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Vincristine Sulfate: White to slightly yellow, odorless, amorphous or crystalline powder. Is hygroscopic. Freely soluble in water; soluble in methanol; slightly soluble in alcohol.

Vincristine Sulfate for Injection: Yellowish-white solid, having the characteristic appearance of products prepared by freeze-drying.

Vinorelbine Tartrate: White to yellow or light brown, amorphous powder. Freely soluble in water.

Vitamin A: In liquid form, a light-yellow to red oil that may solidify upon refrigeration. In solid form, has the appearance of any diluent that has been added. May be practically odorless or may have a mild fishy odor, but has no rancid odor or taste. Is unstable to air and light. In liquid form, very soluble in chloroform and in ether; soluble in absolute alcohol and in vegetable oils; insoluble in water and in glycerin. In solid form, may be dispersible in water.

Vitamin E: Practically odorless and tasteless. The alpha tocopherols and alpha tocopheryl acetates occur as clear, yellow, or greenish yellow, viscous oils. *d*-Alpha tocopheryl acetate may solidify in the cold. Alpha tocopheryl acid succinate occurs as a white powder; the *d*-isomer melts at about 75°, and the *dl*-form melts at about 70°. The alpha tocopherols are unstable to air and light, particularly when in alkaline media. The esters are stable to air and light, but are unstable to alkali; the acid succinate is also unstable when held molten. Alpha tocopheryl acid succinate is very soluble in chloroform; soluble in alcohol, in ether, in acetone, and in vegetable oils; slightly soluble in alkaline solutions; insoluble in water. The other forms of Vitamin E are insoluble in water; soluble in alcohol; miscible with ether, with acetone, with vegetable oils, and with chloroform.

Vitamin E Preparation: The liquid forms are clear, yellow to brownish red, viscous oils. The solid forms are white to tan-white granular powders. The liquid forms are soluble in alcohol; insoluble in water. Miscible with ether, with acetone, with vegetable oils, and with chloroform. The solid forms disperse in water to give cloudy suspensions.

Warfarin Sodium: White, odorless, amorphous or crystalline powder, having a slightly bitter taste. Is discolored by light. Very soluble in water; freely soluble in alcohol; very slightly soluble in chloroform and in ether.

Water for Injection: Clear, colorless, odorless liquid. *NF category:* Solvent.

Bacteriostatic Water for Injection: Clear, colorless liquid, odorless or having the odor of the antimicrobial substance. *NF category:* Vehicle (sterile).

Sterile Water for Inhalation: Clear, colorless solution.

Sterile Water for Injection: Clear, colorless, odorless liquid. *NF category:* Solvent.

Sterile Water for Irrigation: Clear, colorless, odorless liquid. *NF category:* Solvent.

Purified Water: Clear, colorless, odorless liquid. *NF category:* Solvent.

Carnauba Wax: Light brown to pale yellow, moderately coarse powder or flakes, possessing a characteristic bland odor, and free from rancidity. Specific gravity is about 0.99. Freely soluble in warm benzene; soluble in warm chloroform and in warm toluene; slightly soluble in boiling alcohol; insoluble in water. *NF category:* Coating agent.

Emulsifying Wax: Creamy white, wax-like solid, having a mild, characteristic odor. Freely soluble in ether, in chloroform, in most hydrocarbon solvents, and in aerosol propellants; soluble in alcohol; insoluble in water. *NF category:* Emulsifying and/or solubilizing agent; stiffening agent.

Microcrystalline Wax: White or cream-colored, odorless, waxy solid. Soluble in chloroform, in ether, in volatile oils, and in most warm fixed oils; sparingly soluble in

dehydrated alcohol; insoluble in water. *NF category:* Coating agent.

White Wax: Yellowish-white solid, somewhat translucent in thin layers. Has a faint, characteristic odor, and is free from rancidity. Specific gravity is about 0.95. Sparingly soluble in cold alcohol; insoluble in water. Boiling alcohol dissolves the cerotic acid and a portion of the myricin, which are constituents of White Wax. Completely soluble in chloroform, in ether, and in fixed and volatile oils. Partly soluble in cold benzene and in cold carbon disulfide; completely soluble in these liquids at about 30°. *NF category:* Stiffening agent.

Yellow Wax: Solid varying in color from yellow to grayish brown. Has an agreeable, honey-like odor. Is somewhat brittle when cold, and presents a dull, granular, noncrystalline fracture when broken. It becomes pliable from the heat of the hand. Specific gravity is about 0.95. Sparingly soluble in cold alcohol; insoluble in water. Boiling alcohol dissolves the cerotic acid and a portion of the myricin, that are constituents of Yellow Wax. Soluble in chloroform, in ether, in fixed oils, and in volatile oils; sparingly soluble in cold benzene and in cold carbon disulfide; soluble in these liquids at about 30°. *NF category:* Stiffening agent.

Wheat Bran: Light tan powder having a characteristic aroma. Practically insoluble in cold water and in alcohol. Available in a variety of particle sizes depending upon the degree of milling to which it is subjected. Color and flavor development variable, depending on the extent to which it is heat-stabilized.

Xanthan Gum: Cream-colored powder. Its solutions in water are neutral to litmus. Soluble in hot or cold water. *NF category:* Suspending and/or viscosity-increasing agent.

Xenon Xe 127: Clear, colorless gas.

Xenon Xe 133 Injection: Clear, colorless solution.

Xylazine: Colorless to white crystals. Sparingly soluble in dilute acid, in acetone, and in chloroform; insoluble in dilute alkali.

Xylazine Hydrochloride: Colorless to white crystals. Sparingly soluble in dilute acid, in acetone, and in methanol; insoluble in dilute alkali.

Xylitol: White crystals or crystalline powder. It has a sweet taste and produces a cooling sensation in the mouth. One g dissolves in about 0.65 mL of water. Sparingly soluble in alcohol. Crystalline xylitol has a melting range between 92° and 96°.

Xylometazoline Hydrochloride: White to off-white, odorless, crystalline powder. Melts above 300°, with decomposition. Freely soluble in alcohol; soluble in water; sparingly soluble in chloroform; practically insoluble in benzene and in ether.

Xylose: Colorless needles or white, crystalline powder. Is odorless, and has a slightly sweet taste. Very soluble in water; slightly soluble in alcohol.

Yellow Fever Vaccine: Slightly dull, light-orange colored, flaky or crustlike, desiccated mass.

Yohimbine Hydrochloride: White to yellow powder. Melts at about 295°, with decomposition. Soluble in boiling water; slightly soluble in water and in alcohol.

Yttrium Chloride: Colorless, deliquescent crystals. Soluble in water and in alcohol.

Zalcitabine: White to off-white, crystalline powder. Soluble in water and in methanol; sparingly soluble in alcohol, in acetonitrile, in chloroform, and in methylene chloride; slightly soluble in cyclohexane.

Zaleplon: White to off-white powder. Sparingly soluble in alcohol; slightly soluble in propylene glycol; practically insoluble in water.

Zein: White to yellow powder. Soluble in aqueous alcohols, in glycols, in ethylene glycol ethyl ether, in furfuryl alcohol, in tetrahydrofurfuryl alcohol, in aqueous alkaline solutions of pH 11.5 or greater, and in acetone-water mixtures

between the limits of 60% and 80% of acetone by volume; insoluble in water, in acetone, and in all anhydrous alcohols except methanol. *NF category*: Coating agent.

Zidovudine: White to yellowish powder. Melts at about 124°. Exhibits polymorphism. Soluble in alcohol; sparingly soluble in water.

Zileuton: White to off-white powder.

Zinc Acetate: White crystals or granules, having a slight acetous odor and an astringent taste. Is slightly efflorescent. Freely soluble in water and in boiling alcohol; slightly soluble in alcohol.

Zinc Chloride: White or practically white, odorless, crystalline powder, or white or practically white crystalline granules. May also be in porcelain-like masses or molded into cylinders. Is very deliquescent. A solution (1 in 10) is acid to litmus. Very soluble in water; freely soluble in alcohol and in glycerin. Its solution in water or in alcohol is usually slightly turbid, but the turbidity disappears when a small quantity of hydrochloric acid is added.

Zinc Gluconate: White or practically white powder or granules. Soluble in water; very slightly soluble in alcohol.

Zinc Oxide: Very fine, odorless, amorphous, white or yellowish white powder, free from gritty particles. It gradually absorbs carbon dioxide from air. Soluble in dilute acids; insoluble in water and in alcohol.

Zinc Stearate: Fine, white, bulky powder, free from grittiness. Has a faint, characteristic odor. Is neutral to

moistened litmus paper. Insoluble in water, in alcohol, and in ether. *NF category*: Tablet and/or capsule lubricant.

Zinc Sulfate: Colorless, transparent prisms, or small needles. May occur as a white, granular, crystalline powder. Is odorless and is efflorescent in dry air. Its solutions are acid to litmus. Very soluble in water (heptahydrate); freely soluble in water (monohydrate) and in glycerin (heptahydrate); practically insoluble in alcohol (monohydrate); insoluble in alcohol (heptahydrate).

Zinc Undecylenate: Fine, white powder. Practically insoluble in water and in alcohol.

Ziprasidone Hydrochloride: White to slightly pink powder. Very soluble in methanol; slightly soluble in isopropyl alcohol, and in hot tetrahydrofuran; practically insoluble in water.

Zolazepam Hydrochloride: White to off-white, crystalline powder. Freely soluble in water and in 0.1 N hydrochloric acid; soluble in methanol; slightly soluble in chloroform; practically insoluble in ether.

Zolpidem Tartrate: White to off-white powder, hygroscopic. Sparingly soluble in methanol; slightly soluble in water; practically insoluble in methylene chloride.

Zonisamide: White to off-white powder. Freely soluble in dimethylformamide; soluble in methanol.

SOLUBILITIES

Approximate Solubilities of USP and NF Articles

Solute (1 g)	Name and Volume, in mL, of Solvent					
	Water	Boiling Water	Alcohol	Chloroform	Ether	Other
Acenocoumarol	67,000		280	130	1800	
Acetaminophen		20	10			1 N sodium hydroxide, 15
Acetohexamide			230	210		
Acetylcysteine	5		4			
Acetyldigitoxin	6100		62.5	12	>10,000	
Ammonium Alum	7	0.5				
Aluminum Chloride	0.9		4			
Aluminum Sulfate	1					
Amantadine Hydrochloride	2.5		5.1	18		polyethylene glycol 400, 70
Amaranth	15					
Aminocaproic Acid	3					methanol, 450
Aminohippuric Acid	45		50			3 N hydrochloric acid, 5
Aminosalicylate Sodium	2					
Ammonium Carbonate	4					
Amodiaquine Hydrochloride	25		78	>10,000	>10,000	benzene, 10,000
Anethole ¹			2			
Anileridine	>10,000		2	1		
Anileridine Hydrochloride	5		80	>10,000	>10,000	
Antimony Potassium Tartrate	12	3				glycerin, 15
Apomorphine Hydrochloride	50		50			water at 80°, 20
Apraclonidine Hydrochloride	34		74	>10,000		methanol, 13; ethyl acetate, >10,000; hexanes, >10,000
Ascorbic Acid	3		40			
Ascorbyl Palmitate	>1000		125	>1000	>1000	
Aspirin	300		5	17	10 to 15	
Atropine	460		2	1	25	water at 80°, 90
Atropine Sulfate	0.5	2.5	5			glycerin, 2.5
Bendroflumethiazide			23		200	
Benoxinate Hydrochloride	0.8		2.6	2.5	>10,000	
Benzalkonium Chloride (anhydrous)					100	benzene, 6
Gamma Benzene Hexachloride				3.5	40	dehydrated alcohol, 20
Benzethonium Chloride	<1		<1	<1	6000	
Benzocaine	2500		5	2	4	almond oil or olive oil, 30–50
Benzoic Acid	300		3	5	3	
Benzonatate	<1		<1	<1	<1	
Betadex	54					
Betamethasone	5300		65	325		warm alcohol, 15; methanol, 3
Betamethasone Acetate	2000		9	16		
Betamethasone Sodium Phosphate	2		470	>10,000	>10,000	
Betamethasone Valerate	10,000		16	<10	400	
Bisacodyl	>10,000		210	2.5	275	
Boric Acid	18	4	18			boiling alcohol, 6; glycerin, 4
Bromodiphenhydramine Hydrochloride	<1		2	2	3500	isopropyl alcohol, 31
Brompheniramine Maleate	5		15	15		
Busulfan						acetone, 45
Butabarbital Sodium	2		7	7000	10,000	
Butamben	7000					
Butylated Hydroxyanisole			4.0	2.0	1.2	
Butylated Hydroxytoluene			4.0	1.1	1.1	
Caffeine (hydrous)	50		75	6	600	

¹Solubility data for compounds that ordinarily are liquids at 25° are expressed in terms of the ratio of the *volume* of solute to the *volume* of solvent; i.e., 1 mL dissolved in _____ mL of solvent.

²Liquid phase only; silicon dioxide remains as a residue in these solvents.