Ultraviolet Light and Heisey Glass

or

I've Got Those "Don't Know What Sort of Glass I Really Have" Blues

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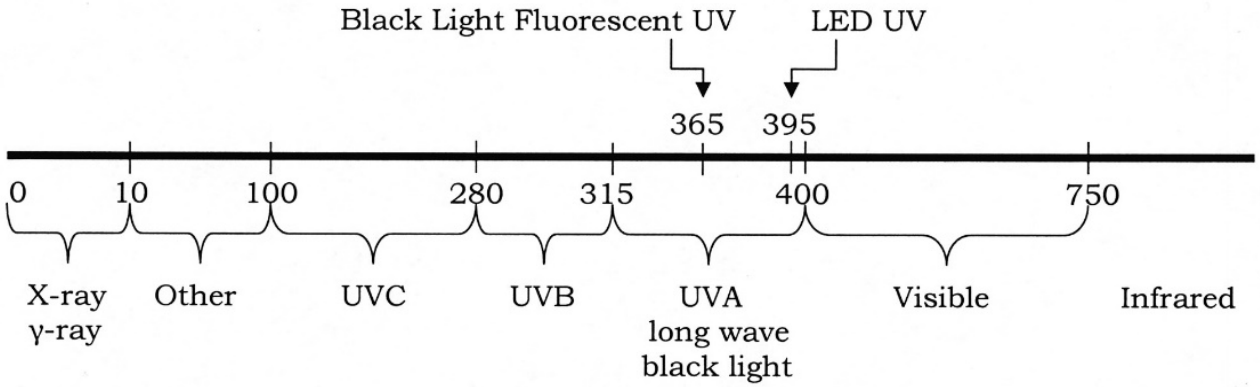
What is ultraviolet light? Why use it?

Ultraviolet light is light that is of shorter wavelength (higher frequency) than we can normally see.

The normal range of vision is from about 390 or 400 nanometers (the violet end of the visible spectrum) to about 740 or 750nm (the red end of the spectrum). Ultraviolet light is shorter than 400nm.

- **UVA** (Ultraviolet A), also called **long wave UV** or **black light,** is about 315nm to 400nm, putting it just adjacent to the range we can normally see.
- **UVB** (Ultraviolet B), also called **medium wave UV,** is the range from 280nm to 315nm. Both UVA and UVB are involved in tanning.
- The next range down, 100nm to 280nm, is **UVC,** also called **germicidal** or **short wave UV.**
- There are several other brackets of even shorter wavelengths. The shortest wavelengths, less than 10nm, are **X-rays** and **gamma (γ) rays.**

Wavelengths of the spectrum in nanometers (not to scale)



The ultraviolet light used for examining glassware is nearly always UVA, long wave UV. (Mineral collectors sometimes use shorter wavelength sources in addition to long wave UV to help identify their finds. As a glass collector, you could use shorter wavelengths, too, but then you'd have to wear protective eye glasses to enjoy your glass.)

When you look at glass under ultraviolet light, the colors you see are not ultraviolet. Ultraviolet light is high energy. When it strikes individual atoms in the glass it energizes, or "excites," them. Excited atoms may let loose of that extra energy by ejecting photons, little packets of light. Depending on the kind of atom and the wavelength of the UV that hit it, the ejected photon will be at a particular wavelength. When the ejected photon's wavelength is in the visible range, that determines the color we see. We see a **reaction** to ultraviolet light, not the ultraviolet light itself.

Why bother with UV at all in collecting Heisey?

- **Maker**—The most common use may be to detect crystal soda-lime glass made by Imperial rather than Heisey. (It can also tell the difference between Heisey Sultana and Imperial amber.) As we'll see, however, the "Imperial test" for crystal has taken a turn that may give you false hope. At least if you're hoping for Heisey rather than Imperial.
- **Type of glass**—Lead crystal often reacts differently than soda-lime crystal (crystal made without lead), for instance. Some Heisey blown ware can be either one.
- **Repairs**—UV may help detect repairs, especially where adhesives, extra glass, or heat were used.
- **Color classification**—Sometimes UV can help you decide exactly which normal-light color you have, for instance, Ivorina Verde vs. Opal.

Types of ultraviolet light sources

Until the last few years, almost all generally available ultraviolet light was in the form of black light fluorescent bulbs. These are the ones that are UVA, or long wave. You could pretty much know what someone meant if Heisey glass was said to have been "tested under ultraviolet" or "passed the ultraviolet test." However.

Two things are important in ultraviolet testing: (1) the wavelength of the UV source (the light coming from the bulb), and (2) the power of the source (watts or intensity). Neither of these factors is as constant as it once was.

How long is it?

UVA wavelength is longer than UVB. Some UVA is longer than other UVA. Ultraviolet light of different wavelengths cause different reactions. As we'll see, it is becoming more important to be particular about which type of ultraviolet light you use to be sure you can properly interpret the results.

For many years, hobbyists have relied on **fluorescent black light.** The dark violet-blue bulbs that produce this light usually have the letters "BLB" on them, meaning "Black Light Blue." These bulbs peak at about **365nm**. They are still widely available in several sizes. You can find fluorescent black light in music stores that cater to rock, occasionally in the large hardware stores, or on the internet.

More recently, another inexpensive source has become available, light-emitting diodes (**LED**). LED bulbs peak at about **395nm**, which is right on the border between the range of normal vision and ultraviolet. Even though the wavelength is longer than traditional fluorescent bulbs, the reactions they create are often similar, but not always. The inexpensive LED's usually come as small flashlights and are most often used for club ID's, checking for counterfeit money, and the like. (You can get panels of LED arrays, but they are more expensive and too intense for our purposes.)

How strong is it?

Wavelength isn't the only thing. Even if you have the same type of source (the same wavelength) as someone else, you may get different results. The amount of light put out, the **intensity,** is also important.

Small, battery-operated fluorescent sources don't have much wattage, and so don't have much intensity. Some glass will react to low-wattage fluorescent UV only weakly or not at all. Stronger sources of the same wavelength (ones with higher wattages) will often get results that are more visible. I got only fair results with a small light about 6" long; I'm not sure of its wattage, but it was low, I'm guessing about 4 watts or less. It was suitable for use only in a nearly totally dark room. A 12" bulb that was 8W gave me decent results and could be used with low ambient light. Both of these were battery powered. The results I mention below for fluorescent ultraviolet are with an 18" bulb, 15W and AC powered. It gives much clearer results. You can get 24" bulbs that are 20W, and even 48" bulbs, 40W.

LED sources also come in varying intensities. Because LED light is much more efficient than fluorescent, you can't compare wattages between the two kinds. The number of LED bulbs is more important. LED's achieve intensity by massing bulbs in grids or arrays. My only experience is with 21-bulb LED's. The intensity is relatively high with these and I have gotten very good results. They are also available with 15 bulbs or 9 bulbs, but I would not recommend these, since they are often nearly the same cost and will be much less intense. I have seen 41-bulb and 51-bulb arrays. These are probably too intense, since protective eyegear is recommended with them.

How expensive is it?

Not very, depending on your means and needs. The small, 6" fluorescent fixtures (including bulbs, batteries extra) can be found on the internet for about $10-$12, which includes shipping. The 12" fixtures (including bulbs, batteries extra) run about the same, or only slightly higher. I found 18" fixtures (including bulbs and AC cord) for only about $14, but $20-$30 is more typical. The 48" bulbs (not including fixture) are around $35 or $40 each.

A note on fluorescent bulb sizes. If you must replace a bulb, be sure it is the right diameter, as well as the right length. In fluorescent bulbs of the two-pin type, they are measured in eighths of an inch. A T5 bulb is 5/8" in diameter, a T8 is one inch, and a T12 is 1½" in diameter. Those three sizes are seen most often. T12's are less efficient than T8's and are not seen as much in newer fixtures, but are still widely available.

Hand-held LED sources are also inexpensive. Flashlights with arrays of 9, 15, or 21 lights all run more or less the same price range on the internet, around $10-$15 including shipping, and can be found even cheaper. Even the 41- and 51-bulb arrays can be had for $15 or less, but I don't recommend them because eye protection is needed. Glasses that screen out the UV, however, are not expensive. Because light comes in around the sides of normal eyeglasses, wrap-around protective glasses are needed with shorter lengths of UV. Polycarbonate is supposed to be especially good at blocking UV.

Which one to get?

It depends on your needs. If your primary need is to distinguish Heisey from Imperial (crystal or amber), you need fluorescent. Overall, fluorescent is preferable, but LED has its place, too, and may serve you well.

Type	Advantages	Disadvantages
Fluorescent (BLB, or Black Light Blue bulbs)	• Most published material relies on results from fluorescent bulbs, so you know what to expect. • Inexpensive ones are small and battery-powered, so are portable. • Even AC-powered ones can be found reasonably cheap. • They are very good at detecting the difference between Heisey and Imperial. • The light is distributed over a relatively wide swath, so it is easy to examine a large piece or several small pieces at once.	• To get enough intensity to get good results, you need larger bulbs plugged into an AC source. • Larger bulbs are more fragile and less portable. • Larger bulbs may need a permanent mount; they take more space to use and store. • There are a number of lengths and widths of tubes, and some tubes are not UVA, so buying new ones and getting replacements requires more attention. • The light is distributed over a relatively wide swath, so you can get distracting reactions from surrounding material. • Attracts flies.
LED	• You get high intensity for low price. • They are small, battery operated, and portable. • They are sturdy and hard to damage. • They can be used in a small space and don't take much space to store. • At this point, at least, LED's are all pretty much the same, so you don't have to concern yourself with technical specifications. • They are focused on a small area, so you can avoid distractions from surrounding material. • Results are similar to fluorescent in many cases.	• Your results may not match what you find in most published material. • They can be too intense if there are too many lights in their grids. • Results aren't always similar to fluorescent. They are poor at detecting the difference between Heisey and Imperial crystal (although reasonably good for amber). • They are focused on a small area, so it is harder to examine a large piece all at once.

What you see with ultraviolet

Intensity of the reaction to UV

Here is a scale I use when evaluating the strength of the reaction under ultraviolet.

0—Absent; no reaction to UV apparent, even with no other ambient light.
1—Weak; there is some reactivity, but it may go unnoticed in some natural-light colors or if there is ambient light, even low.
2—Dull; low but noticeable reactivity in low ambient light; may go unnoticed in normal indoor lighting.
3—Moderate; noticeable reactivity even under normal indoor lighting. This is the typical strength at which most early and middle Heisey lime crystal glows.
4—Strong; sharp reactivity, especially noticeable in low ambient light. Some late Heisey lime crystal is strong, such as much #1489 Puritan. Strong intensity is not due to uranium; natural sunlight will not cause reaction. Other strong reactions are seen now and then in Moongleam, Flamingo and other colors.
5—Brilliant; intense glow in low ambient light. Natural sunlight usually causes some reactivity, as in such transparent colors as Canary or Marigold, but may not be noticeable in opaque colors such as Ivorina Verde. Normal indoor lighting may cause some reactivity if there are high levels of uranium.

Colors seen in Heisey and Imperial as a reaction to UV

Many colors are possible using ultraviolet. All but one of the colors listed below can be found in Heisey glass.

Uranium Green—This is the typical yellow-green color associated with ultraviolet reactivity. Canary, Ivorina Verde, and Emerald always show *Uranium Green,* and virtually all Marigold does, too. Usually of brilliant intensity. Brilliantly intense Yellow-Green sometimes found in Moongleam is probably *Uranium Green. Uranium Green* is the characteristic UV reaction of glass colored with uranium salts. Reacts well under both fluorescent and LED UV.
Uranium Yellow—Possibly due at least in part to the same salts as *Uranium Green.* Seen in Opal. Much less intensity. Reacts under fluorescent, but not under LED. *Uranium Yellow* may simply be a shade of *Uranium Green,* but the different reaction under LED makes it likely it is a distinct reaction.
Yellow-Green—Very similar to *Uranium Green,* but occurs in glass that is not vaseline, emerald green, or custard under normal light, that is, glass that is not colored with uranium salts. *Yellow-Green* is the typical UV reaction of Heisey soda-lime (non-lead) crystal and also the crystal of many other makers. Occurs concurrently but in low intensity with *Milky White* in Imperial lime crystal glass. (See note under *Milky White.*) The *Yellow-Green* of lesser intensity in much Moongleam is probably not due to uranium. *Yellow-Green* is also evident to varying degrees (usually low intensity, but not always) in some Flamingo. Found in low intensity in several other non-lead colors. Reacts well under fluorescent, and reasonably well under LED.
Milky White—Very pale blue to blue-white, not creamy white. The dominant UV reaction in Imperial crystal and in much modern high-brilliance crystal. Rarely seen in Heisey glass, and then only in lead crystal glass. *Milky White* requires higher wattage to be evident.; very apparent under a 15W fluorescent bulb (365nm), but is faint under lesser wattages. It is not apparent at all with LED UV lights (395nm). ***Note:*** Using an LED on Imperial soda-lime crystal

causes *Milky White* to drop out, leaving only dull to moderate *Yellow-Green.* This can make Imperial look almost the same as Heisey soda-lime crystal.
Milky Pink—Soft, pale pink, slightly tilted toward orange, with a milky cast. Typically found in Heisey lead crystal. Possibly the same reaction as the *Opaque Pink* seen in Opal. May be a shade of **Soft Orange** seen in some lead crystal from other makers. Reacts under fluorescent, but not under LED.
Milky Rose—Clear, light rose pink, more bluish than *Milky Pink.* Seen only in some pieces of Flamingo. Seen under fluorescent, but not much under LED.
Opaque Pink—Pale rose tan, seen in Opal. Possibly related to the *Milky Pink* seen in Heisey lead crystal. Seen under fluorescent UV, but not LED.
Flame—Golden orange. Found in all shades of Heisey amber, including Sultana, and amberina. The characteristic UV reaction of the shade of Marigold called Gold. Probably due to the presence of metallic selenium. Reacts well under strong fluorescent and LED, but not under weak fluorescent. Most Tangerine, which also has metallic selenium, has hints of *Flame* reactivity, but this is evident only where the glass has not turned red. Heat and pressure seem to affect the reactivity. Selenium occurs in Flamingo (and presumably in Hawthorne), and both these colors usually react with weak to dull *Flame.* Some pieces of these colors react with *Flame* and *Yellow-Green* concurrently.
Carmine Pink—Deep, rich pink, not quite red. Due to neodymium salt. Found only in Alexandrite and much more pronounced using LED.

How natural-light glass colors react to ultraviolet light

All natural-light colors are Heisey colors unless noted otherwise.
Fluorescent results from 18", 15W BLB bulb. LED results from 21-bulb grid.
Caution: Some results based on small samples, so other results may be possible.

Color under natural light	Reaction under 365nm fluorescent	Reaction under 395nm LED
Soda-Lime Crystal (Heisey)	**Yellow-Green,** moderately intense. Late, very bright crystal, as used in #1489 Puritan, for instance, is strong.	As for fluorescent. Intensity less with LED.
Soda-Lime Crystal (Imperial)	Two colors may appear at once. Usually **Milky White** of moderate to strong intensity. May at the same time show **Yellow-Green** of weak to dull intensity.[1] Older Imperial (such as old imitation cut pressed ware) glows only *Yellow-Green.*	Weak to dull **Yellow-Green;** no trace of *Milky White.*
Soda-Lime Crystal (Others)	Varies. Frequently **Yellow-Green.** The shade varies, sometimes golden yellow.	As for fluorescent.

[1] **Heisey by Imperial crystal** (other than animals): #1 caviar liner; #1 Madonna; #5 Patrician 5" candle; #7 ladle; #11 punch ladle; #25 S&P; #31 Jack-Be-Nimble; #32 & 33 Skirted Panel; #57 S&P; #86 stopper; #112 Mercury; #134 Trident; #142 Cascade; #197 tumbler; #300 & 301 candelabra; #341 Old Williamsburg; #411 Tudor jug; #517 jug; #1183 Revere; #1184 Yeoman stemware & sodas; #1238 Beehive 14"; #1252 Twist 4½" nappy; #1404 Old Sandwich stemware, sodas, 4½" nappy; #1425 Victorian; #1435 ash tray; #1469 Ridgeleigh 3½" coaster; #1483 Stanhope vase; #1485 Saturn; #1486 Coleport barware; #1489 Puritan dressing, decanter, S&P; #1503 Crystolite; #1503½ swan jug; #1504 Regency candle; #1506 Provincial; #1509 Queen Ann candle; #1513 Baroque; #1518 Cut Miter vase; #1519 Waverly; #1535 Diamond; #1540 Lariat 2-lt. candle; #1567½ Plantation 5-pt. relish; #1590 Zodiac; #1615 Flame; #1637A Town & Country; #1951 Cabochon; #2351 Newton sodas; #4035 Bethel cig. holder; #4036½ Marshall; #4044 New Era 2-lt. candle; #4225 Cobel; #5024 Oxford; #5040 Lariat; #6003 Tempo; #6060 Country Club; #6091 Cabochon. Not all pieces made in all patterns. Heisey patterns made only in non-Heisey shapes are omitted. See *Heisey by Imperial,* HCA publication out of print, for more information.

Color under natural light	Reaction under 365nm fluorescent	Reaction under 395nm LED
Lead Crystal (Heisey)	Dull to moderate **Milky Pink,** rarely **Milky White.** Some blown ware usually lead is soda-lime instead. Soda-lime pieces will be *Yellow-Green.* A few pieces of blown ware turn **Yellow-Green,** however, and sound like lead. Colored blown ware with crystal pressed stems sometimes have stems that are lead and other times soda-lime, even on identical pieces in the same pattern.	Reaction **absent.**
Lead Crystal (Imperial)	None available.	None available.
Lead Crystal (Other makers)	Varies. Usually **Milky White,** but sometimes **Soft Orange, Yellow-Green,** or **absent.**	Varies. Usually **absent.**
Emerald	**Uranium Green,** strong to brilliant intensity.	As for fluorescent.
Opal	Generally dull **Opaque Pink,** but occasionally moderate to strong **Uranium Yellow.**	Reaction (including pieces that glow *Uranium Yellow* under fluorescent) **absent** or perhaps slight **white** reaction.
Ivorina Verde (custard)	**Uranium Green** of brilliant intensity. The intensity varies only slightly with the shade of ivory or custard.	As for fluorescent.
Canary (early)	**Uranium Green** of brilliant intensity.	As for fluorescent.
Rose	None available	None available
Canary (late)	**Uranium Green** of strong to brilliant intensity, that is, somewhat less than early Canary.	As for fluorescent.
Moongleam	Early pieces may be brilliant **Uranium Green,** and look exactly like Emerald in normal light. Otherwise, **Yellow-Green,** varying intensity, or **absent.** Deep green Moongleam (not quite Emerald) often has moderate to strong intensity. Some natural-light yellow-side Moongleam glows only with dull intensity. Late bluish Moongleam & some earlier dark, slightly yellowish green Moongleam glows with none, weak or dull intensity.	Moongleam which is **Yellow-Green** under fluorescent reacts more strongly under LED. Much Moongleam with no fluorescent reaction glows weakly under LED. Indicates most Moongleam reactivity is not due to uranium (perhaps copper).
Flamingo[2]	Variable. Often weak to moderate **Flame**. Sometimes moderate to brilliant **Yellow-Green**. Sometimes *Flame* and *Yellow-Green* at the same time. Rarely strong **Milky Rose.**	As with fluorescent. Some reactivity increases with LED. **Milky Rose** is dull with LED.
Hawthorne	**Flame** with weak to dull intensity. Not seen with *Yellow-Green* reactivity.	As with fluorescent.

[2] The #300 schoeppen (soda) was made in Flamingo and in Imperial's Azalea and Rose Pink colors. #1425 Victorian goblets & sherbets made in Azalea; Heisey listed them in Flamingo, but they may be unseen.

Color under natural light	Reaction under 365nm fluorescent	Reaction under 395nm LED
Lead Amber (see also **Sultana**)	Medium to strong **Flame**. The intensity varies slightly with the shade of amber.	**Flame** with weak to dull intensity.
Marigold	**Uranium Green** with brilliant intensity.	As with fluorescent.
Gold	**Flame** with strong to brilliant intensity.	As with fluorescent.
Sahara (transitional)	**Uranium Green** with strong intensity.	As with fluorescent.
Amberina	**Flame** with strong to brilliant intensity. Where the glass has turned red, the reactivity drops to nothing.	As with fluorescent.
Sahara (lead)	**Absent.** Appears colorless.	As with fluorescent.
Sahara (non-lead)	**Yellow-Green,** very weak to dull intensity. Appears slightly yellow overall.	**Absent.**
Alexandrite	**Carmine Pink** with weak intensity. Similar to some of the dichroic color of alexandrite under normal sunlight, so can be overlooked.	**Carmine Pink,** almost magenta, of strong intensity.
Tangerine	Weak to dull **Flame,** and then only where (in normal light) the glass has not turned completely red.	As with fluorescent.
Stiegel Blue	**Absent.** Appears dark blue.	As with fluorescent.
Ultra Blue (Imperial)	**Absent** or weak **Milky White.** See note below in the section on animals.	**Absent.**
Trial Blue	Results to be seen.	Results to be seen.
Zircon and **Limelight**[3]	**Yellow-Green** with moderate to strong intensity. However, some #4083 Stanhope from 1930's glows **Uranium Green** with strong to brilliant intensity.	Weak **Yellow-Green**, or **absent.** Some Stanhope is brilliant **Uranium Green.**
Sultana (see also **Lead Amber,** above)	**Flame** with dull to strong intensity. Darker, murkier hued Sultana, as seen in some #1624 Patio, seems to have a faint greenish undertone under UV along with the *Flame* reaction.[4]	**Flame** with weak to dull intensity.
Amber (Imperial)	Dark, murky, odd blend, probably a mix of **Milky White, Yellow-Green,** and moderate **Flame.** Not Heisey's formula.[5]	**Absent** or very weak **Flame.** No *Milky White* or *Yellow-Green.*
Salmon (Imperial)	Reaction similar to Imperial amber, a mix of **Milky White** and probably weak **Flame**, but little or no *Yellow-Green.*[6]	Weak **Flame.**
Dawn	Very weak **Yellow-Green.**	**Absent.**
Charcoal (Imperial)	Dull to moderate **Yellow-Green.**	Very weak to dull **Yellow-Green.**

[3] Imperial's Blue Haze is roughly similar to some blue-side Zircon, but was never made in anything that could be confused. Imperial's Verde is olive green but is easily separated from Limelight.

[4] Some Heisey amber called cotton amber was made without lead, right about the time that Sultana was on the market. This may account for the difference in the Patio pieces.

[5] Imperial owned Heisey's amber formula, but they seem to have used only their own formula.

[6] The honey amber used for some Heisey animals does not have a close look-alike in Imperial. Salmon, the closest, is distinctly more pink-orange. The Clydesdale and the small elephant were made in both honey amber and Salmon, but the Salmon ones are marked ALIG (Clydesdale) or LIG (small elephant).

Crystal and amber animals by Heisey and Imperial

Since identifying the animals is an especially popular use of UV, I include the following tables that summarize crystal and amber in the animals from Heisey molds. Animal information from *Heisey and Heisey by Imperial Glass Animals,* Hahn & Kikeli. There is always the possibility that there are other Heisey animals in Heisey Sultana or in Imperial amber. Imperial might have made Heisey animals in crystal that have not been previously recorded. Confusion may exist whenever both companies made an animal in the same color. There even could be attempts to remove marks from Imperial pieces to make them appear as unmarked Heisey. If there is any doubt, strong fluorescent UV will make the difference obvious, whether crystal or amber.

Honey amber (made only by Heisey)

Animal	Heisey mark
Clydesdale	<H>
Colt (Balking)	unmarked
Colt (kicking or standing)	<H>
Elephant (small)	<H>
Elephant (medium)	<H>
Elephant (large)	unmarked
Flying mare	<H>
Plug horse (Oscar)	unmarked
Rooster	<H>

Imperial Dark Blues & Heisey

Imperial made **cobalt** blue, but in #1506 Provincial, not in animals. Nothing that Heisey made in Stiegel Blue was also made by Imperial in cobalt. Heisey made four animals—the three colts and Oscar—in Stiegel blue. All are said to be marked <H>. The three colts were made by Imperial in **Ultra Blue** and were marked IG. Stiegel blue is very dark blue with a purplish cast. Ultra Blue is deep blue, not as dark, with no hint of purple. Side by side, the colors are quite distinct. Ultraviolet helps very little. Even if someone removed an Imperial mark from an Ultra Blue colt, there should be no confusion.

Dark amber (Sultana when made by Heisey for animals)

Blank grey cells mean the company is not known to have made the animal in dark amber.

UV helpful	Animal	Heisey mark	Imperial mark
	Asiatic Pheasant		<H>
	Bull		unmarked
	Clydesdale		ALIG
	Colt (Balking)		IG
	Colt (kicking or standing)		IG
	Elephant (small)	<H>	
	Elephant (medium)	<H>	
x	Elephant (large)	<H>	<H>
	Filly (head back)		ALIG
	Filly (head forward)		ALIG
	Fish bookend		unmarked
	Flying mare	<H>	ALIG or NI
	Giraffe	<H>	LIG or ALIG
	Hen		IG
	Mallard (wings any position)		IG
	Piglet (sitting or standing)		unmarked
	Ringneck Pheasant		NI
	Rooster		IG
	Scottie (Sealyham terrier)		ALIG
	Show horse		NI
	Sow		ALIG
	Tiger		ALIG
	Tropical Fish		<H>

Crystal

Blank grey cells mean Imperial is not known to have made the animal in crystal.

UV helpful	Animal	Heisey mark	Imperial mark
x	Airedale	<H> or unmarked	<H> or ALIG
x	Asiatic Pheasant	<H> or unmarked	<H>
x	Bull	<H> or unmarked	<H>
	Bunny (head up or down)	unmarked	
	Chick (head up or down)	unmarked	
	Clydesdale	<H> or unmarked	unmarked—satin finish only
x	Colt (Balking)	<H> or unmarked	<H>
x	Colt (kicking or standing)	<H> or unmarked	<H>
	Cygnet	<H> or unmarked	
x	Donkey	<H> or unmarked	<H>
	Elephant (small)	<H> or unmarked	IG
x	Elephant (medium)	<H>	<H>
x	Elephant (large)	<H> or unmarked	<H>
x	Fighting Rooster	<H> or unmarked	<H> or unmarked
	Filly (head back)	<H>	ALIG
	Filly (head forward)	<H>	ALIG; in addition, sometimes numbered
	Fish bookend	<H> or unmarked	
	Fish bowl	<H>	
	Fish candlestick	unmarked	
	Fish match holder	unmarked	
x	Flying mare	<H>	<H>
	Gazelle	<H>	ALIG
	Giraffe	<H> or unmarked	ALIG
	Goose (wings down)	<H> or unmarked	
x	Goose (wings half or up)	<H> or unmarked	<H>
	Hen	<H> or unmarked	IG
x	Mallard (wings any position)	<H> or unmarked	<H>
x	Piglet (sitting or standing)	<H> or unmarked	unmarked
x	Plug horse (Oscar)	<H> or unmarked	<H>
x	Pouter pigeon	<H> or unmarked	<H>
	Rabbit	<H> or unmarked	
	Rabbit paperweight	unmarked	
	Rearing Horse bookend	unmarked	
x	Ringneck Pheasant	<H> or unmarked	<H>
	Rooster	<H>	
	Rooster vase	unmarked	
x	Scottie (Sealyham terrier)	<H> or unmarked	<H>
	Show horse	<H>	NI
	Sow	<H> or unmarked	ALIG
	Sparrow (any position)	unmarked	
x	Swan	<H>	<H>
	Tiger	<H> or unmarked	ALIG
x	Tropical Fish	<H> or unmarked	<H>
x	Wood Duck	<H> or unmarked	<H>
	Wood duckling (floating)	<H> or unmarked	
	Wood duckling (standing)	<H>	