

# Spray Material Half-Life Chart 2009

# AG

Adjusting the pH of the spray solution can reduce spray material decomposition and make the spray more effective.

The following chart shows the Spray Material Half-Life or the time it takes for half the amount of chemical to be decomposed (made inactive at various pH levels).

Spray Material Product	Buffering	Optimum pH	Half-Life at pH indicated (50% decomposition)					
			9.0 Basic	8.0 Basic	7.0 Neutral	6.0 Acidic	5.0 Acidic	4.5 Acidic
2,4-D Amine		6.0	Stable at pH 4.5 - 7.0					
Accel®		6.0	Strongly recommend pH 5.5 - 6.5					
Achieve®		7.0	>1000 days		114 days		63 days	
Acramite® Updated 6-04	X	6.0	10 min.		1 hr.	12 hrs.		20 hrs.
Acrobat®		7.0	Stable over wide range of pH					
Actara™ Updated 8-04		7.0	Susceptible to alkaline hydrolysis in pH >9.0					
Actellic®		7.0		12 days	35 days		7 days	
Admire® Updated 4-08		7.0	355 days	Fully stable at a pH of 5 and 9			30 days	
Agri-Mek®		7.0	Stable over wide range of pH					
Aliette®		6.0	Stable in pH 4.0 - 8.0					
Alverde® Added 8-06		7.0	Stable over wide range of pH above 4.0					
Amber®		7.0	Stable from 7.0 to 9.0				31 days	
Ambush®		7.0	Stable at pH 6.0 - 8.0					
Ammo®	X	4.0	35 hrs.	More stable in acidic solutions				
Apollo® Updated 1-03	X	6.0	4 hrs.		34 hrs.		248 hrs.	
Asana® Updated 6-04		6.5	Stable over a pH 5.0 - 9.0 range					
Assail™ updated 4-08		6.0	Unstable in water pH below 4.0 and above 7.0					
Atrazine		7.0	Decomposes slowly in base solution					
Auxigro®	X	6.0	Strongly recommend pH 5.5 - 6.5					
Avaunt®		7.0	Stable over wide range of pH					
Avenge®	X	5.0	Decomposes in strong base condition					
Banvel®	X	5.5	Stable at pH 5.0 - 6.0					
Basagran®		7.0	Stable over wide range of pH					
Bayleton®		7.0	Stable over wide range of pH					
Baythroid® Added 4-08			6 days	Stable over wide range of pH				
Beacon®		7.0	>900 days					
Betamix®		7.0	10 min.		17 hrs.		60 days	
Bravo®		7.0	Stable over wide range of pH					
Buctril®	X	5.0	Hydrolysis above pH 7.0					
Cabrio™ EG		7.0	30 days					
Calypso® Updated 1-05		7.0	Stable over wide range of pH 5.0 to 9.0					
Canvas®		7.0	Do NOT lower pH of water					
Captan®	X	5.0		10 min.	8 hrs.		32 hrs.	
CaptEvat® Added 8-04	X	5.0		10 min.	8 hrs.		32 hrs.	
Capture® Added 6-04		6.0	Stable in pH 4.5 - 7.5					
Carzol®	X	5.0	2 hrs.		23 hrs.		4 days	
Classic®	X	5.0	Stable in pH 5.0 water					
Copper Products		>7.0	Do Not Use In water pH below 7.0					
Confirm®		7.0	Stable over wide range of pH					
Curzate® DF Updated 3-03		6.5		8 hrs.	Stable at pH 5.5 - 6.5			
Dacthal®		7.0	Hydrolyzed in strong acid and alkaline					
Decis® added 4-08		7.0	2 days	Stable from pH 5 to 8				
Delegate® added 11-09		7.0	Stable in pH from 5.0 to 9.0					
Des-i-cate®	X	5.0					Stable at pH 4.0 - 5.0	
Di-syston®		7.0	Stable over wide range of pH					
Diazinon		7.0	29 days	3 wks.	10wks.		14 days	8 days
Dibrom®	X	5.0	Hydrolyzed in 48 hrs. in pH > 7					
Digon® Dimethoate	X	5.0	48 mins.			12 hrs.		20 hrs.
Dipel®		6.0	Unstable in pH > 8					
Dithane®	X	5.5	34 hrs.		17 hrs.		20 days	
Diquat®		6.0	Stable in neutral or acid solutions					
Distinct®		7.0	Stable over wide range of pH					
Dursban®	X	5.0		1.5 days	35 days		63 days	
Dylox®	X	5.0		63 min.	6.5 hrs.	3.7 days		
Echo® / Bravo®		7.0	Stable over wide range of pH					
Elite®		7.0	Stable over wide range of pH					
Endura® 7-04		6.8	Stable over wide range of pH					
Entrust® added 9-07		7.0	Stable in pH from 6.0 to 11.0					12 hrs.
Ethrel® updated 2-06	X	7.0	Hydrolyzed under alkaline conditions					
Endosulfon		6.0	Some alkaline hydrolysis					
Envidor® added 4-08		7.0	2 days	Stable from pH 4 to 8				
Everest®		7.0	Stable over wide range of pH					
Express®		7.0	Do NOT lower pH of water					
Flint®		7.0	27 hours	Stable from pH 4 to 8				
Folicur®		7.0	Stable over wide range of pH					
Funginex®		6.5	Neutralized in slightly alkaline water					
Furadan®	X	6.0	78 hrs.			8 days		
Fusilade®		7.0	17 days		21 wks.		65 wks.	
Gallery®		7.0	Stable over wide range of pH					
Gem®		7.0	27 hours	Stable from pH 4 to 8				
Glean®		7.0	Do NOT lower pH of water					
Genesis®		7.0	Stable over wide range of pH					
Goal®		7.0	Stable in neutral pH					
Gramoxone® Extra		6.5	Not stable in pH > 7.0					
Gramoxone® MAX		6.5	Not stable in pH > 7.0					
Guthion® updated 4-08		6.5	12 hours		10 days		17 days	>30 days
Harmony®		7.0	Do NOT lower pH of water					
Harmony® Extra		7.0	Do NOT lower pH of water					
Harmony® GT		7.0	Do NOT lower pH of water					
Headline®		7.0	30 days					
Imidan® Updated 12-03	X	5.0		33 min.	1 hrs.	36 hrs.	7 days	13 days

Intrepid®		7.0	Stable in pH from 6.0 to 11.0				12 hrs.	
Kelthane®	X	5.5	1 hr.		5 days		20days	
Kerb®		6.5	Stable in pH 5.5 - 7.5					
Lannate®		6.5	Stable in slightly acidic water					
Laredo®		7.0	Unaffected by Alkaline Hydrolysis					
Larvin®	X	5.0	Stable in pH 4.0 - 7.5					
Lasso®	X	5.5	Affected by alkaline water					
Lexone®		7.0	Unaffected by Alkaline Hydrolysis					
Lindane		7.0	11 days		27 wks.			
Lorsban®		7.0		1.5 days	35 days		63 days	
Malathion	X	5.0	5 hrs.	19 hrs.	3 days	8 days		
Maneb® Updated 5-03	X	5.5	4 hrs.		17 hrs.		20 days	
Manzate®	X	5.5	4 hrs.		17 hrs.		20 days	
Matrix FNV		5.0 to 7.0	Do not put into solution below 4.0 or above 8.0 pH					
Maverick® Updated 1-04		7.0	11 days			30 days		
Mitac®	X	5.0	1.5 hrs.		15 hrs.		35 hrs.	
MetaSystem R ®	X	6.0	Unstable in alkalies			12 hrs.		
Mocap®		7.0	Stable over wide range of pH					
Monitor®	X	5.5	Decomposes rapidly at pH >7				>30 days	
Movento® Added 11-09		7.0	Stable over wide range of pH					
Morestan®	X	4.5	4 hrs.		80 hrs		10 days	
Nemacur®		7.0	8 days		700 days		40 days	
Oberon® Added 4-06		7.0	Optimum pH is 6.0-8.0			Do Not Acidify Below 6.0		
Oftanol®		7.0	90 days		525 days		325 days	
Omite® 30W & CR		7.0	5 days					
Orthene® updated 3-08		7.0	3 days		17 days		55 days	
Parathion		7.0		25 hrs.	120 days			
Peak®		7.0	672 days		423 days		10 days	
Permit®/Sandea®		7.0	Stable over wide range of pH					
Pencozeb®	X	5.5	4 hrs.		17 hrs.		20 days	
Pendimethalin		7.0	Stable over wide range of pH					
Pinnacle®		6.0	Rapid hydrolysis at pH 9					
Platinum® Added 8-04		7.0	Susceptible to alkaline hydrolysis in pH >9.0					
Poast®		7.0	Stable in pH 4.0 - 10.0					
Pounce®		6.0	pH 5.7 - 7.7 is optimum					
Pristine® 7-04		6.8	Stable in pH 6.7 - 7.5					
Princep®		6.0	24 days				96 days 120 days	
Previcur®		7.0	Stable over wide range of pH					
Promalin®		6.0	Unstable in pH >8					
Provado®		7.0	Stable over wide range of pH					
Prowl®		7.0	Stable over wide range of pH					
Proaxis® Added 8-04			Awaiting Manufacturer Information					
Pyramite®		7.0	Stable over wide range of pH					
Pyrethrum Added 6-04		6.0	pH 6.5 - 7.5 is optimum					
Rave®		7.0	Stable from 7.0 to 9.0				31 days	
Reglone®		6.0	Stable in neutral or acid solutions					
Ridomil Gold® MZ	X	5.0	Most stable at 5.0 Less stable at 7.0 to 9.0					
Rimon® Added 8-27			Awaiting Manufacturer Information					
Ronilan® 7-04		6.8	Stable in pH 6.7 - 7.5					
Roundup®	X	5.5				pH 5.0 - 6.0 optimum		
Rovral® updated 3-08	X	6.0	Rapid above 8.0			pH 5.0 - 7.0 optimum	37 days	
Rubigan®		7.0	Stable over wide range of pH					
Rynaxpyr™ revised 9-07		7.0	Stable for at least 72 hours pH 4.0 to 9.0					
Savey®		7.0	Stable over wide range of pH					
Scala®		7.0	Stable over wide range of pH					
Sencor®		6.5	Stable in pH 5.0 - 9.0					
Sevin®		7.0	1 day	2.5 days	24 days	100 days		
Sevin XLR®		7.0	1 day	2.5 days	24 days	100 days		
Shadeout®		7.0	Stable in neutral pH					
Sovran® added 6-08		7.0	7 hrs.		34 days		Stable	
Spinosad® added 11-09		7.0	Stable in pH from 5.0 to 9.0				12 hrs.	
Spintor®/Success®		7.0	Stable in pH from 5.0 to 9.0				12 hrs.	
Stratego®			27 hours	Stable in pH 5.0 - 8.0				
Surflan®		7.0	Stable over wide range of pH					
Tanos™ Added 12-03	X	6.5	Rapid hydrolysis at pH >7					
Terrachlor®	X	5.5	Rapid hydrolysis at pH >7					
Thiodan®		6.0	Some alkaline hydrolysis					
Tilt®		7.0	Stable over wide range of pH					
Topsin® M Update 8-06		7.0	Stable in pH 6.7 - 7.5					
Treflan®/Trifluralin		7.0	Stable over wide range of pH					
Trimec®		7.0	Avoid pH 5.0 or less					
Triumph®	X	5.5	20 hrs		8.3 days		Avoid pH 5.0 or less	
Turcam®		6.0	45 mins.		3 days		48 days	
Warrior® Updated 8-04		6.5	Stable in pH 5.5 - 7.0					
Vendex®		7.0	Not effected by pH					
Vydate®	X	5.0	30 hrs.				Stable at 4.7 pH	
Zeal®		7.0	Stable over wide range of pH					

\*\*® indicates that the product name listed is the registered trademark of the manufacturer.

\*\*For most pesticides, the optimum pH is in the range of 5.0 - 6.5 (slightly acidic).

\*\*An 'X' in the buffering column denotes that the use of a buffering agent such as TRI-FOL(r) should produce significant agronomic gains.

\*\*Check with the respective manufacturer's label for recommended pH levels. Many factors determine the efficacy of sprays, therefore, it is not possible to guarantee any combination or results accordingly. The following factors are involved with chemical performance: pH, temperature, solubility, concentrations, type of agitation, humidity, mixture time in tank and time of application. The above pH half-life information has been obtained from various manufacturers, universities, and state agricultural sources. Wilbur-Ellis has not tested the above stability levels nor verified the pH half-life ranges, but rather offers the above information as a guideline to address the issue of pH importance to more effective spray application.

\*\*Data Sources; University of Massachusetts, Ohio State University, North Carolina Ag extension, and product labeling.