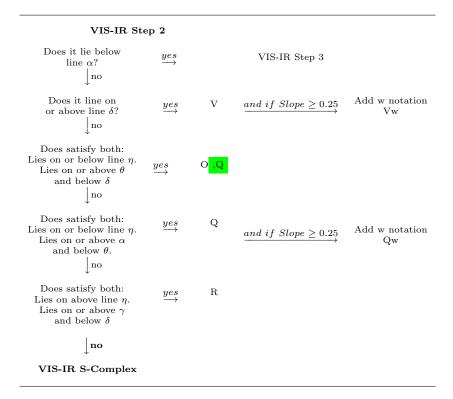
Table 1: Visible + IR Flowchart



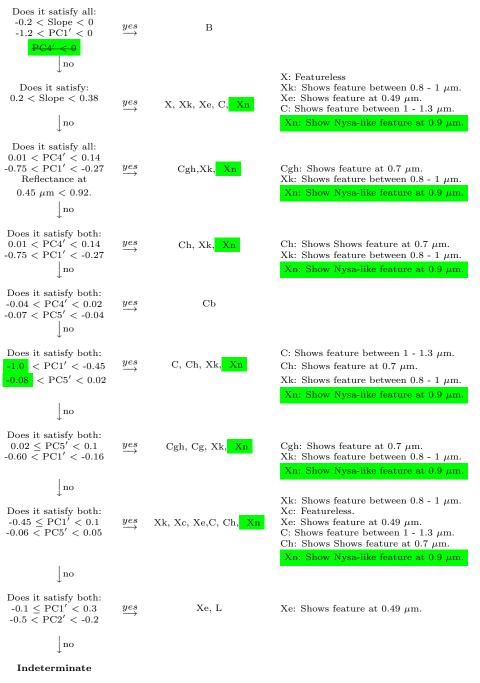
VIS-IR Step 3

VIS-IR C- and X-Complexes

VIS-IR S-Complex

Does it satisfy both: Lies below β and above ζ \downarrow no	$\overset{yes}{\longrightarrow}$	S	$\xrightarrow{and\ if\ Slope} \geq 0.25$	Add w notation Sw
Does it satisfy all: Lies on or above α and below β Lies above η and on or below ζ \downarrow no	$\overset{yes}{\longrightarrow}$	Sq	$\xrightarrow{and\ if\ Slope} \ge 0.25$	Add w notation Sqw
Does it satisfy all: Lies on or above β and below γ Lies above η and on or below ε \downarrow no	$\overset{yes}{\longrightarrow}$	Sr	$\underbrace{and\ if\ Slope \geq 0.25}_{}$	Add w notation Srw
Does it satisfy all: Lies on or above β Lies above ε and below γ	$\overset{yes}{\longrightarrow}$	Sv	$\xrightarrow{and\ if\ Slope} \ge 0.25$	Add w notation Svw
\int no				
Indeterminate				





VIS-IR Checks ¹ for Cg, Cgh, Ch, Xc, Xe, Xk		VIS-IR Equations		
Cg	Strong UV absorption feature before 0.55 μ m	PC1' = -3PC2' - 0.28	Line α	
Ch	Moderately shallow absorption feature around 0.7 μ m	PC1' = -3PC2' + 0.35	Line β	
Cgh	Strong UV absorption feature like Cg and 0.7 - μm	PC1' = -3PC2' + 1.00	Line γ	
	feature like Ch (Reflectance at 0.45 $\mu m < 0.92$)	PC1' = -3PC2' + 1.50	Line δ	
$_{\rm Xc}$	Red and featureless with slight concave down curvature	$PC1' = \frac{1}{3}PC2' + 0.50$	Line ε	
Xe	Concave-up absorption feature before 0.55 μ m	$PC1' = \frac{1}{3}PC2' - 0.10$	Line ζ	
Xk	Red shortward of 0.75 μ m and generally flat	$PC1' = \frac{9}{3}PC2' - 0.50$	Line η	
	longward of 0.75 μm	PC1' = -3PC2' + 0.70	Line θ	
Xn	Weak, narrow, Nysa-like feature at 0.9 $\mu\mathrm{m}$			

 $[\]overline{^{1}}$ These spectral features are originally defined in Bus (1999) and Table 2 of Bus and Binzel (2002).

Table 2: IR Flowchart

IR Step 1: End Members

$$\begin{array}{c} \text{Does it satisfy:} \\ \text{PCir1}' \geq 0.5 \\ \downarrow \text{no} \end{array} \xrightarrow{yes} \quad \text{V} \\ \\ \text{Does it satisfy all:} \\ 0.29 \leq \text{PCir1}' < 0.5 \\ \text{PCir5}' \leq 0.05 \\ \downarrow \text{no} \end{array} \xrightarrow{yes} \quad \text{Sv, Sr} \\ \\ \text{Does it satisfy all:} \\ \text{PCir2}' \leq -0.5 \\ \text{PCir4}' \geq 0.15 \\ -0.40 < \text{PCir1}' \leq 0 \\ \downarrow \text{no} \end{array} \xrightarrow{yes} \quad \text{O} \\ \\ \text{Does it satisfy all:} \\ 0.25 \leq \text{PCir2}' < 0.5 \\ \text{PCir5}' \geq 0.06 \\ \text{PCir3}' \geq 0.05 \\ \downarrow \text{no} \end{array} \xrightarrow{yes} \quad \text{R} \\ \\ \text{Does it satisfy all:} \\ \text{Below line 1} \\ \\ \text{Below line 1} \\ \\ \text{PCir3}' \leq -0.02 \\ \\ \text{Slope}_{ir} \geq 0.24 \\ \downarrow \text{no} \end{array} \xrightarrow{yes} \quad \text{D} \\ \\ \text{Does it satisfy all:} \\ \text{PCir1}' \leq -0.4 \\ \text{PCir2}' \geq -0.2 \\ \text{PCir4}' \geq -0.07 \\ \\ \text{Slope}_{ir} \geq 0.5 \\ \text{PCir3}' \geq 0 \\ \downarrow \text{no} \end{array} \xrightarrow{yes} \quad \text{A} \\ \\ \text{Does it satisfy all:} \\ \text{PCir1}' \leq -0.4 \\ \text{PCir2}' \leq -0.2 \\ \text{PCir4}' \geq -0.07 \\ \\ \text{Slope}_{ir} \geq 0.5 \\ \text{PCir3}' \geq 0 \\ \downarrow \text{no} \end{array} \xrightarrow{yes} \quad \text{Sa} \\ \\ \\ \text{Does it satisfy all:} \\ \text{PCir1}' \leq -0.4 \\ \\ \\ \text{PCir2}' \leq -0.4 \\ \\ \text{Does it satisfy all:} \\ \text{PCir1}' \leq -0.4 \\ \\ \\ \text{Does it satisfy all:} \\ \text{PCir1}' \leq -0.4 \\ \\ \\ \text{Does it satisfy all:} \\ \text{PCir1}' \leq -0.4 \\ \\ \\ \text{Does it satisfy all:} \\ \text{PCir1}' \leq -0.4 \\ \\ \\ \text{Does it satisfy all:} \\ \text{PCir2}' \leq -0.2 \\ \\ \text{Does it satisfy all:} \\ \text{PCir1}' \leq -0.4 \\ \\ \\ \text{Does it satisfy all:} \\ \text{Does it satisfy all$$

IR Step 2: S-complex

Does it lie on or above line 1 and 2?

$$\downarrow no$$
Does it lie on or above line 2 and 3?
$$\downarrow no$$
Does it line on or above line 1 and on or between line 3 and 4?

$$\downarrow no$$
IR Step 3

IR Step 3: C- and X-complexes

```
Does it satisfy:
Below line 1 and on or between 3 and 4?

\downarrow no

Does it satisfy:
Below line 1 and between 2 and 3?

\downarrow no

Does it satisfy:
\downarrow no

Does it satisfy:
Below line 1 and 4?

\downarrow no

\downarrow no
```

${\bf Indeterminate}$

IR Equations	
PCir3' =PCir2' - 0.08	Line 1
PCir1' =PCir2' + 0.15	Line 2
PCir1' =PCir2' - 0.10	Line 3
PCir1' =PCir2' - 0.40	Line 4