillwater News Press*. Retrieved from http://www.stwnewspress.com/news/clean-up-sfd-responds-to-acid-spill-on-perkins-road/article_0e425b5e-94ea-598b-91db-15a9f6094bde.html.
- Lab Safety Supply. (2009, Apr 2). How to Neutralize Chemical Spills. *Lab Manager*. Retrieved from <http://www.labmanager.com/lab-health-and-safety/2009/04/how-to-neutralize-chemical-spills#.WJ3D6fkrLIU>.
- Lowery, E.L, and Herrington, C. (2016, Oct 15). Chemical spill scene secured, roads back open. *WDAM 7*. Retrieved from <http://www.wdam.com/story/33396570/chemical-spill-scene-secured-roads-back-open>.
- Moore, R. (2016, Oct 19). Chemical spill clean-up near completion. *MS News NOW*. Retrieved from <http://www.msnewsnow.com/story/33429721/chemical-spill-clean-up-near-completion>.
- Reinhardt, P.A., Norberg, A.M., Ashbrook, P., Peters, E., Beranek Jr., W., Pine, S.H., Berkowitz, J., Watts, D.J., Corson, A., Thomas, D.C., and Harless, J.M. (1995). Guide for Chemical Spill Response Planning in Laboratories. *The American Chemical Society Committee on Chemical Safety*. Retrieved from <https://www.acs.org/content/acs/en/about/governance/committees/chemicalsafety/publications/guide-for-chemical-spill-response.html>.
- Robinson, R. (2014, Jun 23). UPDATE: Crews clean up hydrochloric acid spill in Gordonville area of Leacock Township. *Lancaster Online*. Retrieved from http://lancasteronline.com/news/local/update-crews-clean-up-hydrochloric-acid-spill-in-gordonville-area/article_c09d2f24-fad7-11e3-bfa0-0017a43b2370.html
- The University of Iowa. (2017). Spill Response Guide: Corrosive Acids. *Environmental Health and Safety*. Retrieved from <https://ehs.research.uiowa.edu/spill-response-guide-corrosive-acids>.
- Zdrazil, T. (2017). Tip For Cleaning Up An Acid Chemical Spill. *Spill Containment Solutions*. Retrieved from <http://www.absorbentsonline.com/spill-containment-blog/tip-for-cleaning-up-an-acid-chemical-spill/>.