

WHAT IS CLAIMED IS:

1. A wellbore tool, comprising:
an expandable member positionable on a downhole conveyance member in a wellbore;
wherein the expandable member comprises a metal having an outer surface and configured to expand in response to hydrolysis, and wherein a volume of the expandable member is sufficient to expand to anchor one or more downhole tools within the wellbore in response to the hydrolysis; and
a barrier coating layer covering at least a portion of the outer surface of the expandable member, the barrier coating layer having a composition formulated to react with a wellbore fluid and erode within a predetermined amount of time to allow the wellbore fluid to contact and hydrolyze the expandable member.
2. The wellbore tool as recited in Claim 1, wherein the metal is an alkaline earth or a transition metal.
3. The wellbore tool as recited in Claims 1 or 2, wherein the metal is magnesium, aluminum or calcium and the metal expands in response to one of magnesium hydrolysis, aluminum hydrolysis, calcium hydrolysis, or calcium oxide hydrolysis, respectively.
4. The wellbore tool as recited in Claim 3 wherein the metal is a magnesium alloy or a magnesium alloy alloyed with at least one of Al, Zn, Mn, Zr, Y, Nd, Gd, Ag, Ca, Sn, or Re.
5. The wellbore tool as recited in Claim 1, wherein the barrier coating layer comprises a polymer, a ceramic, an organic compound, metal, or a combination thereof.
6. The wellbore tool as recited in Claims 1, 2, or 5, wherein the barrier coating layer comprises metal and the metal is nickel, gold, silver, titanium, or chrome.
7. The wellbore tool as recited in Claim 6, wherein the barrier coating metal is nickel having a residual porosity.

8. The wellbore tool as recited in Claim 7, wherein the nickel is an electroless nickel on a magnesium-base alloy and has a porosity that provides a first rate of delay before an onset of expansion of the expandable member, and a second, reduced rate of expansion of the expandable member when exposed to a wellbore fluid.

9. The wellbore tool as recited in Claims 1, 2, or 5, wherein the barrier coating layer comprises ceramic and the ceramic is zirconium dioxide.

10. The wellbore tool as recited in Claims 1, 2, or 5, wherein the barrier coating layer comprises a polymer.

11. The wellbore tool as recited in Claim 10, wherein the polymer is polylactic acid, poly(glycolic acid), low density polyethylene, high density polyethylene, polypropylene, or urethane plastic.

12. The wellbore tool as recited in Claim 11, wherein the polymer is at least 30% crystalline.

13. The wellbore tool as recited in Claims 1, 2, or 5, wherein the barrier coating layer is comprised of multiple layers.

14. The wellbore tool as recited in Claim 13, wherein the multiple layers is a first coating located on the expandable metal comprising an anodizing coating or plasma electrolytic oxidation coating and a second coating located on the first coating and comprising a polymer.

15. The wellbore tool as recited in Claim 14, wherein the multiple layers provide a 10 hour delay of expansion of the expandable metal when exposed to a well bore fluid.

16. The wellbore tool as recited in Claims 1, 2, or 5, wherein the barrier coating layer has a permeability that allows a wellbore fluid to permeate the barrier coating layer within the predetermined amount of time.

17. The wellbore tool anchor as recited in Claims 1, 2, or 5, wherein the barrier coating layer has a porosity that ranges from 0.001% to 20%.

18. The wellbore tool anchor as recited in Claims 17, wherein the porosity ranges from 0.001% to 10%.

19. The wellbore tool anchor as recited in Claims 1, 2, or 5, wherein the barrier coating layer has a permeability rate that ranges from 0.001 g/m²/day to 1000 g/m²/day of water at 200°F.

20. The wellbore tool anchor as recited in Claim 19, wherein the permeability rate is 1 g/m²/day of water at 200°F.

21. A well system, comprising:

a downhole conveyance locatable within a wellbore,

one or more expandable members coupled to the downhole conveyance, wherein the one or more expandable members comprise a metal configured to expand in response to hydrolysis;

a barrier coating layer covering an outer surface of the one or more expandable members, the coating layer having a composition formulated to react with a wellbore fluid and erode within a predetermined amount of time to allow the wellbore fluid to contact and hydrolyze the one or more expandable members; and

a downhole tool coupled to the one or more expandable members, wherein a combined volume of the one or more expandable members is sufficient to expand to anchor the downhole tool within the wellbore in response to the hydrolysis.

22. A method for setting an expandable metal wellbore anchor, comprising:

positioning a downhole conveyance at a desired location within a wellbore of a subterranean formation, the downhole conveyance having an pre-expansion expandable metal wellbore anchor coupled thereto, the pre-expansion expandable metal wellbore anchor including;

one or more expandable members positioned on the downhole conveyance having a barrier coating layer covering an outer surface of the one or more expandable members, the

coating layer having a composition formulated to react with a wellbore fluid and erode within a predetermined amount of time to allow the wellbore fluid to contact and hydrolyze the one or more expandable members;

wherein the one or more expandable members comprise a metal configured to expand in response to hydrolysis; and

wherein a combined volume of the one or more expandable members is sufficient to expand to anchor one or more downhole tools within the wellbore in response to the hydrolysis; and

subjecting the pre-expansion wellbore anchor to a wellbore fluid, the wellbore fluid reacting with the wellbore fluid to cause the barrier coating layer to erode at a predetermined rate to expose the one or more expandable members to the wellbore fluid and thereby expand the one or more expandable members into contact with the wellbore and thereby anchor the one or more downhole tool within the wellbore.