

Abstract of the Disclosure

Disclosed are a method and apparatus for making substantially spherical, homogenous petroleum resid pellets having a size range between 0.1 and 10 mm, a penetration of essentially 0, a softening point temperature from about 200° to about 400°F, a residual water content of from 0.1 to 10 weight percent, and a sulfur content less than 10 weight percent. The process includes feeding the material in a molten state to a rotating prilling head to discharge the material into free space at an upper end of a pelletizing vessel having a diameter larger than a throw-away diameter of the discharged material, allowing the discharged material to break apart, form into substantially spherical liquid pellets, and fall downwardly into a liquid spray and/or bath to solidify the pellets. The apparatus has an upright pelletizing vessel with an upper prilling zone, a sphere-forming zone below the prilling zone, a cooling zone below the sphere-forming zone, a bath below the cooling zone, and a prilling head in the prilling zone rotatable along a vertical axis and having a plurality of discharge orifices for throwing molten material radially outwardly. A vertical height of the sphere-forming zone is sufficient to allow material discharged from the prilling head to form substantially spherical liquid pellets. Nozzles are provided for spraying water inwardly into the cooling zone to cool and at least partially solidify the liquid pellets to be collected in the bath. Also disclosed is pretreatment of a soft resid (softening point temperature below 200°F) by air oxidation to produce a hard resid suitable for feed to the prilling head.

