

Vitro Flat Glass Glazing Products Information on: Ingredient Disclosure; Compliance with EU RoHS Directive; REACH Regulations; Conflict Minerals Reporting; California Proposition 65 and Safety Data Sheets, (Material Safety Data Sheets).

The following information is provided as Vitro’s response to customer requests for Ingredient Disclosure; Compliance with the European Union, (EU) Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, (RoHS) Directive; REACH regulations; Conflict Minerals reporting; California Proposition 65; and product / material Safety Data Sheets, (SDS) concerning Vitro Flat Glass Products as produced by Vitro.

Vitro now manufactures many different glass products that meet the diverse and demanding requirements of virtually every application that utilizes glass. These products include many different coated glass products, mirrored glass, various tinted substrates, ultra-clear, and clear glass.

Environmental, Health & Safety Policy

"Vitro will market, distribute and manufacture products globally in a responsible manner that protects employees, neighbors, customers and the environment. To meet this objective, the Vitro EHS Process, our management system, is integrated into each of our strategic business units. Our policy incorporates the elements of Responsible Care® and Coatings Care® initiatives and emphasizes our commitment to continuous improvement and sustainability."

Ingredient Disclosure

Vitro Flat Glass receives requests from its customers to confirm details of the composition of the glass products that we supply.

The final composition, after melting, by weight percent of Vitro Industries Soda Lime Clear Float Glass is shown below.

Table 1. – Glass Composition

Vitro Soda Lime Float Glass		
Weight Percent, %	Compound	Symbol
73 %	<i>Silicon Dioxide</i>	SiO ₂
14 %	<i>Sodium Oxide</i>	Na ₂ O
9 %	<i>Calcium Oxide</i>	CaO
3 %	<i>Magnesium Oxide</i>	MgO
1 %	<i>Trace elements such as, but not limited to: Salt cake - Na₂O + SO₃, Rouge - Fe₂O₃ , Coal - C</i>	

Tinted glasses are very similar in composition to clear glass with adjustments to trace elements for coloring purposes and sometimes accompanied by minor changes to the other components where necessary for proper melting, such as with Vitro Solargray® Glass where CaO is adjusted up to 9.8% and MgO down to 2.8%.

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These requests are often driven by legislation that prohibits the use of certain chemical substances in a particular application, or by the desire of the customer to eliminate certain substances from its product range, or to allow the customer to manage its product portfolio by understanding the full range of substances that it uses.

Vitro has prepared this document based upon its knowledge of Flat Glass products and information (such as Safety Data Sheets [SDSs]) provided to Vitro by its materials suppliers and in accordance with Vitro's understanding of the U.S. Occupational Safety & Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) and Canada's Workplace Hazardous Materials Information System (WHMIS).

For Vitro products which are mixtures of chemicals that have not been toxicologically tested as a whole, these regulations require the SDS to identify the specific hazards of any hazardous component present in the mixture at 1% or greater and any carcinogen, teratogen, embryo toxin, reproductive toxin, respiratory tract sensitizer or mutagen present at 0.1% or greater (Call-outs). Additionally, Vitro identifies lead-containing materials if they are present in a product at 0.06% or greater or lower if required by legislation. (Call-out). Therefore, all hazardous components of a Vitro product, where hazardous is defined by the applicable regulations, are listed on the SDS if they are present in the product at or greater than their Call-out amount.

For instructions on how to obtain a SDS for a Vitro Architectural Glass product see the SDS section of this bulletin.

Compliance with EU RoHS Directive

The EU Directive 2011/65/EC "Restriction on the Use of Certain Hazardous Substances" (RoHS) and subsequent amendments up to and including 2015/863/EC requires all Member States (per Article 4(1) of the Directive) to ensure that materials and components of electrical and electronic equipment put on the market do not contain the following specific substances: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs) or polybrominated diphenyl ethers (PBDEs), or the phthalates Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP), Diisobutyl phthalate (DIBP).

Schedule 1 EN WEEE 3113 (page 61) suggests that Vitro Architectural Glass' products are not within scope, therefore there are no reporting requirements.

As a responsible supplier and a service to our downstream customers, we have reviewed Vitro Flat Glass products with regard to the EU RoHS Directive and based on our knowledge of these products and the information (such as SDSs) provided to Vitro by its raw material suppliers, the Vitro Flat Glass Products listed in Table 2 do not contain cadmium, hexavalent chromium, lead, mercury, polybrominated biphenyls (PBBs) polybrominated diphenyl ethers (PBDEs) or the phthalates at levels greater

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than the tolerated maximum concentration values established by the EU Commission Directive 2015/863/EC.

REACH Regulation

Vitro is committed to meeting its legal obligations under “Registration, Evaluation and Authorisation of Chemicals” (REACH) Regulation, as a manufacturer, importer and downstream user of chemical substances in the European market. The REACH regulation includes “articles”. An article is defined as something of which the shape and design are more important than the chemical composition. The European Chemicals Agency (ECHA) has published guidance of these requirements available at:

<http://echa.europa.eu/support/guidance>

As glass is considered an article, Vitro has no registration or notification requirements in accordance with the following guidance from the ECHA.

Uncoated glass: According to EU Official Journal “Commission Regulation (EC) No. 987/2008, glass is a singular substance, rather than a mix of component materials. Chemical characteristics of batch materials, including risk to human health and the environment, are not comparable in properties when integrated into a glass matrix. The glass matrix is not a Substance of Very High Concern (SVHC). Manufacturers and importers are not obliged to communicate information on the glass matrix according to Article 33 (1) and Article 7 (2) et seq of the REACH Regulation.

Vitro products are not classified as dangerous according to Regulation (EC) No 1272/2008 and do not contain constituents meeting the criteria as dangerous in accordance with Regulation (EC) No 1272/2008 present in concentrations above the lowest of the applicable concentration limits set out in Directive 1999/45/EC and Annex XIV.

Coated and Mirrored glass: From Table 2. Within the link below:

https://echa.europa.eu/documents/10162/23036412/nutshell_guidance_articles2_en.pdf/1e13dcce-b46b-43cb-904e-6c4675613e9d

Scenario III Partially Coated Article: “The concentration of the Candidate List substance in the (fully/partially) coated article is calculated over the total weight of the coated article, i.e. dividing the weight of the Candidate List substance in the coated article by the total weight of the article.”

None of the SHVC contained within Annex XVII are present in Vitro Architectural Glass’ products or packaging in quantities equal to or above 0.1%.

See also: ECHA “Guidance on requirements for substances in articles June 2017 Version 4.0”

Conflict Minerals Reporting

Section 1502 of the 2012 Dodd-Frank Wall Street Reform and Consumer Protection Act added Section 13(p) to the Securities Exchange Act of 1934. This addition

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obligates the Security Exchange Commission to promulgate rules requiring SEC registrants whose manufactured products utilize conflict minerals that are necessary to the functionality or production of the product, to disclose annually whether any of those minerals originated in the Democratic Republic of the Congo or an adjoining country.

The use of tin is required in the production of Vitro float glass and coated glass products. A portion of our suppliers knowingly source this tin from smelters in countries covered by the regulation. In all cases we have received the necessary information from each supplier ensuring the materials are conflict free. In addition, due diligence measures and corrective action procedures are in place to regularly confirm our suppliers are meeting Vitro's expectations.

The latest (RMI) Conflict Minerals Reporting Template is available upon written request to Vitro Flat Glass Technical Services.

California Proposition 65

The "Safe Drinking Water and Toxic Enforcement Act of 1986", better known as Proposition 65 (Prop 65), requires businesses to warn persons in California before exposing them to certain chemicals that can cause cancer, birth defects or other reproductive harm.

Businesses are required to provide a "clear and reasonable" warning before knowingly and intentionally exposing anyone to a listed chemical in a product. One of these

chemicals, Ethyl Acrylate, is part of the resin in acrylic beads used to make uncoated glass separating powder, a powder applied between lites to prevent scratching on uncoated glass products.

Vitro Architectural Glass is currently evaluating whether alternative separating powders that do not contain Ethyl Acrylate or any other Prop 65 chemicals are available for this application. In the meantime, to ensure compliance with warning regulations that take effect on August 31, 2018, the following warning label will be affixed to all uncoated glass products:

⚠WARNING: The glass separating powder on this glass can expose you to ethyl acrylate, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov. Use gloves when handling glass.

Vitro is not aware of any potential exposure to any other Prop 65 listed chemicals from Vitro's coated or uncoated glass products, as shipped from Vitro. The warning label pertains only to the glass separating powder on Vitro's uncoated glass products. Whether a product made using Vitro's glass requires a Prop 65 warning must be determined by each Vitro customer, based on its subsequent glass processing (e.g., washing, chemical or physical treatment, manufacturing, etc.) and the presence or absence of the glass separating powder in the customers product.

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Safety Data Sheets

Vitro float glass products are considered to be "articles" as defined by OSHA 29 CFR 1910.1200 (and all global hazard communication regulations) and as such there are no specific SDS or labeling requirements for our products.

As a service to our customers Vitro provides SDS's for all of our soda lime float glass products. See Table 2 below.

SDS's are prepared with the intention that all hazardous components of a Vitro product, where hazardous is defined by the applicable regulations, are listed on the SDS if they are present in the product at or greater than their Call-out amount.

In addition, although not required, Vitro distributes Safety Data Sheets (SDS) to our Sungate[®] and Solarban[®] coated glass customers who perform edge deletion. These products contain a very small percentage of metals, and Vitro has determined that workers involved in the edge deletion process may be exposed to metal dust. The OSHA Permissible Exposure Limit (PEL) for silver is 0.01 mg/m³ and the Ontario Occupational Exposure Limit, (OEL-2015) is 0.1mg/m³. Consult the Sungate[®] and Solarban[®] Magnetic Sputtered Vapor Deposition, (MSVD) Coated Float Glass SDS (See Table 2 below) and Vitro Technical Document TD-141 for further information.

Please contact Vitro Flat Glass Technical Services at 412-820-8500 if you have additional questions regarding Vitro products.

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Table 2. - Vitro SDS Listing

SDS Title	Included Products	Product Code
Vitro Non-Coated Float Glass	Clear, Acuity™, Starphire®, Solarbronze®, Solargray®, Atlantica®, Solexia®, Graylite® II, Optigray®, Optiblue®, Azuria®, Pacifica®, Pavia™, Solarblue®, Solarphire® and Solarphire® PV.	<u>01048</u>
Non-Metal Based Offline Coated Float Glass	Solarphire® NaB, Solarphire® AR, Solarphire® 2XAR and Clarvista®	<u>01573</u>
Vitro Chemical Vapor Deposition (CVD) and Spray Pyrolysis Coated Float Glass	Solarphire® STCO, Solarphire® HTCO, Solarcool® Coated Substrates and Vistacool® Coated Substrates.	<u>01049</u>
Magnetic Sputtered Vapor Deposition (MSVD) Coated Float Glass	Sungate® 400, Sungate® 400VT, Sungate® 460, Sungate® 460VT, Solarban® 60, Solarban® 60VTII, Solarban® 67, Solarban® 67VT, Solarban® 70XL, Solarban® 70XLVT, Solarban® 72VT, Solarban® 90, Solarban® 90VT, Solarban® z50, Solarban® z50VT, Solarban® z75VT, Solarban® R100VT.	<u>01050</u>
Mirrored Float Glass	All thicknesses and substrates of Platia™	<u>01051</u>

All SDS documents can be obtained by visiting <http://www.Vitroglazings.com/en-US/Resources/Technical-Info/MSDS.aspx>. Search menus are available on the page to select country and language for each SDS Title.

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HISTORY TABLE		
ITEM	DATE	DESCRIPTION
Original Publication	March 31, 2006	TD-143
Revision 1 - 8	Multiple	See archived file for update descriptions.
Revision 9	September 24, 2015	Modified to incorporate all metals. Removal of discontinued products. Reformatted table and added instructions. Addition of dates to code enforcement bodies. Editorial changes.
Revision 10	January 19, 2016	Addition of Glass Composition Table, changed Product Code hyperlinks and footnote 1 in Table 2 and deleted old SDS instructions.
Revision 11	February 22, 2016	Addition of Conflict Minerals, REACH and Glass composition text. Addition of Solarban 90, 90VT and z75. Addition of Sungate 460 and 460VT. Revision date is the date of verification of compliance to EU RoHS, REACH, and Conflict Minerals regulations.
Revision 12	October 04, 2016	Updated to Vitro Logo and format
Revision 13	August 06, 2018	Added Prop 65 language. Update of compliance statements for REACH and RoHS. Revision date is the date of verification of compliance to EU RoHS, REACH, and Conflict Minerals regulations. Added Acuity, Pavia and Platia to SDS table.

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