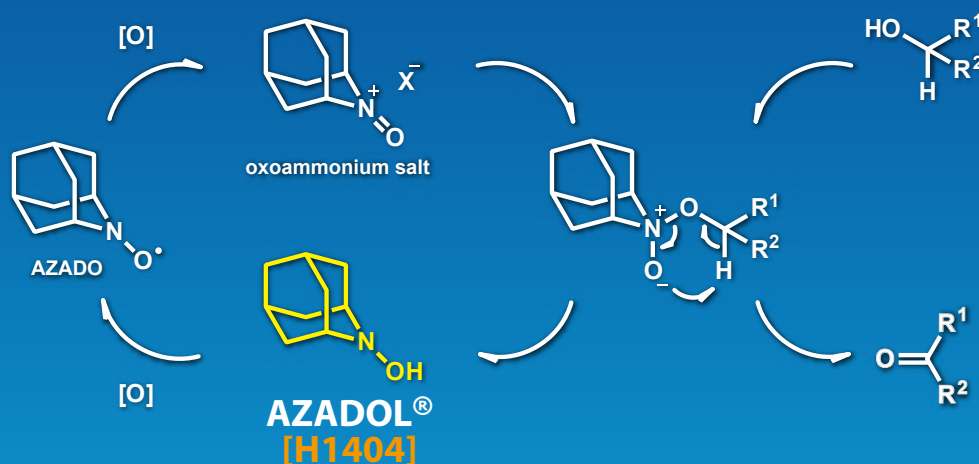


Highly Active Catalyst for Alcohol Oxidation

AZADOL[®]

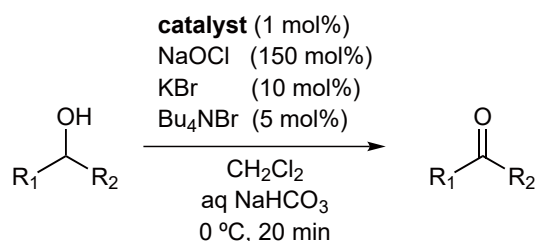


Advantages

- High Catalytic Activity (superior to the activity of TEMPO)
- Easily Oxidize Bulky Secondary Alcohols
- Various Oxidation Reactions Proceed According to Co-oxidants (Co-oxidants: NaOCl, NaClO₂, PhI(OAc)₂, O₂, DIAD)

Reference Y. Iwabuchi, *Chem. Pharm. Bull.* **2013**, *61*, 1197. DOI: <https://doi.org/10.1248/cpb.c13-00456>

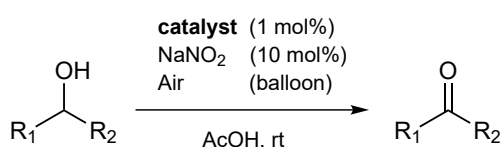
Oxidation of Alcohols under Anelli's Condition



| substrate | | | |
|-----------|-------|--------|-----|
| catalyst | TEMPO | AZADOL | |
| TEMPO | 5% | 94% | 13% |
| AZADOL | 16% | 99% | 91% |

References M. Shibuya, Y. Sasano, M. Tomizawa, T. Hamada, M. Kozawa, N. Nagahama, Y. Iwabuchi, *Synthesis* **2011**, *21*, 3418.
Y. Iwabuchi, M. Shibuya, M. Tomizawa, Y. Osada, *PCT Int. Appl. WO 2009145323*, **2009**.

Aerobic Oxidation of Alcohols



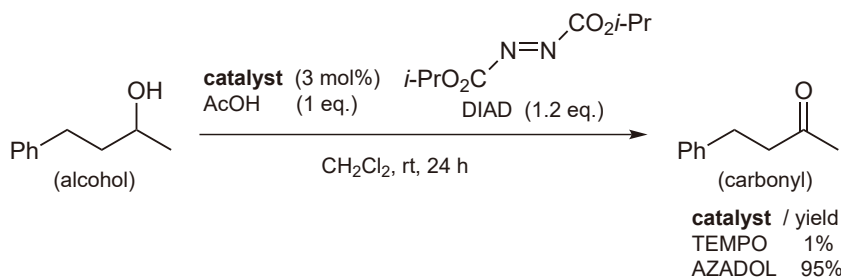
| substrate | | | |
|-----------|------------|-------------|------------|
| catalyst | TEMPO | AZADOL | |
| TEMPO | 10% (24 h) | 97% (9 h) | 1% (24 h) |
| AZADOL | 0% (24 h) | 92% (9.5 h) | 100% (6 h) |

Reference M. Hayashi, Y. Sasano, S. Nagasawa, M. Shibuya, Y. Iwabuchi, *Chem. Pharm. Bull.* **2011**, *59*, 1570.

Highly Active Catalyst for Alcohol Oxidation - AZADOL®

Oxidation of Alcohols to Carbonyl Compounds with Mitsunobu Reagent

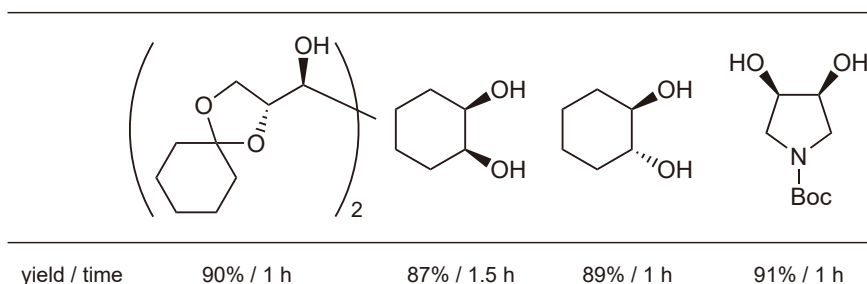
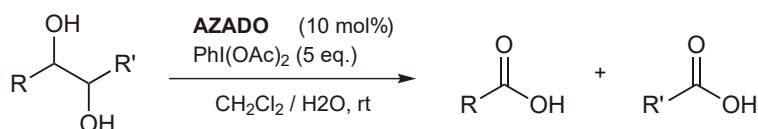
Functional-group-selective oxidation proceeds by use of Mitsunobu reagent DIAD as a co-oxidant.



Reference M. Hayashi, M. Shibuya, Y. Iwabuchi, *J. Org. Chem.* **2012**, 77, 3005.

One-Pot Oxidative Cleavage of 1,2-Diols to (Di)Carboxylic Acids

Oxidative cleavage of 1,2-diols to carboxylic acids proceeds by use of hypervalent iodine compound PhI(OAc)₂ as a co-oxidant.



Reference M. Shibuya, T. Shibuta, H. Fukuda, Y. Iwabuchi, *Org. Lett.* **2012**, 14, 5010.

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| | |
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| Potassium Bromide (=KBr) | 300g [P1747] |
| Tetrabutylammonium Bromide (=Bu ₄ NBr) | 25g / 100g / 500g [T0054] |
| Iodobenzene Diacetate (=PhI(OAc) ₂) | 10g / 25g / 250g [I0330] |
| Polystyrene Iodosoacetate (=PSDIB) | 1g / 5g [P1415] |
| Diisopropyl Azodicarboxylate (40% in Toluene, ca. 1.9mol/L) (=DIAD) | 25g / 100g / 250g [A1246] |

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