FLOW VELOCITIES IN PIPES

Equations :

$V = w\ d^2 / 354$ $w = (V / d^2)\ 354$	$V_K = m_K\ v_g$ $V_D = m_D\ v''$	m^3/h m/s
w	Flow velocity	m/s
d	Inside pipe diameter	m
V_g	Specific volume	m^3/kg
V_K , V_D	Volume flow of condensate, steam	m^3/h
m_K , m_D	Mass flow of condensate, steam	kg/h

RECOMMENDED VALUES IN TECHNICAL LITERATURE

Steam	**w (m/s)**
- Steam vent or flash steam	15 to 25
- Saturated steam pipes	20 to 40
- Low-pressure superheated steam *(less than10 bar)*	20 to 35
- Medium-pressure superheated steam *(10 to 40 bar)*	20 to 40
- High-pressure superheated steam *(40 to 125 bar)*	30 to 60
- High-pressure superheated steam *(high capacities)*	45 to 65

Water	
- Feedwater inlet pipes (suction pipes)	0.5 to 1.0
- Feedwater discharge pipes	1.5 to 3.5
- Feedwater preheaters	0.01 to 0.15
- Cooling water suction pipes	0.7 to 1.5
- Cooling water discharge pipes	1.0 to 4.5
- Condensate pipes, slightly sub-cooled condensate	0.5 to 1.0
- Condensate pipes, increased sub-cooling of condensate	1.0 to 2.0
- Drinking, service water main pipes	1.0 to 3.0
- Local drinking, service water systems	0.6 to 1.0
- Turbine pipes, small diameter	2.0 to 4.0
- Turbine pipes, large diameter	3.0 to 7.0

Gases	**w (m/s)**
- Gas pipes *(max. 2 bar)*	4.0 to 20
- Gas pipes *(max. 5 bar)*	11 to 35
- Gas, household pipes	max. 1.0
- Compressed air pipes	15 to 25

Oils, naphthas	
- Oil pipelines	1.5 to 2.0
- Heavy oil pipes	0.5 to 2.0
- Naphtha, benzene, gas oil pipes	1.0 to 2.0