

CORRELACIONES DE NUSELT PARA LA LECHE

PARA DISTINTOS TIPOS DE RECIPIENTES E IMPULSORES

Table 1 Heat transfer coefficients in Baffled and Unbaffled vessels using FBT, IBT, Propeller, Paddle and Empirical Correlation for Cow Milk

Type of vessel	Type of Impellers	N (rpm)	Reynolds number	Experimental \bar{h} ($\frac{W}{m^2K}$)	Theoretical \bar{h} ($\frac{W}{m^2K}$)	% Error	Correlation	
Baffled Vessel	Flat Six Blade Turbine impeller	85	1251	540	539.1	- 0.6	$Nu = 4.01 * Re^{0.413} * Pr^{0.33}$	
		110	1619	611	599.6	- 1.8		
		130	1914	655	642.5	- 1.9		
		150	2208	680	681.6	0.2		
	Inclined Six Blade Turbine impeller	85	1251	509	506.6	- 0.4		$Nu = 2.0 * Re^{0.502} * Pr^{0.33}$
		110	1619	570	576.6	1.1		
		130	1914	640	627	- 2		
		150	2208	670	673.7	0.5		
	Three blade Propeller impeller	85	1251	552	558.3	- 1.1		$Nu = 5.15 * Re^{0.383} * Pr^{0.33}$
		110	1619	637	616.2	3.2		
		130	1914	679	656.9	3.2		
		150	2208	701	711.3	- 1.4		
	Two Blade Paddle Agitator	50	736	594	593	- 0.2		$Nu = 2.33 * Re^{0.543} * Pr^{0.33}$
		60	883	658	654.4	0.5		
		70	1030	721.5	711.5	- 1.4		
		80	1178	764	765	0.1		
Unbaffled Vessel	Flat Six Blade Turbine impeller with scraper	50	736	721.5	698	- 3.3	$Nu = 10.48 * Re^{0.340} * Pr^{0.33}$	
		60	883	733	743	1.3		
		70	1030	777	783	0.7		
		80	1178	849	819	- 1.1		
	Inclined Six Blade Turbine impeller with scraper	50	736	679.2	671	0.3		$Nu = 10.69 * Re^{0.331} * Pr^{0.33}$
		60	883	710	713	0		
		70	1030	750	750	- 1.2		
		80	1178	793.6	784	- 1.8		
	Three Blade Propeller impeller with scraper	50	736	776.7	777.3	0		$Nu = 5.25 * Re^{0.461} * Pr^{0.33}$
		60	883	848.8	845.4	- 0.3		
		70	1030	933.7	907.7	- 2.8		
		80	1178	955	965.3	1		