

## Editorial Note on Reaction of Tertiary 2-Chloroketones with Cyanide Ions

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### Editorial Note

$\alpha$ -Haloketones are a type of organic chemical that is extremely reactive. A good study of the preparation of  $\alpha$ -haloketones and their reactions, which are based on the creation of distinct heterocycles, was identified in the literature. For the substitution of a halogen atom in  $\alpha$ -haloketones, several reaction pathways were suggested. In a water/ethanol solvent, a simple nucleophilic substitution of the bromine atom in  $\alpha$ -bromoketone generates  $\alpha$ -cyanoketone in good yields, according to the review.

When the process was carried out in DMSO, similar results were obtained. The interaction of cyanide ions with tertiary  $\alpha$ -haloketones, on the other hand, is poorly documented in the literature. It is well known that such compounds react inconveniently with nucleophiles, but the nucleophilicity can be boosted, for example, by utilising crown ethers to create a "naked" cyanide anion. Some side reactions, such as the attack of the cyanide ion on the carbonyl group, are linked to other issues.

The cyanohydrin reaction is a well-known cyanide ion-carbonyl group reaction. If a halogen is present in the next position, simple intramolecular dehalogenation occurs, resulting in the formation of  $\alpha$ -cyanooxiranes, a process that has been described more frequently. With sodium cyanide in water/dioxane,  $\alpha$ -bromoketones were transformed to  $\alpha$ -cyanooxiranes. In the presence of zinc (II) iodide,  $\alpha$ -chloroketones were transformed to

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3-chloro-2-(trimethylsilyloxy) nitriles using trimethylsilyl cyanide. In the presence of Lewis bases, the same reaction occurs with  $\alpha$ -bromoketones and, in particular,  $\alpha$ -fluoroketones.

3-Chloroquinolinediones **1** are useful model compounds for the study of tertiary haloketone interactions with nucleophiles. Because 3-chloroquinolinediones **1** has two reactive sites, there are several reactions that can result in the formation of novel heterocyclic compounds.

Compounds **1** are made by reacting 4-hydroxyquinolin-2-ones with sulfonyl chloride in a smooth manner. It is known that a significant number of quinolinediones have a functional group including heteroatom replaced in position 3.