PAREXUSA

Dark Color Finishes on EIFS

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DARK COLOR FINISHES ON EIFS

Parex USA specifications call for a finish with a Light Reflectance Value (LRV) of at least 25% (the finish must reflect at least 25% of the light that strikes it). There are two issues that must be addressed when consideration is given to using an acrylic finish that has a lightness value of less than 25% on a Parex USA EIF System, and these are:

1. Possible damage to the Expanded Polystyrene Insulation Board.
2. The likelihood of fading or color changing of darker color finishes.

The first issue, possible damage to the EPS board, is a functional problem and can affect the performance of the EIF System. The second issue, fading of the color, is an aesthetic problem that does not affect the performance of the System, but is still not a desirable condition. Let's look at each of these issues in more detail.

Possible Damage to Insulation Board

The foam plastic insulation that is used in most EIF Systems is the expanded or extruded polystyrene board, and the producers of the polystyrene boards recommend a maximum service temperature of 167°F (75°C). At temperatures higher than this value, the boards begin to deform.

Therefore, the use of dark color finishes over the polystyrene boards should be avoided in order to prevent the occurrence of high temperatures on the surface of the insulation boards. Energy absorption of a dark color finish is one of the factors to be considered, but one must also take into account the overall climate and the orientation of the surface utilizing the dark color. Given the proper set of variables, the temperatures on the surface of the EIF System can exceed the service temperature of the polystyrene insulation board. Specific variables that can affect the service temperature are:

Ambient Temperature – the higher the ambient temperature, the higher the surface temperature of the EIF System.

Surface Orientation – the angle of incidence of the surface to the sun, or the more direct the angle of the sun to the wall (closer to 90 degrees), the higher the surface temperature.

Also, the direction the wall faces will influence the performance of a dark color EIF System, as a north facing wall will never see direct sunlight (unless it is reflected) and thus would not be a problem. The east elevation of a building is the next best condition, as ambient temperatures are not at the peak as the sun rises in the east. South and west elevations are the potentially most troublesome due to sun direction and ambient temperatures.

Climate – Such things as cloud cover, air pollution, number of cooling degree days and climate in general will affect the service temperature of the EIF System when a dark color finish is used. An example would be the typical lack of cloud cover in a city like Phoenix, Arizona versus the normal cloud cover in Orlando, Florida. Even though both locations have extreme summer temperatures, the cloud cover in Orlando provides occasional shade and reduced surface temperatures for the System.

Wall Area – Relatively small surface areas like decorative bands pose less of a problem when dark colors are used, as the surface heat can be dissipated more readily than on a large wall area.

Reflected Light – A dark colored finish that not only receives direct radiation from the sun but can also be exposed to additional reflected light from a window or some other reflector, is far more susceptible to have a surface temperature that exceeds the service temperature of the polystyrene board. This double dose of radiation can rapidly produce excessive surface temperatures in just about any environment or climate.

Color – the darker the color, the less light is reflected, so more energy is absorbed in-turns creates heat.

When color selections are made, it is important to be aware of the potential damage that may result from the elevated surface temperatures when a dark color finish is desired; the responsibility for choosing the color is solely left to the designer not the manufacture and for the designer to understand the color chosen and any undesirable effects that may occur from that choice.

The Parex USA color chart indicates the lightness values of all the standard color finishes in a scale between 1 and 100 with the lighter colors having the higher numbers. Colors with a lightness value of 25 or greater are typically safe to use over an EIF System in any geographical area and climatic condition. We recommend that before a color selection is made, the light reflectance value of the color is determined. If it is below 25%, the other determining variables are examined to assess the risk and potential damage associated with the use of a dark color on the System. LRV values less than 25% can be used on EIF System projects, the designer needs to be aware of the possible consequence of the color chosen.

Color Fading

The second issue with using a dark color is the probability of fading. The gradual changes in color or fading is primarily due to the common pigments used in the industry that must be incorporated into the acrylic finish in order to achieve the desired color. Finishes of lighter colors typically utilize pigments that are made up of inorganic chemicals. These pigments are very stable and are not easily broken down by exposure to ultra-violet light. Therefore, fading is not much of an issue in lighter colored finishes.

To achieve darker colors, it may be necessary to switch to pigments that are made up of organic compounds, and in some instances, these types of chemicals may be susceptible to ultra-violet light degradation. If a certain organic pigment must be used to achieve a certain dark color, and if this pigment is prone to UV breakdown, then the fading of the color is almost a certainty.

The degree of fading will be a function of exposure to UV light which is directly related to some of the variables already discussed above.

Once again, fading is an aesthetic issue and does not compromise the functionality of the EIF System, but the selection of the proper color with the most stable pigments can make the difference between years of beautiful colors or a constant maintenance program to rejuvenate original colors.

Colors with an LRV of below 25% do not qualify for the ColorFast Fade Warranty program. Consult your dealer for additional cost of ColorFast Plus Warranty.

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