Answering the LEED™ Challenge to Sealant and Weatherproofing Products

Michael Schmeida MS, LEED AP; Manager of Sustainable Programs,
Tremco Global Sealants
3735 Green Road, Beachwood, OH, 44122

1 Introduction:

Green building is arguably the newest trend in the construction industry. As our society has paid the price for decades of unrestrained use of natural resources such as crude oil, water and clean air, we are faced with increasing needs to conserve such resources and to reduce the impact on the environment while maintaining and pushing forward with the conveniences of our modern lifestyle.

Before we can discuss the trends, practices and direction of green building, we need to define this term. Green building is the practice of designing and constructing occupied space that uses less energy, water, nonrenewable natural resources and allows for the convenient and continued use of methods by the building occupants [1]. While this is a very generic definition, as we proceed through this discussion each of these points will be further elaborated.

Sealants and waterproofing have, even before green building became a trend, functioned in a "green" manner. Sealants have always been and by definition are used to seal gaps in the building envelope to eliminate the infiltration of air and water and thus one can deduce that these materials reduce the energy consumed to heat and/or cool the building [2]. Today, however, "green" takes on a whole new meaning not only as it relates to traditional sealant and waterproofing applications and uses, but also how these materials are made, how they are used and even which products are used.

The most notable guide for green building is the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) program. LEED is a systematic approach to building construction, design and use that makes the practice of green building easy to understand and achieve. LEED has evolved from one single program, LEED for New Construction and Major Renovations (known as LEED-NC), into many programs and even subprograms encompassing renovation of an existing structure, programs for leased and tenant occupied spaces, homes and even specific subprograms for specific use structures such as schools and hospitals. Still, the most common LEED program in use today is LEED-NC. Most discussions, including this one, utilize LEED-NC as the basis for discussing green building and defining possible practices for constructing a truly eco-friendly building [3]. It should be noted that regardless of whether you are under the guise of the USGBC or another GBC (there are over two dozen GBCs throughout the world), all LEED programs are currently based on those established by the USGBC. For reference, here are the other LEED programs and what construction segments they are designed to fit into [4]:

- LEED for Existing Buildings. Designed for major remodeling of buildings over 5 years old.
- LEED for Core and Shell. Designed for landlords and developers to utilize LEED for unfinished, leased commercial space.
- LEED for Commercial Interiors. Designed for tenants and is a compliment to the LEED for Core and Shell.
- LEED for Homes. Designed for single family home construction.
- LEED for Housing Developments. Designed for allotments and condominium development.

Regardless of the LEED program that is applicable to your particular construction-type, there are basic goals common to all of these programs. First, both construction-phase and long-term occupancy impacts on the surrounding ecosystem must be minimized. Second, water conservation and impacts on

the aquifer are minimized. Third, energy efficiency is addressed. Fourth, the classic "reduce, reuse and recycle" principles come into play through the reuse and recycling of materials, as well as the emphasis on renewable and locally harvested materials. Fifth is the emphasis on natural light and ventilation for both energy reduction as well as occupant health. Finally, LEED programs reward those going the extra step and those who utilize the knowledge of LEED Accredited Professionals (LEED-APs). In just this high-level overview we can see how building sealing can be primarily impacted by and also have an impact on green design [5].

2 Why Care About LEED/Green Building?

The classic question anyone asks regarding any topic is, "Why should I care at all?" This is a fair question. There really is only one answer, "Because you have to care or be at a disadvantage." Green building is no exception. It has begun to play a significant role in the sealant and weatherproofing industry.

The answer is a little more complicated than, "Because." There are a number of reasons detailed on the USGBC web site [6]:

- LEED is being adopted globally. Over two dozen countries have GBC's, which are in essence just "branches" of the USGBC. These include Canada, Mexico, most countries in Western Europe, Australia, New Zealand, India, China and Chile.
- LEED is being integrated into law, be it in building codes or traditional legislation. California has mandated all government buildings meet LEED requirements for certification, Boston has done the same and most recently the USGBC and ICC have signed a letter of understanding to integrate basic green building design requirements into future versions of the code. Further, the U.S. Federal government requires sustainable design requirements on new government buildings.
- Because of the above requirements, many green building structures tend to be very high profile projects such as convention centers, arenas and municipal buildings.
- There are currently nearly one billion square feet of commercial construction either registered or certified with the USGBC. This does not account for green building projects outside of the US. It is unknown how many square feet are unregistered or uncertified that are being or were built with green building requirements in mind.
- Of the nearly one billion square feet that have been registered, only 12% of the buildings are certified, meaning that the number of in-progress buildings is dramatically higher than in previous years.
- Financial reasons such as tax breaks for high-efficiency buildings that minimize stress on the infrastructure and lower utility bills including water, gas and electric are becoming more prevalent.
- Approximately 80% of a company's operating costs are in their employees. In high-efficiency green buildings, incidents of absence due to allergies, asthma and colds are reduced. Further, since these buildings have generally pleasant lighting and emphasize occupant comfort, related employee complaints are reduced on average 16% and work output is increased similarly.
- Architects, engineers and contractors are being required to know about green building practices. There are over 35,000 LEED APs and an estimated 90,000+ design professionals currently involved in LEED registered products in the U.S.

Now that we know the reasons to consider green building, let us examine LEED-NC to see more specifically how the sealant industry is impacted. But, it should be noted that this article is not meant to be a guide to the LEED-NC system. This discussion will not cover every credit, but only those where there is or potentially could be some impact on the building sealing industry, be it either in the use or manufacturing of such products. This includes sealants, waterproofing, coatings and associated products sold and marketed by companies in the sealant and weatherproofing industry.

3 Sealants/Weatherproofing in LEED

3.1 Sustainable Sites Credits:

The first section of LEED-NC is the Sustainable Sites Credits. The overall spirit of this series of credits is to reduce the impact of the construction as well as the long-term existence of the building on the local ecosystem. This plays right into the old cliché, "Think globally, act locally." By changing actions on the local level, the impact will be global.

Arguably the most noticeable effect on the local ecology, aside from the change to the landscape itself, is the resulting increase in what is called the heat island effect. The removal of natural landscape in favor of concrete, gravel or, even worse, blacktop has resulted in noticeable changes in local temperature referred to by this name. As an example, I can drive from my suburban home just seven highway miles from downtown Akron to the center of the city, a city of less than 250,000 people, and the thermometer in my car will consistently read three to four degrees Fahrenheit higher downtown regardless of time of year. This is because concrete and blacktop absorb light as heat energy which subsequently is given back as heat. In fact, according to studies done at The Lawrence Livermore National Laboratory cited by both the United States Department of Energy and USGBC, a pure black surface can reach a temperature 90 degrees Fahrenheit higher than ambient on a sunny summer afternoon. On a hot July day in a city such as Phoenix, Arizona or Las Vegas, Nevada, this means the surface can be over 200°F!

Most simplistically the easiest way to alleviate the heat island effect is to get rid of the concrete and asphalt. Of course, concrete is relatively inexpensive and very versatile as a building material. As such, just getting rid of it is not feasible. This is where waterproofing and sealants organizations come into play in the LEED program. There are two remedies such organizations can provide to help alleviate this effect:

- White coatings on rooftops, parking areas and other exposed concrete and asphaltic surfaces.
- Green roofs.

White is the most reflective of all colors because it is comprised of all colors. Since what we perceive as color is the reflected wavelength of light and light itself is "white", a white coating in theory reflects all light. And, since it reflects all light, none is absorbed and converted to heat energy. Conversely, "black" is an absorption of all light. Thus, darker colors lead to the largest amount of absorbed light to be converted to heat [7].

LEED requires a white coating meeting the Energy Star (a government system for rating the energy saving properties of a product) requirements for reflectivity and emissivity. It also requires that such a coating be used over minimal percentages of the roofing or parking surface, which vary depending on whether other anti-heat island effect techniques are utilized in design- most notably the installation of green roofs. It should also be noted that in the case of all metal structures or those that are being rehabilitated with very low load-bearing capacity where green roofs are not an option, a white coating is really the only option for heat island effect reduction.

For those in more traditional sealant organizations who may not be 100% familiar with what a green roof is, such a system is that which encompasses waterproofing, insulation, drainage, water retention and growth media for plants on the top deck of a building (Figure 1). More simply, it is a plaza deck or roof top that has growth media and vegetation in place of a topping slab of concrete or asphalt or in place of a traditional roofing membrane. While such systems are available in a variety of designs and

configurations from numerous manufacturers, they all have one thing in common: they all waterproof and seal the building off from water infiltration while providing a viable environment for plant growth.

Figure 1: A Typical Green Roof. Green roofs have many ecological benefits including heat island reduction, storm water management and the plants convert carbon dioxide into oxygen.

LEED is very generous to the sealant and waterproofing industry when it comes to sustainable sites credits. Green roofs and white coatings under the sustainable sites section are among a very few instances where simply by installing a product/system, building owners qualify for LEED points.

Of course, this last statement implies that there are less obvious yet certainly viable opportunities within LEED for the sealant and weatherproofing industry. One example is that under sustainable sites a point is possible for redeveloping a brownfield. Brownfields are areas that may be contaminated/polluted due to previous development. Many manufacturers offer waterproofing products and sealants approved and tested to prevent the infiltration of the building envelope by possible pollutants at such sites such as methane, petroleum distillates/solvents and even fuels. Another "soft" use for waterproofing products under the sustainable sites credits involves solutions that manufacturers offer for sealing the below-grade area in lagging applications. By utilizing lagging, builders require a smaller excavation to build the building and subsequently leave a larger amount of a property undisturbed, which can garner a point in LEED.

Other areas within Sustainable Sites include:

- Site Selection. Choosing a site that is not farmland, a flood plain, in a wildlife area, etc.
- Development Density.
- Alternative Transportation. Being located near mass transit and having facilities for alternative transport methods such as locker rooms for bicycle riders and special parking and facilities for alternative fuel vehicle and carpool drivers.
- Light Pollution Reduction. Minimizing the amount of man-made light that reaches beyond either the building envelope or the immediate used property (i.e. beyond the parking lot, beyond walkways, etc.).

3.2 Water Efficiency Credits:

There are many major environmental concerns in our world today. Global warming is on everyone's list and, consequently, so are ways to reduce greenhouse emissions. Certainly the reduction in the use of fossil fuels, particularly those that are petroleum-based, not only fits into this but also has an economic and political tinge to it as well. Another issue is water- clean, untainted fresh water for potable use as well as for aqueous plant and animal life to survive in is a scarce commodity. The

Colorado River does not flow to the Gulf of California in dry months anymore and, in the Midwest, the Great Lakes are being explored as a source for the booming populations of desert cities such as Phoenix and Las Vegas [8, 9].

LEED addresses the need for preserving water resources. However, much as with brownfields and as we will see with many more examples in LEED, there are not always direct opportunities for the sealant and weatherproofing industry, but indirect ones do exist. The same green roofs we mentioned before, when designed and planted for minimal watering, count towards Water Efficient Landscape calculations. As an example, if a building's footprint were to cover 50% of the property and the entire roof was a low or even zero water consuming green roof, then 50% of the landscape would contribute towards this credit.

Another more abstract impact on the industry is in the collection of water for use in non-potable situations such as flushing of toilets and landscape watering. Manufacturers of prefabricated drainage (Figure 2) have an ideal tool for gathering run-off to be subsequently transported and stored in cisterns, retention ponds, etc. for such uses and thus helping to meet the other two credits in this section; Water Use Reduction and Innovative Wastewater Technologies. Additionally, roof coatings that are approved for the catchment of potable water by a government agency are ideal for collecting rainwater for human consumption. These coatings in white (common in the Caribbean) also have the added heat island reduction function previously discussed.

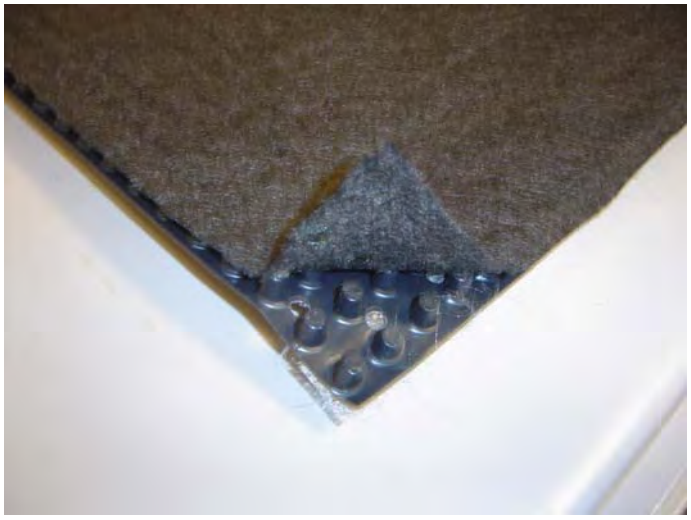

Figure 2: A Prefabricated Drainage Medium. Such a medium can be used to collect rainwater which can subsequently be used in the place of potable water for watering plants, flushing toilets and other non-potable applications.

3.3 Energy and Atmosphere Credits:

If water consumption and preservation is among one of the top three ecological concerns we face, then energy consumption is a second member of that list and quite possibly the top entry. We are all aware that in the year 2008 the US and Canada, in particular, are in the midst of an energy crisis to rival that of the 1970s. We only now truly comprehend that petroleum-based energy sources such as heating oil, propane and natural gas are finite and will only become increasingly scarce in the coming decades and increasingly more costly. In addition to limited quantities of these energy sources, the long-term burning of all fossil fuels, including those listed as well as coal, has released significant quantities of gases now linked to global warming [10].

While the extent of the impact of global warming is in itself a topic capable of filling volumes of books, it is nonetheless one which the construction industry is now facing as 40% of all energy resources consumed in the US are for lighting, heating/cooling and maintaining buildings. In addition, to relate this back to LEED, approximately 25% of the points needed to qualify for certification can be obtained under one credit of Energy and Atmosphere, the Optimized Energy Performance credit.

Fortunately, sealant and weatherproofing product manufacturers have always been working to reduce energy consumption related to heating, ventilating and air conditioning (HVAC) in particular, since that is by definition what a sealant or an air barrier is supposed to do.

Products in the sealant and weatherproofing industry can assist in green building by helping to minimize energy consumption in many ways:

- Using sealants to seal all gaps in duct work and insulating products in all fenestration openings and around HVAC units, conduits, etc. eliminates the leakage and energy loss of HVAC systems and reduces energy consumption of these units as a result. Sealants are ideal for this as they are flexible, durable and in the case of the butyl technologies commonly seen in duct work, easily removed and reapplied should work need to be done to the HVAC system.
- Using air barrier systems (Figure 3), including the air barrier itself and the detailing materials, on the above-grade building envelope to eliminate the transfer of air between the inside and the outside of the envelope. Some studies by the U.S. Department of Energy have shown the reduction of HVAC can be as much as 40% depending on climate, design and other factors. Regardless of energy savings, this is a direct financial gain that cannot be ignored.
- Alternative roofing solutions. As we discussed before, traditional roofing can become extremely hot in the sun. Through the use of high reflectivity/low emissivity white roofing, this heat build-up is avoided and subsequent demand on HVAC is reduced. On this same note, green roofs are also less heat absorptive than conventional roofing and have the added benefit of being insulating, again reducing heating and cooling requirements.
- Alternatives to conventional drainage. Many manufacturers now offer prefabricated drainage for below-grade that also acts as an insulating layer in addition to fulfilling the role of drainage. As a result, the requirement for heating sub-grade occupied space is reduced due to both the presence of insulation as well as removal of thermally conductive moisture from contact with the below-grade wall.

Figure 3: Spray Application of an Air Barrier Membrane. In combination with sealants and flashings, a complete air barrier system can eliminate air loss in the building façade, reducing HVAC use by up to 40%

Reduced energy consumption is not the only credit which those in the sealants industry should find important. Manufacturers of aerosolized products, particularly aerosolized foams, not only are providing a product that is insulating and gap-filling, but also are utilizing next-generation propellants that are free of ozone depleting chemicals which helps their customers attain points under the Ozone Depletion Credit. Finally, the sum of our efforts in reducing energy consumption combined with other methods such as on-site solar panels help in attaining Green Power Credits by allowing building owners to not only rely less on power from the grid, but in the case of those with production capabilities exceeding their consumption, they can place energy onto the grid for others.

Other credits within this section include:

- Renewable Energy. Utilizing on-site alternative energy sources such as windmills or solar panels.
- Additional Building Commissioning. Training of building occupants on how the building systems work to insure they maintain their ecological benefits on a long-term basis.
- Measurement and Verification.
- Green Power

3.4 Materials and Resources:

So far we have examined two major ecological issues today and how building seals and sealants can have a significant impact in reducing the problem through green building practices. A third major issue is materials. Everything that goes into building a structure falls into materials. When it comes to materials in the sealants and weatherproofing industry, one is most concerned about the source, disposal and transport of materials. As it relates to source, are the materials recycled or are they virgin? If they are virgin, are they renewable or non-renewable? Regarding disposal, can materials or their containers be reused or recycled in some fashion as opposed to being sent to the garbage dump? And finally, how can we minimize the environmental impact of transporting goods by greenhouse gas emitting and fossil fuel consuming means such as truck or train?

Construction waste management, or disposal, is by far the most visible of the three areas regarding materials and resources within LEED. It is easy to visualize dumpster after dumpster full of packaging material, applicator tools and general waste being removed from a job site and consequently being placed in a landfill. Diverting as much waste as possible from the landfill to some other reuse is what is being emphasized in LEED. Fortunately, sealants and weatherproofing products tend to arrive in reusable or recyclable packaging. Packages such as plastic tubes, cans, aluminum foils and buckets/pails are generally recyclable so long as they are free of toxic materials. Drums, totes and even tankers are considered in most cases to be recyclable/reusable. Another benefit in most of these cases is that these containers can be sold for scrap or returned to obtain container deposits from some manufacturers. And, even if the packaging cannot be diverted from the landfill, new packaging options, such as foil wrapping, which are completely crushed reduce the volume of material being disposed of in a landfill. In the LEED process, the amount of diverted waste is calculated by weight or volume. By encouraging not only packaging reuse but endorsing the adoption of waste diversion, sealant and weatherproofing product manufacturers are certainly helping customers achieve the points for this credit.

Similarly, LEED places emphasis on the recycled content of materials used in the construction process. After all, it is not just the prevention of materials from the job making their way into a landfill, but reusing materials that were themselves diverted from disposal that truly reflects the spirit of ecologically friendly building. Historically, many of the products used in sealing the building envelope have utilized virgin materials. Being sophisticated, well-engineered, chemically-reactive products in a host of cases (e.g. caulks, adhesives, coatings, waterproofing membranes, etc.), these products are too

sensitive to the unknown contents often found in recycled raw materials. Recent advances have made it possible to use some reclaimed materials such as fly ash and ground rubber, but the uses are still being discovered for these materials. Though sealant and weatherproofing products may not have any recycled content, LEED acknowledges the recycled content in the packaging itself as well as cases/boxes and pallets. While packaging generally only accounts for a few percent of the product by weight, the points are awarded as follows:

- The total amount of recycled content by weight of the product is multiplied by the value of the product.
- These values are then added up and the points are then awarded based upon the total dollar value of recycled content for the job.

As sealants and weatherproofing products generally account for less than 2% of the total construction costs of the job, even products with minimal recycled content, which constitute the vast number of the products in the sealants field, have an overall minimal negative impact on average for the entire job. Though some sheet-applied membranes and most prefabricated drainage media have a much higher recycled content, the impact is still quite small [11].

The third point category within Materials and Resources that affects the sealants and waterproofing industry is Regional Materials. These are defined as:

- Locally manufactured materials have a final assembly and/or filling within 500 straight-line miles of the job site.
- Locally harvested materials are those that are harvested (harvested meaning grown, mined, or similarly "picked") within 500 straight-line miles of the job site.

If a job is within 500 miles of your plant, that means you are making a positive contribution towards obtaining the locally manufactured point. If you are not so lucky, though, it is not, nor should it be, a make or break issue as again the point is calculated based on dollar value of the material and this is a small part of the finished building. The same can be said for the locally harvested portion of this credit. This point has a bigger twist, though, as most, if not all, manufacturers have several suppliers for each raw material. In turn, each of these suppliers likely has more than one source for its raw materials and so on. Consequently, sealant and weatherproofing product manufacturers have very little chance of knowing which point source raw materials originated from for any given production run.

The final credit area of concern in this part of LEED is the use of Rapidly Renewable Materials. Many of the products in the sealant and weatherproofing industry have roots in petroleum-based chemicals, which are becoming scarce. This emphasizes the need to explore chemicals from renewable sources such as natural-based chemicals derived from sources such as corn, soy or peanuts. It also leads to the need to explore additional sources of raw materials such as plant-based fillers. Again, while a small part of the building, good environmental stewardship and the eventual rise in the cost of limited resources should be forcing sealant and weatherproofing manufacturers into exploring these options. The bigger challenge is maintaining product quality while incorporating eco-friendly technology and maintaining price.

Additional credits within this section of LEED include:

- Building Reuse.
- Resource Reuse.
- Certified Wood. Wood used in the construction that is certified as being harvested and grown under the guidelines set forth by The Forestry Stewardship Council.

3.5 Indoor Environmental Quality:

Another aspect of LEED, besides the concerns over environmental impact, is the emphasis placed on providing a pleasant and healthy environment for building occupants and construction workers. Employees are the single largest dollar investment for any organization and providing an environment in which they can be more productive ensures a good return on investment.

First, VOC content is directly addressed in LEED via the Low-Emitting Materials Credit. For over a decade since the EPA passed the first federal laws in 1997, the industry has been working to reformulate products to lower VOC levels while maintaining or improving performance. Since 1997 stricter rules have come into existence, most notably those in California. In particular, the South Coast Air Quality Management District (SCAQMD), encompassing the Greater Los Angeles Area, and the Bay Area Air Quality Management District (BAAQMD), encompassing the San Francisco and Oakland areas, have traditionally set the strongest VOC regulations not only in the US, but in the world.

There are two basic requirements for sealants and adhesives outlined in LEED:

- Such products must adhere to the requirements set forth in SCAQMD Rule 1168.
- Such products must adhere to BAAQMD Regulation 8, Rule 51.

To do business in SCAQMD and BAAQMD regulated areas, most manufacturers have already made significant advancements in sealant technologies to produce compliant products. Similarly, coating systems used in interior work areas, utility closets, interior parking and similar areas must also meet VOC rules established by the SCAQMD in LEED situations. Yet again, this has already been accomplished by most manufacturers so they can continue to do business in the Los Angeles area.

As we have seen in other sections of LEED, the impact of/on the sealant and weatherproofing industry is not always so obvious in the Indoor Environmental Quality section. However, by looking at the basic function of the products manufactured, we can see the link.

The emphasis on Daylight and Outdoor Views is another area in Indoor Environmental Quality that is specifically designed for occupant comfort. The premise is that by eliminating the “cube world” of fluorescent lights and no windows, occupants will feel better emotionally. In addition, by allowing natural light in to illuminate space, electricity is saved as additional lighting is not required. The use of more windows means better glazing and curtainwall sealing must be provided to minimize HVAC consumption. Regarding HVAC, Ventilation Effectiveness (air exchange effectiveness) is also taken into account in LEED. Again, sealants have always been used to maximize the efficiency of HVAC systems.

While we are on the topic of sealing in/out, LEED places emphasis on Indoor Chemical and Pollutant Source Control. The intent of this credit is to keep the necessary evils of occupying and maintaining a structure (janitorial closets, restrooms, etc.) from contaminating office and/or living space. Again, sealants by definition have always been used to control the movement of air and water, and this is no exception. Even products not considered as typical sealants, such as firestopping sealants (Figure 4), work to insure indoor environmental quality, even while functioning to insure occupant health in a much different circumstance from the norm.

Figure 4: A Firestopping Sealant at a Through-Wall Penetration. While the primary focus of the sealant is to prevent fire and smoke migration to adjacent areas in the case of a fire, it has the secondary function of preventing everyday air flow, isolating possible pollutants and irritants in one room from another.

Additional credit areas in this section include:

- Carbon Dioxide Monitoring.
- Controllability of Systems.
- Thermal Comfort.

3.6 Innovation and Design Process:

Finally, LEED has what can best be described as a "free answer" section. There are two credits in this section:

- Innovation in Design. This is awarded if the USGBC determines a project has in some way gone above and beyond what was required for some aspect of LEED.
- LEED AP. This is awarded if a member of the project team holds the LEED AP title.

The first credit is possibly the most subjective of the credits in the LEED system. By providing consulting services to customers, any manufacturer could arguably help meet criteria for the former credit, particularly if the manufacturer has a LEED AP on staff. As LEED becomes more and more widespread, criteria for answering these questions may be more clearly defined.

4 What Can We Do?

Undoubtedly every manufacturer and probably everyone within each organization has a different view on what they could or should be doing to address the concerns of green building. Opinions range from the very enthusiastic and outright sold on marketing the idea to the hilt to those who think it is a fad and deserves minimal attention, if any at all.

Ultimately, there is only one answer to this question that we can probably all agree on- whatever it takes to help the customer. We should all be willing to help answer any questions and provide any information required. There are definitely a few questions we will all get:

- What is LEED?
- What is a VOC?
- What is the VOC content of this product?
- What is the recycled content of said product (both post-consumer and post-industrial)?
- Where is this product made?
- Where did the raw materials used in making this product come from?
- Is this product made with any renewable materials? If so, what percentage is the content? Where were these materials harvested?

How a manufacturer decides to not only answer these questions, but proceed further with pursuing green building, is going to determine the questions they are asked and how they will be seen in the marketplace. Having just said that, there are a few things we should all be doing:

- Providing basic product information related to LEED in a simple format to allow customers to fill-out their registration documents.
- Understand the basics of the LEED system including what the most pertinent system(s) are to the sealant and weatherproofing customer, how sealant and weatherproofing products are affected and, more importantly, how customers are affected.
- Have a plan to address not only LEED but other sustainable design issues related to the industry.

5 Summary

Ultimately, our society must deal with the environment of which we are a part. Given that building construction and occupancy has a significant impact on the environment, it is only logical that ecologically friendly building design and construction practices can significantly help to improve our environment. LEED in particular has made accomplishing such construction practices easy and has thus led to its greater acceptance. As sealant and weatherproofing product manufacturers, embracing this change and adapting ourselves to it not only makes sound business sense, but common sense as well.

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