A topological group $G$ is called $\tau$-precompact, where $\tau$ is an infinite cardinal number, if for every neighborhood $V$ of the identity there exists a subset $K$ of $G$ with $|K| < \tau$ such that $G = K \cdot V$.

The class $\tau PHGrp$ of $\tau$-precompact Hausdorff topological groups for a fixed infinite cardinal number, forms a reflective subcategory of the category $TopGrp$ of all Hausdorff topological groups.

In the paper it is proved that the reflection functor $\omega_{\tau} : TopGrp \rightarrow \tau PHGrpG$ preserves perfect surjective homomorphisms and quotient homomorphisms. The central result of the paper is Theorem 3.7 stating that the reflection functor $\omega_{\tau}$ commutes with products.

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MSC:

22A05 Structure of general topological groups
54H11 Topological groups (topological aspects)
18B99 Special categories

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