Low Volatile Organic Compound (VOC) Building Products

This fact sheet describes Fort Collins building-code changes effective January 1, 2012, concerning Indoor Environmental Quality (IEQ). The new requirements apply to all residential and non-residential construction projects (including existing-building projects) for which a building permit is required.

Code reference

International Building Code **(IBC) Sec. 3603.2:** applies to commercial and all multifamily housing.

International Residential Code **(IRC) Sec. R325.1:** applies to Single-family detached housing, duplexes, townhomes.

"Construction materials, floor coverings and site-applied finishes, including sealants and adhesives, resilient flooring, carpeting and pad, site-applied paints, stains and varnishes, structural wood panels, hardwood veneer plywood, particle board and fiber board building products, and insulation shall meet specified volatile organic compound (VOC) emissions limits in accordance with California Department of Public Health (CDPH) 01350; GREENGUARD Environmental Institute GGPS.001 standard for building materials and finishes; or Green Seal® standards. Documentation demonstrating compliance shall be required with delivery of such materials and shall be available for inspection.

> ***Exception:*** *For alterations to existing buildings, carpeting and pad, structural wood panels, hardwood, veneer plywood, particle board and fiber board building products and insulation are not subject to this requirement*."

What are low-VOC materials and why are they important?

Volatile organic compounds (VOCs) refer to a class of chemicals that readily vaporize (become *volatile*) at typical indoor temperature and pressure conditions. Common VOCs include formaldehyde, benzene, toluene, flammable alcohols, household cleaning solvents, lacquers (including acetone-based cosmetic fingernail finishes), gasoline and other liquid combustion fuels.

VOCs can affect human health or have adverse effects on the environment. Some are known carcinogens. Indoor VOC sources include many building materials – such as carpet, composite wood products, insulation, paints, adhesives – as well as furniture, cleaning products, copy and fax machines, tobacco smoke and personal care products such as deodorant and cologne. U.S. EPA studies have found that indoor levels of common organic pollutants are several times higher than outdoor levels.

In contrast, low-VOC materials are formulated to reduce "off-gassing" of hazardous and potentially flammable vapor emissions. Low-VOC building products benefit the health of those individuals installing such materials in addition to long-term building occupants. Reducing the use of materials that emit pollutants is the most effective way to improve indoor air quality.

Do low-VOC products perform as well as conventional products?
Local retail suppliers indicate performance of low-VOC latex paint has significantly improved to the point of matching or surpassing solvent-based products, with little or no price premium.

Other regulated low-VOC building products – including composite-wood systems, adhesives, caulks, sealants, finishes and coatings – are steadily improving to the point of providing comparable in performance to more volatile counterparts.

How do I comply with the code requirement?
The building code requires the use of certain types of products specified in the code language above that are certified as "low-VOC" products or meet recognized standards limiting VOC emissions as verified by an independent testing agency. The building permit holder must have documentation to this effect available for inspection by the City of Fort Collins Building Services office.

Acceptable forms of documentation include copies of verified test report(s) from an approved independent testing agency – as determined by the City of Fort Collins Building Services office – denoting particular regulated product(s) do(es) not exceed the stipulated maximum allowable VOC emission limits.

To further long-term improvement of indoor air quality and health in general, City of Fort Collins residents are encouraged to choose low-VOC products within their homes and offices whenever possible.

Where can I find compliant VOC building products?
Compliant low-VOC building products are widely available in local paint stores, hardware stores and building supply outlets. The following contact list will help you locate the appropriate certification or standards organization for categories of building products.

Colorado Governor's Energy Office (GEO)
GEO is a good starting point, with an inclusive, on-line, user-friendly pdf *VOC Reference Sheet* listing specific compliant maximum VOC emission limits for most applications. Go to: http://rechargecolorado.com/images/uploads/pdfs/GEO_HPBP_Contractor_VOC_Reference_Sheet.pdf

International Green Construction Code ™
"Public Version 2.0," published by the International Code Council® (ICC), is also a detailed resource for compliant maximum VOC emissions. For a free download, go to:
http://www.iccsafe.org/cs/IGCC/Pages/default.aspx
The "2012 Edition" is scheduled for debut, spring 2012.

California Department of Public Health (CDPH) – Section 01350
Over two decades, CDPH has evolved a testing protocol entitled, *"Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."* This is typically referenced as *"Section 01350"* or *"CDPH 01350."* Results of the testing are commonly used to identify low-VOC-emitting products, typically certified by other independent ("third-party") testing agencies.
www.eurofins.com/product-testing-services/topics/ecolabels,-quality-labels/section-01350.aspx

GREENGUARD Environmental Institute's (GEI) Children and Schools Certification Program – Standard GGPS.001
GEI's mission is to improve human health and quality of life by enhancing indoor air quality and reducing people's exposure to chemicals and other pollutants. GEI certifies products and materials for low chemical emissions and is a free resource for choosing healthier products and materials for indoor environments. To receive its Indoor Air Quality certification, products must meet GEI's *GGPS.001.GREENGUARD IAQ Standard for Building Materials, Finishes and Furnishings*. Certified products can be found online at www.greenguard.org/en/QuickSearch.aspx.

Green Seal®
Green Seal® develops life cycle-based sustainability standards for products, services and companies and offers third-party certification for those that meet the criteria in the standards. Standards relevant to the code requirement are GS-11 (Paints and Coatings) and GS- 47 (Stains and Finishes). Certified products can be found online at www.greenseal.org/FindGreenSealProductsAndServices.aspx

Carpet and Rug Institute (CRI) – Green Label
CRI is a nonprofit trade association representing carpet manufacturers as well as their suppliers and service providers. CRI initially developed the Green Label program to help commercial specifiers locate carpet, padding and adhesives with low VOC emissions. More recently, the *Green Label Plus* programs sets even higher standards. For more information, visit www.carpet-rug.org.