Drilling muds II:

The O/W (oil-in-water) vs W/O (water-in-oil) distinction is a function of composition toward the ends of the compositional range but additionally is a function of acid-base chemistry for intermediate cases. (Patel 1999)

This is a ternary diagram showing qualitative relationships among three end-members, but it is not a quantitative diagram.

Water-based muds
Favored in completion

Emulsion muds (water-based)

Addition of acid

Invert emulsion muds (oil-based)

Emulsion muds (O/W)

Addition of base

Invert emulsion muds

Oil-based muds
Favored in drilling

Synthetics
Favored in drilling

This document is derived from Shah et al. (2010), the Schlumberger Oilfield Glossary, and Patel (1999). Many thanks to Dr. Subhash Shah for his help with this diagram.