

**THE  
ULTIMATE GUIDE  
TO  
CONTACT LENSES**

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As a guide to information seekers  
from the article...

100 FARRAR ST  
1 W KASLOFF WY  
BARRY GARRACIO D.D.S.  
100 FARRAR ST  
NEW YORK, N.Y.

100 NORTHERN BLVD  
NEW YORK, N.Y.

# THE ULTIMATE GUIDE TO CONTACT LENSES

By Melinda Blau

**T**WENTY-FIVE YEARS AGO, Otto Wichterle dropped a pebble into the pool of optical technology, and we've yet to feel the last ripple. The Czech scientist developed a pliable plastic contact lens that clung to the cornea. These "soft" lenses were extremely comfortable and instantly wearable, and as such had the staggering potential to convert the nation's 120-

million eyeglass wearers to contacts.

This unprecedented innovation in eye care sowed the seeds for the burgeoning, highly competitive new-lens industry, which, within the next twenty years, theoretically will make it possible for most people who wear glasses to switch—without sacrificing sight.

Whether a person is myopic (near-sighted), hyperopic (farsighted), or color-blind, has a corneal astigma-

tism (irregularly shaped cornea), or, like the majority of eyeglass wearers over 40, needs bifocals, there's now a contact lens made to correct the problem. Contacts can be used therapeutically, as eye "bandages," or by babies born with cataracts, as well as by their grandparents as an alternative to thick, unsightly post-cataract glasses. Lenses can change the color of the iris or the shape of the cornea. And, increasingly, they can be used on an "extended wear" basis — you can take them to bed and, as one myopic convert put it, "get up in the middle of the night and actually see the alarm clock!"

The question is: Which kind of contact lens is right for you? Basically,

there are three types: firm (made from hard plastics), soft (either hydrogels, which are at least 30 per cent water, or rubbery silicone-based varieties), and gas-permeable (made from firm but porous materials). If you're in the market for contacts, the "Eye Chart," on pages 4 and 5, can help you to understand and compare the advantages and disadvantages of the different types. It combines data collected from the manufacturers, lens dispensers, F.D.A. officials, corporate analysts — sources that often conflict — and first-hand experience gleaned from a severely myopic reporter's 26-year lens-wearing history.

If the chart appears formidable,

know that the marketplace is even more overwhelming. To date, more than 60 new lenses (hydrogels, silicone soft, and gas-permeables) have been sanctioned by the F.D.A. — and more than half were approved within the last three years. The sales of contact lenses have increased more than tenfold since 1971, when Bausch & Lomb produced the first soft lens. (This year, more than 2.5 million people will spend anywhere from \$60 to \$700 each for the privilege of buying contacts.) And, according to bottom-line watcher Irving J. Arons, senior staff consultant at Arthur D. Little, the \$500-million sales figure for 1982 (including all types of lenses and lens-care products) will double by 1987. Arons also predicts that

within the next ten years the new gas-permeables will make traditional hard lenses obsolete, and will make a significant dent in the hydrogel market, which currently accounts for around 70 per cent of all new fits. Perhaps most significant, Arons says, 30 to 50 per cent of the people who wear glasses will be using contacts as their primary mode of vision correction.

To be sure, the new-lens industry will change the face of eye care, but for the individual buyer, simply knowing about the product is not enough. When it comes to contacts, determining the skill of the person who fits the lenses is equally, if not more, important.

Lens fitting is more an art than a science. A dozen unpredictable variables influence lens-eye compatibility: the size, shape, and sensitivity of the eye, how the lids move, the amount of tear fluid, the type and degree of correction needed, as well as the physical and emotional state of the wearer. In short, there are no "formulas." The only way to find out what kind of contact would be best is to *try* them. And that means going to one of the "three O's" — ophthalmologists, optometrists, and opticians.

New York is a contact-lens town. In the five boroughs alone there are about 350 ophthalmologists (medical doctors) and 700 optometrists (doctors of optometry — O.D.'s), who are trained to diagnose vision problems and sell lenses. Further, many of the city's 825 retail opticians are specially licensed to dispense contacts under professional supervision. A prospective lens buyer, then, can go to a private practitioner (M.D. or O.D.) for a complete "package" — that is, examination, fitting, and follow-up; to an M.D. or O.D. for just the examination and then take the prescription to a less expensive fitter, an optician; or to what might be called a "Fast Eye" center.

The Fast Eye business — optical centers selling high volumes of cut-rate contacts — is a natural outgrowth of the multi-million-dollar lens boom. Since the Federal Trade Commission now allows eye-care specialists to advertise, aggressive retailers have been vying for contact-lens sales over the last few years. Today, approximately 35 per cent of all contacts are sold by commercial retailers. Fast Eye centers might advertise for \$99 the same soft

lenses that M.D.'s and O.D.'s sell for \$200 to \$300. They all pay manufacturers roughly the same wholesale price, but the Fast Eye retailer can offer reduced rates by selling more lenses and, in some cases, by providing less service as well.

Complaints on file with the New York City Department of Consumer Affairs reflect some of the problems of assembly-line eye care. One woman, lured by a Fast Eye ad that promised "\$99 soft lenses" to correct her astigmatism, actually paid \$274 by the time the costs of a heat-disinfection unit and professional services were added. After being told she'd get the lenses in two weeks, the lenses arrived six weeks later. When she began to experience blurriness and discomfort in the left eye, she went to a private practitioner to check it out and was told she'd been given the wrong prescription. She returned to Fast Eye, was promised a second pair, and months later found out that they'd never been ordered. When the second pair turned out to be even

worse than the first, the Fast Eye people informed her that she'd have to keep the original pair. She finally demanded a refund, but didn't get one until the D.C.A. stepped in.

Fast Eye customers who fall prey to such advertisements often spend more time with low-paid, sometimes incompetent assistants than with professionals. But lens-fitting traumas aren't restricted to commercial establishments. Even in private practitioners' offices, patients may spend much of their time waiting — to be seen and to get their lenses — and may end up with improper prescriptions and contacts they'll never wear.

"Around 50 per cent will be happy initially — even if their lenses don't fit," says Dr. Paul Farkas, a New York O.D. whose busy practice, devoted entirely to contact lenses, is one of the largest in the world. In Dr. Farkas' opinion, half the population has "insensitive" eyes — they can wear ill-fitting soft lenses without feeling it at first. "Within six months, about 50 per

## Are Contacts for You?

**H**OW DO YOU KNOW WHETHER YOU'RE AN EASY FIT OR A "GRIEF" case? For example, if a person has a severe astigmatism, correcting his vision is one problem, but if he also swims regularly in a chlorinated pool, snorts a lot of cocaine, and doesn't get enough sleep, he is probably a very tough case—though not necessarily impossible. Dr. Paul Farkas's 57-item self-scoring questionnaire can help you find out where you stand. The scale is divided into five categories that focus on background, health, information about eyes without lenses, lens-wearing history, and goals—in other words, what you want out of lenses. Here are some sample items.\* The higher the score, the greater the potential for fitting problems.\*

### AGE

0-5=7; 6-10=5; 11-15=2; 16-30=1; 31-45=3; 46-65=4; over 65=6

### AMOUNT OF SLEEP

over 8 hours=1; 6-8 hours=3; under 6 hours=5

### HAPPINESS SCALE

predominantly happy=1; moderately happy=3; predominantly sad=5

### ALCOHOL USE

never=0; frequent (daily)=3; heavy (several times per day)=5

### MARIJUANA

never=0; occasional (less than twice a week)=3; heavy=5

### TEARING

normal=0; mild=1; excessive=3; dry (sandy feeling)=5

### PROBLEMS WITH PREVIOUS LENSES (add up total)

poor vision=1; lid discomfort=2; eye-glass vision blurred when lenses removed=3; burning and fogging=4; corneal abrasion from overwear=5

### DESIRED WEARING TIME

few hours' social wear on occasion=1; under 8 hours daily=2; 8-12 hours daily=3; 12 hours to full day=4; overnight on occasion=5; 6 nights out of 7=7; extended wear over a month at a time=10

\*To obtain a complete questionnaire, send a stamped, self-addressed envelope to Sensitivity Scale, Dr. Paul Farkas, 30 East 60th Street, New York, New York 10022.

# Eye Chart

Everything you've always wanted to know about contacts—but may not have thought to ask. Armed with this information, it should be easier to separate contact-lens practitioners who know and care about what they're doing from those who only have eyes for profit.

	HARD	SOFT	GAS-PERMEABLE
<b>DESCRIPTION AND COST</b>	<ul style="list-style-type: none"> <li>Also known as <i>firm</i>, <i>regular</i>, or <i>conventional</i> lenses, they're usually considerably smaller than the cornea (the clear "window" over the iris), and are made of the tough acrylic plastic used in aircraft windows, a form of Plexiglas. The material is essentially non-porous. Cost: \$12 to \$40 wholesale, \$60 to \$400 retail.*</li> </ul>	<ul style="list-style-type: none"> <li>Marketed as <i>soft</i> lenses, most are <i>hydrogels</i>, derived from hydrophilic (water-loving) plastic called HEMA, a gas-permeable material highly compatible with human tissue. The lenses are flexible and squishy—like thick, moist Glad Wrap. The most permeable lenses are the new <i>soft flexible</i> contacts, made with silicone. Cost: \$10 to \$100 wholesale, \$88 to \$700 retail.</li> </ul>	<ul style="list-style-type: none"> <li>Though sometimes advertised as <i>semi-hard</i> or <i>semi-soft</i>, these lenses look and feel like hard ones. They're composed of firm but porous materials that allow oxygen and carbon dioxide to travel to and from the eye—hence the term "gas-permeable." Cost: \$30 to \$70 wholesale, \$100 to \$550 retail.</li> </ul>
<b>VARIATIONS</b>	<ul style="list-style-type: none"> <li>There are differences in size, thickness, edge design, and quality depending on the prescription and who makes the lenses. They're also available in colored tints, and can be marked to distinguish right from left, as well as fenestrated (drilled with tiny holes) to allow the eyes to "breathe."</li> </ul>	<ul style="list-style-type: none"> <li>There are more than 40 F.D.A.-approved brands. The hydrogels differ in chemical makeup, optical power, water content (from 30 to 80 percent), and size and thickness. The newcomers are a blue-tinted hydrogel, the first soft bifocals, silicone-based soft flexible lenses, and extended-wear lenses.</li> </ul>	<ul style="list-style-type: none"> <li>There are about a dozen on the market. Four are made of relatively hard cellulose acetate butyrate (C.A.B.), seven blend hard-lens acrylates with silicone, the most porous lens material (only one of them has been approved by the F.D.A.), and one is based on a new hard silicone material.</li> </ul>
<b>USES</b>	<ul style="list-style-type: none"> <li>Nearsightedness, farsightedness, and astigmatism can all be corrected. Bifocal or multifocal models can correct presbyopia. Only rarely do practitioners prescribe firm lenses for aphakic (cataract) patients. A special red-tinted lens is sometimes prescribed to correct color blindness.</li> </ul>	<ul style="list-style-type: none"> <li>Nearsightedness, farsightedness, presbyopia (see box, page 40), and, with toric hydrogels, astigmatism can be corrected. Cataract patients can leave extended-wear lenses in their eyes for up to one month; with cosmetic vision correction, the limit is two or four weeks, depending on the brand of lens.</li> </ul>	<ul style="list-style-type: none"> <li>Same as firm lenses. More and more, they are the lens of choice for those with sensitive eyes who can't tolerate hard lenses and can't get good vision with hydrogels. Some people who have fallen asleep wearing them have begun to wear them for extended periods. The F.D.A. is now considering them for this use.</li> </ul>
<b>FITTING</b>	<ul style="list-style-type: none"> <li>The practitioner tests vision and measures the eyes: Sometimes "trial" lenses are used to gauge patient response. Hard plastic "buttons" are then lathed at the optical lab. Many practitioners also have office equipment that enables them to make minor modifications at the time of fitting. Hard bifocal lenses are extremely difficult to fit.</li> </ul>	<ul style="list-style-type: none"> <li>Most hydrogels and silicone-based soft flexibles come in stock curvatures and strengths, and can be fitted diagnostically—by trying on various lenses. Depending on the practitioner's inventory, lenses may be dispensed the same day or ordered. In either case, it's difficult to modify these ready-to-wear contacts.</li> </ul>	<ul style="list-style-type: none"> <li>Most gas-permeables come in stock sizes and strengths, and can be fitted diagnostically, but if the patient has special needs—and is willing to wait a week or two—these lenses can be custom-ordered. Gas-permeable lenses are somewhat harder to modify than conventional lenses.</li> </ul>

\*Price per pair, retail, includes fitting.

	HARD	SOFT	GAS-PERMEABLE
<b>COMFORT</b>	<ul style="list-style-type: none"> <li>These require an adaptation period in which wearing time is gradually increased—it can take anywhere from one week to a lifetime, depending on the accuracy of the fit and the user's patience. But once eyes adjust to them, a well-fitting pair of hard lenses can be extremely comfortable—discounting grit-laden gusts of New York City air.</li> </ul>	<ul style="list-style-type: none"> <li>Soft lenses mold to the shape of the eye, so most are instantly comfortable. They are less likely than hard or gas-permeable contacts to trap dirt in the eye. But if they're not kept scrupulously clean after every wearing, or if your eyes tend to get dry, comfort decreases.</li> </ul>	<ul style="list-style-type: none"> <li>Adaptation time is longer than with hydrogels, less than with conventional lenses. The C.A.B.'s may be better for patients whose eyes tend to be dry, but they are not as oxygen-permeable as silicone-based lenses and may be less comfortable over daylong wear. Also, protein and lipid deposits on the lenses (from tears) can irritate the cornea.</li> </ul>
<b>VISION</b>	<ul style="list-style-type: none"> <li>Vision is extremely sharp—usually better than with the other types of lenses. People wearing hard contacts may experience "spectacle blur" when they remove their contacts, because the lenses deprive the eyes of oxygen and slightly distort the corneas, but it is only temporary.</li> </ul>	<ul style="list-style-type: none"> <li>Generally, hydrogels are less dependable optically than the harder lenses. But manufacturers have finally expanded the range of prescriptions, and extreme myopia can now be corrected. Vision is affected by fit (a loose lens can float and cause vision to "fluctuate"), amount of tear fluid, and type of correction required.</li> </ul>	<ul style="list-style-type: none"> <li>With a proper fit, vision is similar to that with firm contacts. Spectacle blur rarely occurs—except in sensitive eyes. Vision may be distorted if the lenses become coated with lipid or protein deposits. A highly astigmatic person may get the best vision from specially designed gas-permeable lenses.</li> </ul>
<b>CARE AND HANDLING</b>	<ul style="list-style-type: none"> <li>Conventional lenses are easy to handle, easy to clean—and also easy to lose. The brittle plastic tends to pop out of your hands, or, if you glance sideways too abruptly, out of your eyes. Lenses are washed with a cleansing solution and inserted with a wetting solution. Saliva is <i>not</i> a good substitute.</li> </ul>	<ul style="list-style-type: none"> <li>Hydrogels are easily contaminated. Daily cleansing and disinfection with an electronic heating unit or chemical disinfectants are essential, as are periodic overnight enzyme "baths" to remove protein deposits. Also, the lenses are floppy and can accidentally be turned inside out, which <i>does</i> affect vision.</li> </ul>	<ul style="list-style-type: none"> <li>These lenses are more easily contaminated than hard lenses, so cleaning is more critical. Overnight soaking is mandatory to maintain wetness. Since they're usually larger than hard contacts, they hug the eye more tightly, making them easier to put in than take out.</li> </ul>
<b>DURABILITY</b>	<ul style="list-style-type: none"> <li>The sturdiest of all three types, these are good for at least five years—they often outlive the wearer's prescription. Replacements are required when the lenses become scratched too deeply to be polished or pop out of the eye, never to be found again.</li> </ul>	<ul style="list-style-type: none"> <li>The average life of daily-wear lenses is one to two years, less if they are ultrathin; extended-wear contacts—the most costly—usually last less than a year. Lenses must be replaced when they tear, discolor, or become heavily coated with protein deposits. Contacts disinfected with chemicals generally last longer than those treated with heating units.</li> </ul>	<ul style="list-style-type: none"> <li>The lens life is slightly less than that of conventional lenses. C.A.B. gas-permeables scratch easily and tend to lose their shape—and thus their optical accuracy—when mishandled. The newer, silicone-based ones are more durable, but both types have to be replaced when protein and lipid deposits build up and the lenses can no longer be polished.</li> </ul>
<b>PROBLEMS</b>	<ul style="list-style-type: none"> <li>Overwear or particles lodged under lenses can cause watery eyes, uncontrollable blinking, burning, and pain, and can irritate the cornea even in veteran wearers. Corneal abrasions are very painful, but usually localized, and heal within a day or two. Ill-fitting lenses may so restrict the flow of oxygen to the cornea that they cause edema (corneal swelling) or worse.</li> </ul>	<ul style="list-style-type: none"> <li>Corneal abrasions are rare with soft lenses—but when they <i>do</i> happen, the irritation often lasts longer than hard-lens abrasions. Especially in stronger prescriptions (the lenses are thicker), hydrogels can also deprive the cornea of oxygen. Insufficient or improper cleaning, overwear, or an allergic reaction to the cleaning solutions can cause redness and even precipitate an infection.</li> </ul>	<ul style="list-style-type: none"> <li>Both C.A.B.- and silicone-based lenses tend to accumulate surface deposits that will affect comfort and vision. With higher-powered optical correction, the wearer may experience any of the problems associated with oxygen deprivation. Overwear can cause eyes to burn, sting, or become red, dry, and itchy, although this happens to a lesser degree with the new gas-permeables. —M.B.</li> </ul>



# Bifocal Contacts: New Hope for the Vain

**M**OST PEOPLE NO MORE RELISH THE THOUGHT OF wearing bifocals than they look forward to a double chin. Yet, presbyopia—in which the muscles that control the eye's lens lose their elasticity, making it hard to focus on things that are close—is an almost inevitable by-product of aging. Few over-40s escape the dismaying discovery that they can no longer hold the menu far enough away to read it—and it's not because their arms have shrunk. Fortunately, the research teams that gave us contact lenses have finally turned to this problem as well.

There are two methods of correcting presbyopia using contacts. One employs a different strength of lens for each eye and is called "monovision." The other involves soft bifocal lenses. Hard bifocal contacts have been around for years, but the design—thicker at the bottom—makes them hard to fit and, in most cases, uncomfortable to wear. Nevertheless, many practitioners say they're ideal for long-time hard-lens wearers—as long as doctor and patient are willing to spend the time to ensure proper fit.

In the monovision method, if a person had normal vision or was farsighted before presbyopia set in, he is given one lens for reading, and that's all. If he was myopic to begin with, he wears two lenses—one to correct the nearsightedness and the other for reading. The idea is to learn to use the

eyes separately, and about three-quarters of the people who try this method adapt to monovision within two weeks.

Although several manufacturers are developing soft bifocal contact lenses, to date only three have been approved by the F.D.A., and each has a different design. Bisoft lenses (by Ciba Vision Care) are composed of two concentric circles with a small center zone for distance vision and an outer zone for reading; Bausch & Lomb's P.A. 1 bifocals use a blended-zone system similar to no-line bifocal glasses'; and the slightly harder-to-fit TruFocal lenses (by Wesley-Jessen) have a crescent-shaped near-vision zone at the bottom—it's used when the eyes shift downward. The greatest difficulty with bifocal lenses—any type, including glasses—is that some people can't adjust to the different zones, and continue to see both vision centers simultaneously.

Obviously, bifocal contacts aren't for everyone. Early estimates suggest that only about 25 percent of the 34-million Americans with presbyopia will be able to use the current designs. The best candidates are people between the ages of 45 and 55 whose eyes are relatively insensitive and who don't need a high degree of visual correction. For those who can't adapt to bifocal contacts, the only alternative will be to wear reading glasses *over* regular lenses. Still, even that's better than telltale bifocal specs! —M.B.

cent begin to experience discomfort. Eventually, most poorly fitted lenses will present problems."

Dr. Farkas, whose Contact Lens Sensitivity Scale (see box, page 37) is based on 25 years of fitting experience, estimates that 75 per cent of his patients are "grief" cases — difficult fits, many of them skeptical second- or third-timers. They include not only casualties of the Fast Eye rush but also patients of negligent private practitioners.

Poorly fitting contacts often merely end up in a drawer, but injuries *do* occur. To avoid either eventuality, shop the market carefully, and keep the following considerations in mind:

□ *Experience.* A good rule of thumb is that the fitter should have around five years of lens-fitting experience — with all types of lenses — and dispense at least three pairs a week. Especially if you're a tough case, it's imperative that the fitter understand the pros and cons of each type of lens — and how that information relates to your eyes.

□ *Inventory.* Find out whether the fitter can order both firm and gas-permeable lenses. Does the in-house stock include at least four brands of soft lenses? Be wary of practitioners who are overly enthusiastic about one type of lens — it may be the only one they carry, which drastically limits your chances of finding the right lens. If lenses have to be ordered, ask how long

it will take. Some "special orders" may mean a three-to-six-month wait.

□ *Support services.* Be sure to ask where, and during what hours, you can call in case of an emergency. Also, who teaches patients how to wear and care for their lenses? Patient education, a not-to-be-underestimated aspect of lens dispensing, should be provided by well-informed assistants in immaculately clean settings. Most orientations usually include a "starter kit" of lens-care products, and a good lens dispenser will warn you about potential allergic reactions to them. Some people can't tolerate the chemical solutions used to prevent bacterial buildup on soft lenses — their eyes get red and itchy. It may take anywhere from a few days to several months for such a reaction to occur. If it does, there are several new hypoallergenic — but more expensive — lens-care products on the market.

□ *Follow-up.* For the price of the lenses, the fitter you choose should be willing to re-examine you for two to six months — once a week if necessary — to ensure proper fit. And if the first pair doesn't work out, the lens dispenser should be willing to try several different types. This is not as magnanimous a gesture as it might seem: The average wholesale price of conventional hard lenses is negligible, and stock hydrogels and gas-permeables can be sterilized, plopped back into their little

vials, and resold to someone else!

□ *Finances.* Get specific details about the fee — and get them in writing. Especially if you've failed with a first pair of lenses, make sure the contract has some type of "escape clause" — a refund policy for terminating the agreement at various points during the lens-fitting process. If the word "refund" is thrown around, what does it mean? Some Fast Eye entrepreneurs, for example, fail to mention that customers are given store credit and not money. Others give refunds — but also levy service charges for time spent.

□ *Complaints.* Don't hesitate to express even vague complaints, like "This lens just doesn't *feel* right." And if it's your vision and not the fit that worries you, insist that the prescription be double-checked. When questions are discouraged and all else fails, appeal to higher authorities: to the state licensing agency, the Office of Professional Discipline (800-442-8106), on issues of competency and negligence, or to the Department of Consumer Affairs (577-0111) if your complaint is about contracts, warranties, or advertising practices.

In the final analysis, with today's improved materials, your chances of being able to wear contacts have dramatically increased. But the likelihood of your living happily ever after with lenses will still depend on the person who sells them to you. ●