

**List of short PHI materials for Botrytis, powdery mildew, and downy mildew of grape
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Botrytis (Good to Excellent)				
Fungicide	FRAC	REI	PHI	Comments
Elevate	17	12	0	
Luna Tranquility	7+9	12	7	(No longer on the market)
Meteor	2	48	7	
Rovral	2	48	7	
Scala	9	12	7	
Switch 62.5WG	9+12	12	7	May suppress sour rot
Vanguard	9	12	7	
Botrytis (Fair to poor: may not work as a solo application, but would be a nice mixing partner)				
Fungicide	FRAC	REI	PHI	Comments
Topsin-M	1	2	7	Probably no longer effective against Botrytis
Ph-D, Oso	19	4	0	Relatively older material, introduced recently to the US. Limited information available, but known to have resistance issue, so, please mix with another Botrytis material.
Fracture	NC	4	1	Not many information available
Champ (and other fixed copper materials, please see Downy mildew section for some examples.)	M1	48	0	Has efficacy on Downy and powdery mildew. Discuss with your winemaker about the use of copper late in the season.
Captan, Captec 4L/ 50 WP	M4	48	0	It also has efficacy on Downy mildew, do not mix with oil. Discuss with your winemaker about the use of captan late in the season.
Powdery mildew				
Fungicide	FRAC	REI	PHI	Comments
Armcarb	M	4	0	Very good for stopping on-going powdery mildew
Captan, Captec 4L/ 50 WP	M4	48	0	Has some efficacy on Botrytis and downy mildew. Discuss with your winemaker about the use of captan late in the season.
Champ (and other fixed copper materials, please see Downy mildew section for some examples.)	M1	48	0	Has some efficacy on Botrytis and downy mildew. Discuss with your winemaker about the use of copper late in the season.
Double Nickel	NC	4	0	Very limited information available. Worked well when mixed with Oso in our trials. May suppress sour rot.

Ferbam	M3	24	0	Fair efficacy.
JMS Stylet Oil	M	4	0	Do not mix with captan or sulfur!
Kaligreen	M	4	1	Very good for stopping on-going powdery mildew
Microthiol D (sulfur)	M	24	0	Do not mix with oil!
Milstop	M	4	0	Very good for stopping on-going powdery mildew.
Nutrol	M	4	0	Very good for stopping on-going powdery mildew
Oxidate 2.0	M	1	0	Very limited information available. It works better with sour rot (but needs to be mixed with an insecticide to control fruit flies)
Procure	3	12	7	
Sulfuriox	M2	24	0	Do not mix with oil
Torino	U6	4	3	Different mode of action group. Limited to two applications per year, known resistance issue.

Downy mildew

Fungicide	FRAC	REI	PHI	
Phostrol, ProPhyt, Agri-Fos, etc.	P07	4	0	Good DM material with a kickback activity. Do not mix with copper!!
Champ (fixed copper)	M1	48	0	Has some efficacy on Botrytis and powdery mildew. Discuss with your winemaker about the use of copper late in the season.
Cueva (fixed copper)	M1	4	0	Has some (=poor to fair) efficacy on Botrytis and powdery mildew. Discuss with your winemaker about the use of copper late in the season.
Cueprofix (fixed copper)	M1	48	0	Has some efficacy on Botrytis and powdery mildew. Discuss with your winemaker about the use of copper late in the season.
There are many other copper materials, please refer to the label for REI and PHI. If you are concerned about copper accumulation in the environment, copper soap-type materials (e.g., Cueva, etc.) tend to have a lower concentration of Cu.				
Captan, Captec 4L/ 50 WP	M4	48	0	Has some efficacy on Botrytis and powdery mildew. Discuss with your winemaker about the use of captan late in the season. Different products may have longer REI. Check the label!
Lifeguard	44	4	0	It has a label for powdery and downy, but it seems to work better with downy mildew. You need to spray preventatively.
Oxiphos	P07+ M	4	0	One of the components is a phos acid. If you wish to use Oxidate, I would recommend this one.
