

## Matrix guide to Ch 22

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**Table 22.5**

### Summary of the Nucleophilic Substitution Reactions of Carboxylic Acids and Their Derivatives

Starting material

Product

	RCOCl	(RCO) <sub>2</sub> O	RCOOH	RCOOR'	RCONR' <sub>2</sub>
[1] RCOCl →	–	✓	✓	✓	✓
[2] (RCO) <sub>2</sub> O →	✗	–	✓	✓	✓
[3] RCOOH →	✓	✓	–	✓	✓
[4] RCOOR' →	✗	✗	✓	–	✓
[5] RCONR' <sub>2</sub> →	✗	✗	✓	✗	–

Table key: ✓ = A reaction occurs.  
✗ = No reaction occurs.

Plus nitriles (to carboxylic acids, amines, aldehydes, and ketones)