



GREENGUARD Emission Criteria

For use with GREENGUARD low-emitting product certification program

Formaldehyde Emission Reduction Technology

Applicable to Process or Product designed to reduce free formaldehyde release or generation of free formaldehyde

Individual VOCs ¹	≤1/100 TLV and ≤½ CA chronic REL
Formaldehyde	≤0.0135 ppm/13.5 ppb
Total VOCs ²	≤0.22 mg/m ³
Total Aldehydes ³	≤0.043 ppm/43 ppb
Formaldehyde Reduction ⁴	≥80%
Total Phthalates ⁵	≤0.01 mg/m ³

¹ Any VOC not listed must produce an air concentration level no greater than 1/10 the Threshold Limit Value (TLV) industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438).

² Defined to be the total response of measured VOCs falling within the C₆ – C₁₆ range, with responses calibrated to a toluene surrogate.

³ Defined to be the total response of a specific target list of aldehydes (2-butenal; acetaldehyde; benzaldehyde; 2,5-dimethylbenzaldehyde; 2-methylbenzaldehyde; 3-and/or 4-methylbenzaldehyde; butanal; 3-methylbutanal; formaldehyde; hexanal; pentanal; propanal), with each individually calibrated to a compound specific standard.

⁴ Processes implemented to reduce emissions of formaldehyde in a finished product must demonstrate a formaldehyde reduction of ≥ 80% of original value. Formaldehyde emissions must be reduced by 80% within 168 hours of the product being used for production or installation.

⁵ Defined to be the total response of a specific target list of phthalates including dibutyl (DBP), diethylhexyl (DEHD), diethyl (DEP), butylbenzyl (BBP), di-octyl (DOP), and dimethyl (DMP) phthalates (conducted using a modified phthalate specific analytical method, OSHA 104).

GREENGUARD Certification affirms that a product's emissions fall within the limits selected by GREENGUARD from reputable third-party risk based criteria, as identified above. GREENGUARD program testing is conducted consistent with a defined protocol and does not measure emissions under usage conditions other than those defined in the protocol and does not address potential environmental impact other than chemical emissions.