Ester Hydrogenation Catalysts

Green features
- 100% atom efficient reductant (H₂)
- No costly, mass-intensive workup

Advantages
- Can be handled in air
- Extremely high TON (up to 40,000)
- Active at as low as 23 °C

To read more, visit Aldrich.com/esterhydrogenation

Reductions with metal hydrides are commonplace, as are tedious methods to deal with the resulting emulsions.

These featured catalysts make ester reductions possible with hydrogen gas, eliminating the workup issues associated with other stoichiometric reducing agents and offering a cost effective, greener method for ester reduction.

Takasago:

\[
\text{Ru-MACHO}^\circ \quad 739103 \quad (0.1 \text{ mol } %)
\]

\[
\text{O} \quad \text{Me} \quad \text{Me} \quad \text{OH}
\]

\[
\begin{align*}
\text{40 bar H}_2, \\
\text{NaOMe, MeOH, 100 °C, 16 h}
\end{align*}
\]

90% yield

Gusev and Spasyuk:

PNN precatalyst

\[
746347
\]

SNS precatalyst

\[
746339
\]

\[
\text{O} \quad \text{Me} \quad \text{Me} \quad \text{OH}
\]

\[
\begin{align*}
\text{50 bar H}_2, \\
\text{t-BuOK, THF, 40 °C, 6 h}
\end{align*}
\]

95% conversion