If electrophilic aromatic substitution of a monosubstituted benzene is slower than that of benzene under identical conditions, the
substituent in the monosubstituted benzene is called a deactivating group.

e.g.: Under identical conditions, Reaction 2 is slower than Reaction 1. Thus, the nitro group is a deactivating group.

All deactivating groups are electron-withdrawing groups.

Common deactivating groups:

- \(-\text{NO}_2\)

- \(-\text{NO}\)

- \(+\text{NR}_3\) (R = H, alkyl, aryl, or any combination thereof)

- \(-\text{C} = \text{R}\) (R = H, alkyl, aryl, hydroxy, alkoxy, phenoxy, NH_2)

- \(-\text{X}\) (X = F, Cl, Br, I)

- \(-\text{CN}\)

- \(-\text{SO}_2\text{H}\)

see also activating group, ortho, para directing group, meta directing group

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