A rocket is a machine which generates high pressure for the motion. The nozzle from the rocket turns the static high pressure high temperature gas into rapidly moving gas at near-ambient pressure. Most Commonly used Nozzle in Rocket is De laval type Nozzle The materials used in the throat area of Nozzle included refractory metals, refractory- metal carbides, graphite, ceramics, cermets, and fiber - reinforced plastics.

The temperature of the gaseous products exiting from the nozzle is higher than the melting point of the nozzle material. Most of the thermal energy produced is ejected with the exhaust. The Cooling is essential there for the nozzle and the system to give a good efficiency. But the extensive cooling itself directly attack the walls of the nozzle like removal of inner layer of the walls.

It is important to maintain the life of the wall in order to make the propulsion of rocket. There is a method called coating which provides a thin layer to the material which acts as a refractory and anti erosion agent which increases the life of material.

In the case of high thermal emission machines we need a Thermal Barrier Coating (TBC) usually applied to metallic surfaces like aero-engine parts, operating at elevated temperatures, as a form of exhaust heat management. These 100 µm to 2 mm coatings allow for higher operating temperatures while limiting the thermal exposure of structural components, extending the life of materials by reducing oxidation and thermal fatigue.