



Designation: E1542 – 21

Standard Terminology Relating to Occupational Health and Safety¹

This standard is issued under the fixed designation E1542; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This terminology standard provides a compilation of consensus definitions of terms used in ASTM occupational safety and health standards.

1.2 This terminology standard does not purport to be an exhaustive lexicon. Rather it defines terms relevant to occupational health and safety.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

[E1132 Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica](#)

[E2349 Practice for Safety Requirements in Metal Casting Operations: Sand Preparation, Molding, and Core Making; Melting and Pouring; and Cleaning and Finishing](#)

[E2350 Guide for Integration of Ergonomics/Human Factors into New Occupational Systems](#)

[E2523 Terminology for Metalworking Fluids and Operations](#)

[E2565 Guide for Consensus-Based Process for an Occupational Safety and Health Standard That Includes an Occupational Exposure Guideline](#)

¹ This terminology is under the jurisdiction of ASTM Committee E34 on Occupational Health and Safety and is the direct responsibility of Subcommittee E34.01 on Terminology.

Current edition approved April 1, 2021. Published April 2021. Originally approved in 1993. Last previous edition approved in 2020 as E1542 – 20b. DOI: 10.1520/E1542-21.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[E2875 Guide for Personal Protective Equipment for the Handling of Flat Glass](#)

3. Terminology

3.1 Health and safety terms specific to metalworking fluids and the metalworking environment are found in Terminology [E2523](#).

3.2 Generic Terms and Their Definitions:

3.2.1 *ceiling limit*—an exposure which shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, then the ceiling limit shall be assessed as a 15-min time-weighted average exposure which shall not be exceeded at any time over a working day, except for substances which cause immediate irritation upon short exposure.

3.2.2 *short-term exposure limit (STEL)*—the 15-min time-weighted average exposure which shall not be exceeded at any time during a workday, even if the occupational exposure limit is not exceeded. Exposures above the occupational exposure limit up to the STEL should not be longer than 15 min and should not occur more than four times per day. The minimum interval between these exposures should be 60 min.

3.3 Terminology Based on Existing E34 Standards:

3.3.1 *adjustable barrier guard, n*—physical barrier with adjustable sections that is designed to prevent entry of any part of the body into the hazard zone by reaching through, over, under, or around the barrier. **E2349**

3.3.2 *bail/spreader, n*—hoop or arched connection between the crane hook and ladle or between crane hook and ladle trunnions. **E2349**

3.3.3 *blast, n—in foundry operations*, air or oxygen-enriched air that is blown under pressure into a cupola for supporting combustion. **E2349**

3.3.4 *blast compartment, n*—that portion of the blasting enclosure that contains the blasting media propulsion device. **E2349**

3.3.5 *blow plate, n*—plate affixed to the magazine or blow head of a core- or mold-blowing machine, having holes or slots through which sand or other media in the magazine or blow head passes into the core or mold cavity or around the pattern when air or other gas pressure is applied to the machine. **E2349**

*A Summary of Changes section appears at the end of this standard

3.3.6 *bottom discharge (pour, tap) ladle*, *n*—ladle that has its molten metal contents discharged through an opening in the bottom. **E2349**

3.3.7 *channel furnace*, *n*—electric induction furnace in which heat is electrically induced in the metal in a refractory channel. **E2349**

3.3.8 *charge*, *n*—in foundry operations, material introduced into a melting furnace for the production of molten metal. **E2349**

3.3.9 *core*, *n*—in foundry operations, preformed aggregate or collapsible insert placed in a mold to shape the interior or that part of a casting that cannot be shaped by the pattern. **E2349**

3.3.10 *core binder(s)*, *n*—any material, liquid or solid, which is used to bond core aggregates. **E2349**

3.3.11 *corebox*, *n*—a (wood, metal, or plastic) structure, the cavity of which has the shape of the desired core that is to be made therein. **E2349**

3.3.12 *coreless furnace*, *n*—electric induction furnace consisting of an induction coil surrounding a crucible or refractory lining in which metal is melted or molten metal is retained. **E2349**

3.3.13 *core- or mold-blowing or shooting machine*, *n*—machine for injecting sand or other media into the core or mold cavity by means of compressed air or other gas. **E2349**

3.3.14 *crane ladle*, *n*—ladle handled by an overhead crane. **E2349**

3.3.15 *crucible*, *n*—in foundry operations, container used for the melting, holding, and pouring of metal. **E2349**

3.3.16 *cupola*, *n*—in foundry operations, vertical shaft-type furnace for melting and/or producing molten metal by combusting coke or other fuels using a blast, and possibly additional pure oxygen, that is introduced through the cupola tuyeres. **E2349**

3.3.17 *cupola drop*, *n*—materials dropped from the cupola at the end of a heat. **E2349**

3.3.18 *direct arc furnace*, *n*—furnace in which heat is produced by an electric arc between electrodes and the charge. **E2349**

3.3.19 *drop area*, *n*—in foundry operations, the area directly under the cupola that receives the hot bed coke or other hot materials from the inside of the furnace when the bottom doors or side access door are opened. **E2349**

3.3.20 *drop zone*, *n*—the zone adjacent to the drop area that is exposed to drop hazards during the dropping process. **E2349**

3.3.21 *dross*, *n*—metal oxides or foreign matter, or both, that accumulates on the surface of nonferrous molten metal. **E2349**

3.3.22 *finishing*, *v*—in foundry operations, attainment of a desired surface finish or finish characteristics by such means as abrasive impingement, grinding, or polishing. **E2349**

3.3.23 *flask*, *n*—in foundry operations, a container, without top or bottom, used to contain the sand or other media while it is being formed. It is made in two or more parts; the lower part

is called the “drag” and the upper part is called the “cope.” Intermediate sections, if any, are called “cheeks.” **E2349**

3.3.24 *flask lifting device*, *n*—chains, rods, bails, cables, slings, and other materials used to support a load such as a flask for turning, inverting, or transporting. **E2349**

3.3.25 *flat glass*, *n*—general term covering glass in its annealed state, such as sheet glass, lite of glass, float glass, various forms of rolled glass, and raw products derived from glass. **E2875**

3.3.25.1 *Discussion*—This definition is not intended to apply to heat-tempered or laminated glass products. With heat-tempered or laminated glass products, refer to your local risk assessment.

3.3.26 *gas handling system*, *n*—the collective group of equipment that draws cupola gas from the furnace. **E2349**

3.3.27 *heat*, *n*—in foundry operations, stated weight of metal obtained from a period of melting in a cupola or furnace or the time required to melt and process this material. **E2349**

3.3.28 *indirect arc furnace*, *n*—furnace in which heat is produced by an electric arc between electrodes. **E2349**

3.3.29 *informed decision*, *n*—agreement reached by affected stakeholders, which is obtained by a process by which affected stakeholders (1) are involved in a participative process that creates common understanding of the issues, concerns, and priorities held by all affected stakeholders; (2) assess, prioritize, and select actions to improve the problem situation; and (3) achieve consensus on specific initiatives related to the consensus-based standard development process. **E2565**

3.3.30 *job*, *n*—set of tasks performed by one or more workers. **E2350**

3.3.31 *knowledge base*, *n*—organized body of information applicable to the integration of ergonomics into new occupational systems including both general ergonomic resources, such as those found in the Bibliography, and the experiences of the organization. **E2350**

3.3.32 *knowledge base, general*, *n*—ergonomics textbooks, guidelines, recommendations, reports of other companies’ ergonomics programs, and so forth. **E2350**

3.3.33 *knowledge base, internal*, *n*—organized account of the organization’s positive and negative experiences with occupational processes. **E2350**

3.3.34 *knowledge base, project*, *n*—working collection of experiences for the current project in which decisions made at each stage are added to the project knowledge base for use at later design stages, and after the completion of a project, the project knowledge base is integrated into the internal knowledge base. **E2350**

3.3.35 *ladle handler*, *n*—mechanism used to suspend, transport, raise, and/or lower a ladle. **E2349**

3.3.36 *ladle pouring stand*, *n*—structural device for supporting or tilting a ladle, or both. **E2349**

3.3.37 *lance, oxygen*, *n*—device consisting of steel pipe, tubing, oxygen source, and controls. **E2349**

3.3.37.1 *Discussion*—Frequently used to open frozen tap or

slag holes; also occasionally to oxidize impurities in molten metal bath. **E2349**

3.3.38 *lip*, *n*—*in foundry operations*, formed “U” or “V” depression in a molten metal outlet to confine the stream. **E2349**

3.3.39 *main burner*, *n*—primary combustion device commonly ignited by a secondary source. **E2349**

3.3.40 *mold*, *n*—*in foundry operations*, form that contains the cavity into which molten metal is poured to produce a casting of definite shape and outline. **E2349**

3.3.41 *molding machine*, *n*—mechanical device for compacting molding media (usually sand) about the pattern(s), thus forming the mold. **E2349**

3.3.42 *moving frame*, *n*—that part of a molding machine that supports the flask and imparts the motions necessary to the mold-making process. **E2349**

3.3.43 *muller*, *n*—machine that blends, coats, kneads, or mechanically combines various sand(s) or other media used for foundry purposes with binders and other additive agents. **E2349**

3.3.43.1 *Discussion*—Typically, it consists of a circular container in which rotating plows or mill wheels (mullers), or both, are mounted. **E2349**

3.3.44 *occupational exposure guideline (OEG)*, *n*—a guideline used in an ASTM standard for limiting exposure to a chemical, physical, or biological agent to prevent unacceptable risk of harm to worker populations. OEGs may be established for mixtures. **E2565**

3.3.44.1 *Discussion*—An OEG may take one or more of several forms and should include considerations of the averaging time (for example, ceiling, short term limits, full shift limits, etc.) and the target (individual workers, process of activity, population, position, etc.). **E2565**

3.3.45 *occupational exposure limit (OEL)*, *n*—generic term limiting exposure to a chemical, physical, or biological agent. **E2565**

3.3.46 *occupational exposure limit to quartz dust*—the maximum time-weighted average (TWA) concentration of respirable quartz particles to which nearly all workers may be repeatedly subjected over a normal 10-h day or a 40-h week without known adverse health effects. Ceiling and lifetime exposures are undefined. **E1132**

3.3.47 *pattern*, *n*—*in foundry operations*, form of wood, metal, or other material against which molding material is compacted to make a mold for casting metals. **E2349**

3.3.48 *pouring*, *n*—*in foundry operations*, final transfer of molten metal before its solidification into its intended form. **E2349**

3.3.49 *pouring area*, *n*—location in a foundry where molten metal is poured into molds or transferred from a ladle to a furnace. **E2349**

3.3.50 *qualified engineer*, *n*—one who possesses an engineering degree from an accredited institution of higher learning or a certificate of professional standing and has engineering experience with the kind of work and equipment involved. **E2349**

3.3.51 *qualified person*, *n*—individual determined by the employer to have the training and experience to safely operate or maintain the equipment involved. **E2349**

3.3.52 *reactive metal*, *n*—any metal that is readily oxidized with the release of large quantities of heat. **E2349**

3.3.53 *runout pit*, *n*—pit placed below or in front of a furnace, or both, to receive molten material in an emergency. **E2349**

3.3.54 *sand mixer*, *n*—machine for conditioning mold and core sand by controlled mixing with additives. **E2349**

3.3.55 *sand muller*, *n*—machine for conditioning mold and core sand by controlled mixing with additives. **E2349**

3.3.56 *sand system*, *n*—that part of a foundry installation that processes and transports sand or other media in bulk form. **E2349**

3.3.57 *screen (sand)*, *n*—sieve or riddle with openings of definite size used to separate one grain size from another or to remove lumps and foreign objects from sand. **E2349**

3.3.58 *skimming*, *n*—*in foundry operations*, removing slag or dross from the surface of the molten metal. **E2349**

3.3.59 *skip hoist*, *n*—basket, bucket, or other container that is drawn or elevated on rails by a pulling or pushing action. **E2349**

3.3.60 *slag*, *n*—nonmetallic byproducts and contaminants generated during the melting, transferring, and holding of molten metal. **E2349**

3.3.61 *slag hole or door*, *n*—opening in the furnace through which slag is removed. **E2349**

3.3.62 *slinger*, *n*—machine that throws sand or other media into a flask, corebox, or other container. **E2349**

3.3.63 *stakeholder (interested party)*, *n*—person or organization that can affect, be affected by, or perceive itself to be affected by a decision or activity. **E2565**

3.3.64 *tapping*, *v*—*in foundry operations*, removing molten material from the furnace by opening a tap hole. **E2349**

3.3.65 *transfer car*, *n*—*in foundry operations*, vehicle used for transporting vessels or material(s), usually in a fixed path. **E2349**

3.3.66 *trunnions*, *n*—shafts used to support, turn, or tilt a vessel. **E2349**

3.3.67 *tumbling barrel*, *n*—power-driven rotating drum or barrel in which castings are cleaned or polished, or both. The castings act as abrasives for each other or are tumbled in an abrasive media. **E2349**

3.3.68 *tuyere*, *n*—nozzle opening through which the blast enters a cupola. **E2349**