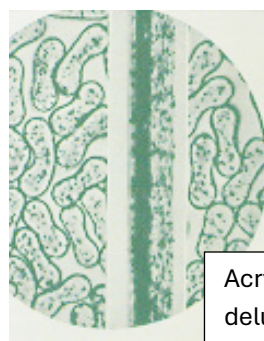


Synthetics: Acrylic & Modacrylic & Olefin

Acrylic and *modacrylic* are the next synthetic fibers modified to provide new fabric characteristics. *Acrylic* is far more prevalent than modacrylic, although they have similar end-product uses. *Olefin* followed with different characteristics—examples area it is more lightweight and has better wicking properties. All three fibers are made from petrochemicals with the same environmental and biological concerns as other synthetic fibers.

Acrylic

Acrylic was initially discovered in 1940 and became a commercial fiber in 1950. Like *nylon* and *polyester*—it is petroleum based. The fiber was positioned to mimic wool and cotton, so is most often texturized and a staple (chopped short) fiber. When introduced it was often called “art wool”. If you are a knitter or crocheter—you are probably familiar with the *acrylic* fiber. It is an inexpensive alternative to *wool* and is usually machine washable—read the care label.

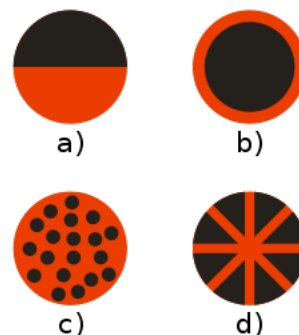


Acrylic with
delusterants
photomicrograph

Source: Johannes Kalliauer,
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<https://commons.wikimedia.org/wiki/File:Bikomponens.svg>

a. side-by-side, b. core
sheath, c. matrix/fibrils, d.
radial



Like other synthetic fibers, *acrylic* can be modified: add delusterants, texturize, solution dye, long fibers or chopped to any length. *Acrylic* was the first fiber developed as a biocomponent fiber under the tradename Orlon Sayelle. For *acrylic biocomponent*, two slightly different formulations of the *acrylic* dope are extruded side-by-side (a. in the illustration). The sides have different heat sensitivities. In production when the fiber is heated—it curls adding texture to the fiber.

Acrylic Properties (selected):

Lightweight: compared to *nylon* and *polyester*, *acrylic* is lighter in weight.

Moderate resilience: makes apparel a natural application. Although it is used for carpet, it is not as resilient as *nylon* and *wool*—OK for low traffic areas.

Not as durable as *nylon* and *polyester*: tendency to pilling.

Good wash and wear: apparel can be easily washed with one caution—no chlorine bleach.

Good resistance to UV fading: positive property for draperies, outdoor carpets & upholstery.

Good wicking: not absorbent, but wicking properties can make it comfortable.

Application examples:

Apparel: knitwear, sweaters, performance wear (example trade names: Creslan, Sayelle. older tradenames—Orlon, Acrilan)

Interiors: blankets (trade names: same as apparel)

Other: Fade resistant awning and other outdoor applications (Sunbrella—tradename for a fabric made of *acrylic*)

Modacrylic

Think of *modacrylic* as a modified *acrylic*. It is a less prevalent commercial fiber than acrylic. *Modacrylic* properties are much like *acrylic*, however it was developed to be flame-retardant. SEF (Self-Extinguishing-Fiber) *modacrylic* is used in protective apparel, industrial workwear, and home furnishings. Moderate resilience, sunlight, moth and chemical resistance make it a good choice for many products including wigs.



Theatrical wig by Christian Dior. Made in Korea of fiber made in Japan.

Museum Rotterdam, CC BY-SA 3.0

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https://commons.wikimedia.org/wiki/File:Pruik_van_grijze_krullen_objectnr_77664.JPG

Properties (selected):

Fire resistant: may be used in commercial interiors, for example hotels where fire safety compliance is required.

Sunlight resistant: good for outdoor products or any areas where sun exposure may be a problem.

Resistant to moths, chemicals: unlike wool can store without moth damage. Chemical resistance makes it good choice for protective apparel.

Moderate resilience: used in carpets, but not as resilient as *nylon* and *wool*. Low traffic areas OK.

Application examples:

Apparel: children's sleepwear (trade name example: SEF modacrylic) faux fur (tradename example: Dynel)

Interiors: draperies, faux fur blankets (trade name example: Dynel)

Other: wigs (tradename example: Kanekalon)

Olefin

There are two variations of *olefin*—polypropylene and polyethylene. You may see these names on labels instead of *olefin*. For home sewers and crafters the slight differences are not pertinent. *Olefin* was first used for upholstery, outdoor furniture and carpet. It is the most lightweight fiber—making it an excellent choice for products that are large and require long distance shipping, e.g. carpet, which can add substantial cost to a product. *Olefin* is often used as the backing for carpet—cutting down on weight. In addition, it is relatively low cost, chemical and moisture resistant. *Olefin* was the first “wicking” fiber so is used in sports and athletic wear.

Olefin Properties (selected):

Waxy hand: can have unpleasant waxy feel especially compared to natural fibers.

Moderate resilience: good for apparel and low traffic carpet.

Shrinks at low temperatures: use low temperatures for washing and drying.

Reacts to some dry-cleaning solvents: typically labeled “do not dry clean”.

Oleophilic (attracts & holds oily stains): can stain or yellow when in contact with body oils or oily food stains like peanut butter.

Good wicking: good for action wear, wicks perspiration, dries quickly.

Difficult to dye: early olefins were noted for underlying grey or beige tones. Difficult to dye after production, so best solution dyed.

Application examples:

Apparel: sportswear, underwear, sport sox (action wear tradename example: Drymax)

Interiors: blankets, carpet, upholstery (carpet tradename examples: Royalton, Herculon)

Other: housing material-layer between interior structure and siding (tradename examples: Tyvek, Typar), mailing envelopes (Tyvek)