

# AgGaSe<sub>2</sub>, AgGaS<sub>2</sub> Crystals



## Description

**AgGaSe<sub>2</sub> crystal** has band edges at 0.73 and 18 μm. Its useful transmission range within 0.9–16 μm and wide phase matching capability provide excellent potential for OPO applications when pumped by a variety of currently available lasers. Tuning within 2.5–16 μm has been obtained when pumping by Ho:YLF laser at 2.05 μm; as well as non-critical phase matching (NCPM) operation within 1.9–5.5 μm when pumping at 1.4–1.55 μm. AgGaSe<sub>2</sub> has been demonstrated to be an efficient frequency doubling crystal for infrared CO<sub>2</sub> lasers radiation.

**AgGaS<sub>2</sub> crystal** is transparent from 0.53 to 12 μm. Although its nonlinear optical coefficient is lower among the other IR crystals, high short wavelength transparency edging at 550 nm is used in OPOs pumped by Nd:YAG laser; in numerous difference frequency mixing experiments with diode, Ti:Sapphire, Nd:YAG and IR dye lasers covering 2.4–12 μm range; in direct infrared countermeasure systems, and for SHG of CO<sub>2</sub> laser. Thin AgGaS<sub>2</sub> crystal plates are popular for ultrashort

wavelength pulses.

## Features

- Large effective optical nonlinearity
- Wide spectral and angular acceptances
- Broad transparency range
- High figure of merit for non-linear interactions
- Ultrashort pulse generation in mid IR range
- Suitable for applications with CO<sub>2</sub> laser

## Standard specifications

Transparency range	0.9-16 μm (AgGaSe <sub>2</sub> )
	0.53-12 μm (AgGaS <sub>2</sub> )
Dimensions tolerance	+0/-0.1 mm
Length tolerance	±0.1 mm
Orientation accuracy of cut angle	<30 arcmin
Surface quality	20-10 S-D
Surface flatness	<λ/4 @ 632.8 nm
Parallelism error	<40 arcsec
Perpendicularity	<5 arcmin
Protective chamfers	<0.1 mm x 45°
Material optical damage threshold	>350 MW/cm <sup>2</sup> for 10 ns pulses @ 1064 nm