

Dittus-Boelter Heat Transfer Correlation

This procedure calculates the heat transfer coefficient using the Dittus-Boelter correlation.

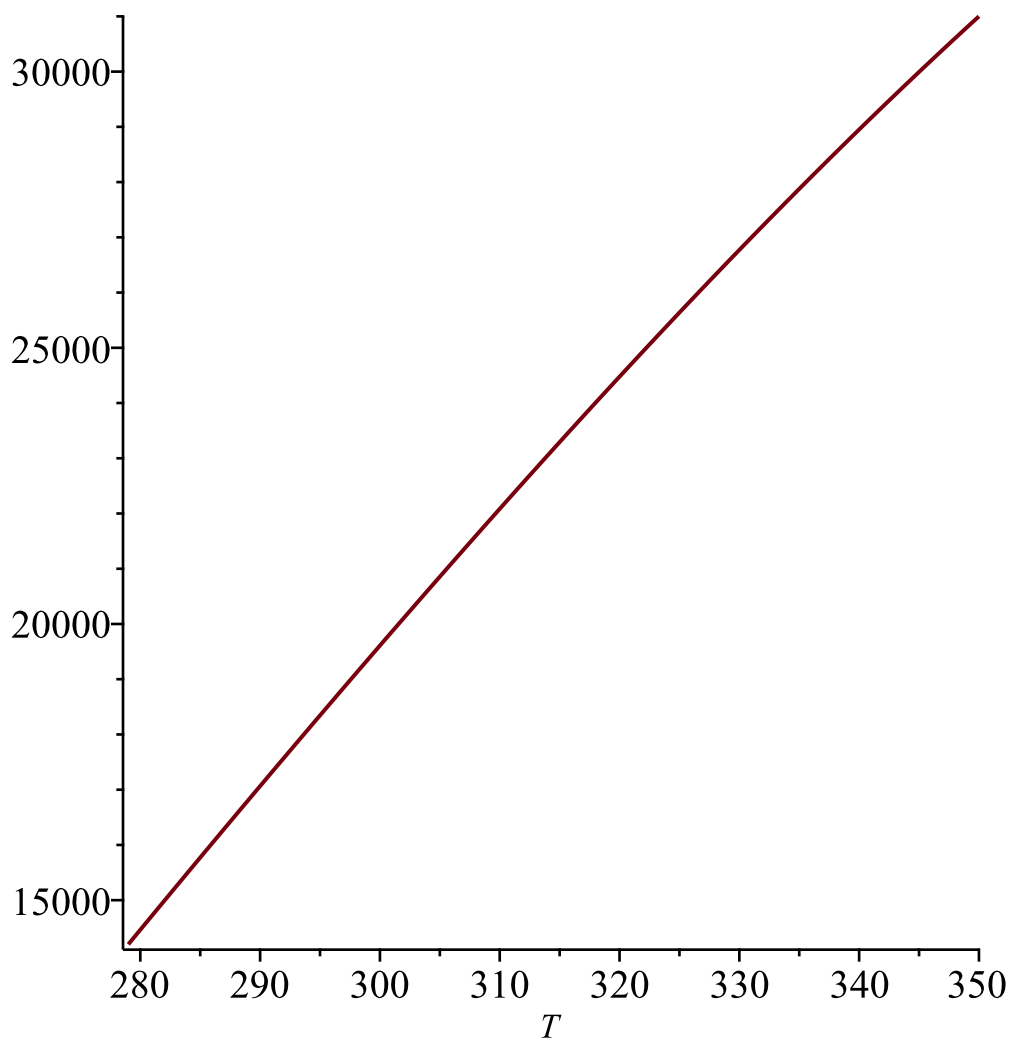
```
> ht := proc( temp, press, Dh, u, n, fluid)
  uses ThermophysicalData :
  local Pr, Rey, Cp, μ, k, ρ, N, h :
  Cp := Property( C, T = temp, P = press, fluid) :
  μ := Property( V, T = temp, P = press, fluid) :
  k := Property( L, T = temp, P = press, fluid) :
  ρ := Property( D, T = temp, P = press, fluid) :
  Pr :=  $\frac{Cp \cdot \mu}{k}$  :
  Rey :=  $\frac{Dh \cdot u \cdot \rho}{\mu}$  :
  N :=  $\frac{k}{Dh} \cdot 0.023 \cdot Rey^{0.8} \cdot Pr^n$  :
  h :=  $\frac{N \cdot k}{Dh}$  :
  return h :
endproc:
```

```
> ht( 279, 101325, 0.1, 1, 0.4, water)
```

14200.58588

(1)

```
> plot( 'ht'( T, 101325, 0.1, 1, 0.4, water), T = 279 .. 350)
```



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