7-deaza-deoxyxanthosine (7-deaza-dX) is a deoxyribonucleoside in which the 7-nitrogen (N7) of the base is replaced by C-H. The resulting modified dX is unable to form a hydrogen bond at position 7. 7-deaza-dX is a useful research tool for DNA structural studies. For example, in one study on triple helix formation, the authors showed that 7-deaza-X:A-T triplets are stable and can be used to facilitate formation of triple helices in the anti-parallel motif (1). In a different study related to development of an expanded genetic alphabet, the ability of 7-deaza-dX to form non-standard base pair with an 2,4-diaminopyrimidine analog (2). Note that in both studies, their authors used H-phosphonate chemistry to incorporate 7-deaza-dX into the oligonucleotide. 

References