

Laser Cutting and Hot Gas Welding KYDEX® Thermoplastic Sheet

For information applicable to KYDEX® FST please refer to 300 series technical briefs.

TB - 110-E

General Information

Laser cutting and hot gas welding of KYDEX® sheet are two techniques that are potentially hazardous due to the emission of fumes. Reports indicate that these techniques work well but should only be performed under the proper conditions.

For example, KYDEX® sheet emits hydrogen chloride fumes when cut with a laser or hot gas welded. The filters that are commonly used to clean up the fumes, which originate from laser cutting of metals, will not remove the fumes produced from plastics. These points indicate that workers involved with laser cutting of KYDEX® sheet may potentially be exposed to unacceptable levels of hazardous substances. If laser cutting or hot gas welding is going to be attempted, employers need to install the correct ventilation systems so that exposures are controlled adequately. A local exhaust system with a capture velocity of at least 100 feet per minute at the point of operation is recommended unless alternate methods such as an enclosed fume hood or downdraft workstation are used.

Exposure to fumes given off during the hot gas welding of KYDEX® sheet is not normally likely to give cause for concern. However, there may be a health risk where the welding takes place in confined spaces in which the welder's head is close to the welding operation, and where ventilation is restricted. In such cases a cartridge respirator with organic vapor/acid gas filters is recommended as minimum protection.

Note: Of greater concern is exposure to hazardous fumes during hot gas welding of fluoropolymers such as PVDF, ECTFE, PFA and FEP, which can cause influenza-like symptoms, known as "polymer fume fever". For this reason, suppliers recommend the use of adequate ventilation and even breathing apparatus when hot gas welding these materials.

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