Designation: E1522 – 93 (Reapproved 2019)

Standard Specification for Autoclavable Protective Coatings on Laboratory Glassware[1]

This standard is issued under the fixed designation E1522; 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 specification covers the requirements for autoclavable protective coatings on laboratory glassware up to and including the 4L size. These coatings will not prevent the escape of liquids from vessels under pressure.

1.2 *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. Chemical Resistance

2.1 The physical resistance (see 3.1) of the coating shall be acceptable after continuous exposure for one hour to acids, (other than chromic), alcohols, bases, aliphatic hydrocarbons (except as noted below), and oxidizing agents at room temperature. The intent of the coating is to allow enough time after breakage for proper disposal, not for continued use.

2.2 The coating shall *not* be required to withstand exposure to aldehydes, esters, aromatic hydrocarbons, halogenated hydrocarbons, or ketones.

3. Physical Resistance

3.1 The thickness and character of the undamaged coating shall be such that it will not permit the immediate total loss of liquid at 15 °C to 70 °C from a protected stoppered or capped container filled to rated capacity when dropped from a height of 40 in. onto a floor made of ⅛ in. maximum vinyl tile over concrete, but will prevent the escape of glass.

4. Autoclavability

4.1 The coating shall withstand 15 min autoclave cycles at 121 °C and 15 psig, although some air pockets under the coating and some other surface depressions may become permanent. Some moisture may be absorbed through the coating during autoclaving and cause a slight clouding, but this clouding must be removable by oven drying at not over 110 °C. Drying time will vary depending on size and configuration of vessel.

4.1.1 Coating life will vary depending on size and configuration of vessel and size and procedure of autoclave used. Also allow coating to clear and dry before repeating autoclave cycle.

4.2 **CAUTION:** Loosen or remove all caps or closures before autoclaving and allow autoclave pressure to return to zero before removing glassware to minimize the formation of air pockets under the coating. Also allow coating to clear and dry before repeating autoclave cycle. Vacuum drying may distort the coating.

5. Temperature

5.1 This coating should not be exposed to dry heat above 110 °C or moist heat above 121 °C. However, prolonged exposure to either dry or wet heat will cause discoloration and embrittlement. Discolored coatings may no longer be usable. Manufacturers should be consulted for specific applications.

6. Microwaving

6.1 Containers filled with aqueous solutions and having dry coatings (no obvious moisture under or on them) shall withstand microwaving provided that the 110 °C temperature limit is not exceeded. Wet coatings may develop steam pockets and cause the coatings to separate.

6.1.1 Coating life will vary depending on size and configuration of vessel, temperature achieved and time at such temperature.

6.2 **CAUTION:** Loosen or remove all caps or closures before microwaving.

7. Thermal Combustion

7.1 Combustion of various coatings will result in the release of certain chemicals. Combustion of PVC, for example, will result in the release of the major combustion products of carbon dioxide, carbon monoxide, hydrogen chloride and water. Provision should be made to deal appropriately with such combustion products if combustion occurs.

[1] This specification is under the jurisdiction of ASTM Committee E41 on Laboratory Apparatus and is the direct responsibility of Subcommittee E41.01 on Laboratory Ware and Supplies.

Current edition approved July 1, 2019. Published August 2019. Originally approved in 1993. Last previous edition approved in 2013 as E1522 – 93(2013). DOI: 10.1520/E1522-93R19.