



**Definition**

Given a family of topological spaces  $\mathcal{F} = \{(X_\alpha, \mathcal{T}_\alpha)\}_{\alpha \in I}$ , the *product topology* of  $\mathcal{F}$  is the topology on  $\prod_{\alpha \in I} X_\alpha$  generated by the set

$$\left\{ p_\beta^{-1}(U_\beta) \mid (\exists \beta)(U_\beta \in \mathcal{T}_\beta) \right\}$$

where  $p_\beta : \prod_{\alpha \in I} X_\alpha \rightarrow X_\beta$  is the  $\beta$  coordinate projection. Some authorities also use the terminology *Tychonoff topology*.



