

Abstract

Several crosslinked polymer gels have been developed over the last 5 decades to address the different technical challenges in oil reservoirs especially conformance control operations. Among these systems, polyethylenimine (PEI) crosslinked polymer gels, which have gained a huge interest thanks to their eco-friendly aspect and thermal stability at extremely high temperatures. They have been largely examined in laboratories and implemented in oilfields since their introduction in the late 1990s. One can find in the literature many reviews on gel systems which have addressed briefly polymer/PEI gels. However, in this article, we are providing a thorough and detailed discussion on these systems and their recent developments. To do so, we are presenting the main polymer/PEI gel systems investigated over the last 2 decades. Then, we are highlighting the recent improvements that aimed to extend their gelation times and final strengths; finally, we are representing some of their successful implementations worldwide.