

Uranometria 2000.0's Bright Nebulae Database

We draw to scale 377 bright nebulae with a solid outline if larger than 10'. Objects smaller than 10' are drawn as solid-line square boxes in two sizes (10' to 5' and less than 5'). On the 2× close-up maps they are plotted to scale if larger than 2.5'; on the 3× maps, if larger than 1.7'.

These objects, also called diffuse or Galactic nebulae, occur in two main classes depending on their source of illumination: emission and reflection, although they occasionally are a combination of the two. Much less common is a third type of bright nebula, the supernova remnant (SNR).

Emission nebulae are clouds of dust and glowing hydrogen gas, sometimes referred to as H II (“H-two”) regions. The atoms in the cloud are ionized by nearby hot stars, and when the excited electrons fall back to their previous energy state, the process releases energy in the form of visible light. A well-known example is the Lagoon Nebula, found on Charts 145 and 146. Since most of the light visible from emission objects comes from just the three lines produced by hydrogen (H β at 4861Å) and oxygen ([OIII] at 5007Å and 4959Å), the use of narrow band “nebula” filters can be helpful in viewing them.

Reflection nebulae have the same composition as emission objects but lack stars sufficiently hot to cause the gas comprising them to fluoresce; therefore, they shine merely by the dust in the nebulae scattering starlight (the gas does not actually reflect any light). Good examples are the nebulosities surrounding the Pleiades star cluster (Chart 78) and M78 in Orion (Chart 116). Because these objects scatter starlight of all colors, filters are not generally helpful in viewing them.

A supernova remnant is the remains of a catastrophic stellar explosion, wherein much of a star's material is ejected, often as a highly-structured cloud. Examples are the Veil Nebula in Cygnus (Chart 47) and the Crab Nebula (M1) in Taurus (Chart 77). These objects have strong emission lines similar to H II regions, hence also benefit from the application of nebula filters.