

	SL	LT	LTT	SF	REG	DCFL	CFL	TAL/LIL/CCG/HG	LCFL/MCFL/ML	IL	CSL	REC	RE	Trio	FTrio	AFL	FAFL
$\bar{L}$				✓	✓	✓	×	×		×	✓	✓	×				
*					✓		✓		✓	✓	×	×	✓	×	×	×	✓
(				✓	✓		✓		✓	✓	✓	✓	✓	×	×	✓	✓
+					✓		✓		✓	✓	✓	✓	✓	×	×	✓	✓
$\cup$				✓	✓	×	✓		✓	✓	✓	✓	✓	×	×	✓	✓
$\cap$				✓	✓	×	×	×		×	✓	✓	✓				
$\cap R$					✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
$\varepsilon$ -free $h$					✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
$h^{-1}$					✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
$h$					✓		✓		✓	✓	×	×	✓	×	✓	×	✓
Difference				✓	✓	×	×	×		×	✓	✓	×				
Substitution					✓	×	✓		✓	✓	✓	×	✓				
Sub into REG					✓		✓		✓	✓	✓	✓	✓	×	×	✓	✓
Sub by $\varepsilon$ -free REG					✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Sub by REG					✓		✓		✓	✓	×	×	✓	×	✓	×	✓
GSM map					✓		✓		✓	✓	×	×	✓	×	✓	×	✓
$\varepsilon$ -free GSM map					✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Inverse GSM map					✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Limited Erasing					✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Quotient with REG					✓		✓		✓	✓	×	×	✓	×	✓	×	✓
INIT					✓		✓		✓	✓	×	×	✓	×	✓	×	✓
Reversal					✓	×	✓			✓	✓	✓	✓				
MIN					✓	✓	×					✓	✓				
MAX					✓	✓	×				×	×	×				
CYCLE					✓	×	✓				✓	✓	✓				
$w \in L$					D	D	D				D	D	U				
$L = \emptyset$					D	D	D				U	U	U				
$L = \Sigma^*$					D	D	U				U	U	U				
$L_1 = L_2$					D		U				U	U	U				
$L_1 \subseteq L_2$					D	U	U				U	U	U				
$L_1 \cap L_2 = \emptyset$					D	U	U				U	U	U				
$L = R$					D	D	U				U	U	U				
$L$ finite							D										
$L$ regular	T	T	T	T	T	D	U				U	U	U				
$L_1 \cap L_2$ same type				T	T	U	U				T	T	T				
$\neg L$ same type				T	T	U	U					T	U				

Table 1: Closure and decision properties of string languages