

**Calculation header**

Identifier *BINAK*  
 Tag No. *FE-2121A/B/C*

**Medium selection and state**

Medium  *Natural Gas (AGA8)*  
 Mixture composition  *C-2101A/B/C INLET*  
 State  *Gaseous*  
 Gas *Gas, dry (Operating conditions)*

**Inlet properties**

Operating temperature  $t_1$  *36.78* °C  
 Operating pressure  $p_1$  *4.9* bar(g)  
 Operating density ( $t_1$ ,  $p_1$ )  $\rho_1$   *5.7545* kg/m<sup>3</sup>  
 Isentropic exponent ( $t_1$ ,  $p_1$ )  $\kappa_1$   *1.2189* -

**Pipeline**




☒ Pipe class  *ANSI*  
 Size class  *8"*  
 Schedule  *Schedule 20*

**Orifice plate**




Throttle *Single stage*  
 Type of orifice plate *Single-hole orifice*  
 Type of bore *Cylindrical bore*  
☐ Flow coefficient  $C$   *0.90141* -

**Operating data**

☐ Critical flow according to R. W. Miller Calculation ☐ Safety-related application *d*

Permanent pressure loss  $\Delta\omega$  *125.0* mbar  
 Throttle orifice (20°C)  $d$   *95.436* mm  
☒ Mass flow rate  $q_m$  *8,923.9* kg/h  
☐ Volume flow rate (operating conditions)  $q_v$   *6,827.8* GPM(US)  
 Flow type  *Non-critical*



**Calculated auxiliary values**

Sound pressure level (A-weighted)	LpAe 	61.4	dB(A)
Diameter ratio	$\beta$ 	0.46244	-
Power loss	P 	7.2843	hp(l)

**Outlet properties**

Operating pressure	p2 	4.775	bar(g)
Mach number	Ma2 	0.037173	-




**Hint:**

-  Approximate value: Dynamic viscosity ( $t_1$ ,  $p_1$ ) -  $\eta_1$
-  Approximate value: Min. orifice thickness for  $\Delta p$  -  $E_{\min}$

**Comments:****Mixture composition**

*Methane: 63.9 %, Nitrogen: 0.298 %, Carbon dioxide: 3.16 %, Ethane: 13.8 %, Propane: 7.73 %, n-Butane: 1.86 %, i-Butane: 0.839 %, n-Pentane: 0.377 %, i-Pentane: 0.697 %, n-Hexane: 0.655 %, n-Heptane: 0.196 %, n-Octane: 0.0596 %, n-Nonane: 0.0297 %, n-Decane: 0.0099 %, Water: 1.03 %, Hydrogen sulphide: 5.41 %*

**Legend**

-  Calculated value
-  Lookup value
-  Hint