Choosing Colour

The process for selecting colours for lighting is the subject of a whole book in itself.
There are, however, some basic rules which you can follow:

1) Use pale colours for acting-area lighting (front lighting).
2) Use deep colours for side- or back-lighting, or for special effect.
3) Yellows and oranges are "warm" colours for sunny days or happy times.
4) Pale blues are "cold" colours for less happy times.
5) Lavenders are "neutral" colours and can appear warm or cold depending on the other colours in use at the time.
6) Lanterns with no colour gels ("O/W" for "Open White" or "N/C" for "No Colour") can appear warm due to the high colour temperature of the light source.
7) Green shouldn't be used as front light (unless you're lighting a witch or evil character in a pantomime)
8) When lighting the same space from two angles, use slightly different (or even contrasting warm and cool) colours to add interest and make the lighting look more dimensional.
9) Darker skin tones respond to colour differently. Lavenders & pinks work better on dark skin than straw / yellow.
10) As with everything in lighting, there's absolutely no reason why you should follow any of these rules.

There are two main manufacturers of colour filters – **Lee Filters** (www.leefilters.com) and **Rosco** (www.rosco.com/uk/). Gels are identified by number (so a sheet of Rosco 26 is the same colour worldwide), but Lee and Rosco use completely different numbers for the same colour, so it's important to be clear about which range you're using.
In an ideal world, you'd have a full stock of all colour filters within one of the manufacturer's ranges. A good starting point, however, might be the following handy kit of colours for basic drama use (using Rosco numbers)

Colour	Rosco	Rosco name	Suggested use	Transmission
	R01	Light Bastard Amber	Enhances fair skin tones. Suggests strong sunlight.	56%
	R05	Rose Tint	A clean pale pink; useful as a blush for skin tones.	80%
	R13	Light Straw	Much less green than in other straws. Suggests warm sunlight glow when contrasted with ambers and blues.	78%
	R14	Medium Straw	Pale amber. Sunlight, accents, area lighting with caution to skin tones.	68%
	R20	Medium Amber	Afternoon sunlight. Lamplight and candlelight. Tends to depress color pigment values.	54%
	R21	Golden Amber	Useful for amber cyc light and late sunsets.	43%
	R26	Light Red	Vibrant red. Good alternative primary.	12%
	R27	Medium Red	Good red primary for use with three-colour light primary system.	4%
	R36	Medium Pink	Good for general washes and cross lighting.	46%
	R339	Broadway Pink	A deep, saturated pink created for musicals and specials. Excellent for down and backlighting.	15%
	R45	Rose	Use on scenery and background effects. Adds tone and modelling to scenery.	8%
	R48	Rose Purple	Pale evening colour. Excellent for backlight.	16%
	R52	Light Lavender	Excellent for general area or border light washes. A basic followspot colour.	26%
	R55	Lilac	Neutral general.	37%
	R57	Lavender	Excellent backlight. Gives good visibility without destroying night illusions.	24%
	R61	Mist Blue	Excellent for general area washes. Very light cool tint of blue.	66%
	R65	Daylight Blue	Useful for achieving depressed moods and dull skies.	35%
	R68	Parry Sky Blue	Excellent for early morning sky tones.	14%
	R80	Primary Blue	For use with three colour light primary system in cyc lighting.	9%
	R382	Congo Blue	Good for dark night skies or for a backlight colour.	0.56%
	R86	Pea Green	Good for dense foliage and woodland effects.	56%
	R89	Moss Green	Useful for mood, mystery and toning.	45%
	R90	Dark Yellow Green	Dance / effects. Good alternative primary where higher transmission is desired.	13%
	R91	Primary Green	Primary green for three colour primary system.	7%

(colours shown are an indication of the hue of the colour and are not 100% accurate)

Split gels Due to the way the optics in profile lanterns work, you can use a split gel in combination with a gobo to produce a mottled effect.

Frosts and Silks If you've had a look through a swatch book showing the full range of colour filters available, you'll have seen some mysterious filters towards the back of the book.
Many of these are of little use in the stage lighting world, being more suitable for use in film/tv lighting where they're used in colour correcting lighting for the camera, and for reflecting light onto performers. However, the range of frosts and silks are very handy for problem-solving in the theatre world.
FROSTS can soften the hard edges of a beam from a profile. This means you can focus a range of lanterns doing the same job with hard edges, then add a frost into the colour runners along with the colour gel, to give every lantern the exact same focus. A frost can also be used in a lantern with an uneven beam to soften any "hotspots".
Be aware, however, that using frosts can result in light bouncing all over the stage.
SILKS are more cunning – rather than simply diffusing the light, they can "stretch" the beam in a particular direction. The practical use of silks is in the lighting of scenery, staircases for example, which a single lantern can't quite cover. Add a silk, and the beam is stretched to cover the scenery. Silks are sometimes known as Linear Frost. The pattern of lines on the silk is at 90 degrees to the direction of 'stretch'.

Colour Scrollers: A long string of between 12 and 16 different colours on a roll passing horizontally in front of a lantern. Individual colours can be selected remotely from the lighting desk by selecting a "level" for a channel. Instead of the level corresponding to the intensity of a lantern, the level corresponds to a position for the colour string. Colours can either be changed "live" with the lantern on, or with the lantern off during a scene change or blackout. The speed of the change is given by the time on the lighting desk fade where the scroll position changes. Although most of the time the colour string is cut square, complex effects can be achieved with colours fading into one another by varying the shape of the join between gels.
A clear gel can be used as part of the scroll to enable you to achieve "open-white" light if necessary.

Gel burning out: Some scrollers have cooling fans to prolong the life of the gel string. Stronger colours will burn out faster without cooling, or if the focus of the beam is concentrated on the gel. If colours aren't lasting very long in scrollers, try changing the focus of the lantern (if it's a profile). **HEAT SHIELD** clear gel should be used between the lens and the colour scroller to absorb some of the heat. (Ensure there's room for air circulation around the heat shield)

There are specific requirements for the exact length of the scroll in most cases, and these vary according to the manufacturer, as do the method of loading the colour onto the rollers. Special heat-resistant tape should be used to stick the colours together, and to stick the colours to the rollers.

Help! My gels are burning out as soon as I put them in. High-wattage (over 1kW) lanterns are not kind to dense (deep) colours. The lower the transmission percentage for the gel, the more likely it is to burn through early. Anything under 10% is a potential problem. To avoid this, use gels from a manufacturers High Temperature (HT) range.
You can also use a special Heat Shield gel from a company such as Lee Filters or Rosco. The heat shield should be placed between the light source and the colour filter allowing an air gap between the shield and the colour. Air must be able to circulate all around the heat shield. This should significantly improve gel life.

How do I know which colours to use? Most lighting designers work from a palette of around 15-20 gels they use most often. The following manufacturer's websites carry guides suggesting when to use the various gels in their ranges.

What is Colour Temperature? A measure of the "warmth" or "coolness" of light sources and colours. Measured in degrees Kelvin. A higher colour temperature light source will appear whiter (colder). The human brain automatically compensates for different colour temperatures – a film or video camera cannot, and thus what we see as white may appear to have a blue or green tint when no colour correction is used for video. Most video cameras have a "White Balance" control to make colour temperature adjustments, to ensure white looks white on camera. Daylight is approximately 5600°K, Tungsten Halogen is approx. 3200°K and standard incandescent lamps are 2800°K. Many discharge light sources are in use in modern theatrical productions using discharge followspots or moving lights – colour correction filters are used to balance the colour temperature.

Can I use a grey gel to get a monochrome effect? Grey gel (or Neutral Density gel) is used in TV & film to reduce the brightness of a light source without affecting the colour temperature. It has no use in theatre lighting.

More information:
Lee Filters: www.leefilters.com Rosco Filters: www.rosco.com GAM Filters: www.gamonline.com