

ARKIM: Calculations on immersion of a solid in a fluid

Immersion of a solid of density D_s in a fluid of density D_f . The immersion rate only needs these data. Mass M or volume V of the solid are needed for absolute values of lift force and immersed volume.

Data

Solid (s):
 $M = 636$ g
 $D_s = 0.33$ g/cm³
 $V = 1927$ cm³

Fluid (f):
 $D_f = 0.881$ g/cm³
 petroleum, crude

Results

$W = 6.24$ N < $L_{max} = 16.66$ N => **PARTIAL IMMERSION**

$V_s = 722$ cm³ = 37 %

Buttons: Densities, Formulas

Varying D_s by moving up or down the solid

Solid data random generation

Data entry

Solid:
 Mass M
 Density D_s
 Volume V

Fluid:
 Density D_f

A table of densities is shown clicking on this button.
 Values of densities can be transferred to the Data panel

Solids and fluids densities

| Material | d (g/cm ³) |
|-------------------|------------------------|
| cork | 0.24 |
| aluminium | 0.24 |
| cire | 3.50 |
| coal (anthracite) | 1.90 |
| coke | 3.14 |
| copper (mean) | 19.32 |
| cork | 0.92 |
| diamond | 7.8 |

| Fluid | d (g/cm ³) |
|---------------|------------------------|
| glycero | 1.261 |
| diiodomethane | 1.261 |
| ethanol | 0.817 |
| gasoline | 13.55 |
| glycerol | 1.03 |
| kerosene | 0.92 |
| mercury | 0.929 |
| milk | 0.881 |

Buttons: Add / Edit record

Data

Solid (s):
 $M = 940$ g
 $D_s = 0.24$ g/cm³
 $V = 1649$ cm³

Fluid (f):
 $D_f = 1.261$ g/cm³
 glycerol

With these buttons or dbl click on the item