

### Why Z-DENS Polypropylene Vent Systems

Polypropylene (PP) is comprised of only 2 elements carbon & hydrogen and is made without the use of any toxic or carcinogenic materials, heavy metals or chlorides.

PP is manufactured from propylene monomer, a waste gas of the petroleum industry which used to be burned off increasing greenhouse gases. Therefore the more PP used the LESS greenhouse gases are emitted.

PP has a higher maximum flue gas temperature limit (230°F) as compared to PVC (149°F) & CPVC (194°F). PP is easily 100% recyclable where PVC & CPVC is not due to its chemical composition and various additives.

- PP is environmentally friendly.
- PP has a higher temperature limit and range (working & softening) making it a safer vent material.
- PP is non-toxic.
- PP is more chemically resistant to aromatic hydrocarbons (found in fuels i.e. benzene and toluene) and acids (sulfuric, nitric & hydrochloric) as compared to PVC & CPVC.
- PP will not leach out any chlorides which can attack metal heat exchangers.
- When burned PP releases less smoke and no toxic smoke.

Poly vinyl chloride (PVC) & chlorinated polyvinyl chloride (CPVC) are comprised of 3 elements carbon, hydrogen & chlorine and is made from vinyl chloride monomer (VCM) which is very toxic.

VCM exposure has been linked to rare form of liver cancer, angiosarcoma. EPA has classified vinyl chloride as a Group A, human carcinogen.

To make PVC & CPVC more flexible plasticizers called phthalates are added. Phthalates are carcinogens and can leach out. When burned PVC produces more smoke than PP. When burned (building or back yard fires or incinerated) PVC & CPVC also produce a mixture of highly toxic gases such as hydrogen chloride and dioxins due to the chlorine in PVC & CPVC where PP does not.

#### U.S. EPA states:

*"Dioxins are called persistent organic pollutants (POPs), meaning they take a long time to break down once they are in the environment. Dioxins are highly toxic and can cause cancer, reproductive and developmental problems, damage to the immune system and can interfere with hormones."*

PVC also has a lower surface energy and ages faster when compared to PP.

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