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(R) Glossary of Automotive Inflatable Restraint Systems

***Foreword*—**This glossary is prepared to serve as a basis for improving communication about and understanding of automobile inflatable restraint systems. Representatives from automobile manufacturers, government agencies, and restraint system suppliers provided input on the systems with which they are familiar.

***1. Scope*—**The terms included in the/Glossary are general in nature and usually apply to more than one manufacturer's system. All terms in Section 3 apply to automotive restraint systems in general 'which are initiated by an electric or mechanical stimulus upon receipt of a signal from a sensor. All terms in Section 4 apply primarily to the initiator used in automotive restraint systems. In some cases, the same terms appear in both sections to allow for the general definition and for definitions applying specifically to initiators.

These terms are intended to reflect existing designs and the Glossary will be updated as information on other types of systems becomes available.

Appendix A is included to identify terminology that is no longer in common use or specifically applicable to inflatable restraint systems, but was published in the April 1988 version of SAE J1538.

2. References

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J885—Human Tolerance to Impact Conditions as Related to Motor Vehicle Design
SAE J1113-4—Conducted Immunity, Bulk Current injection (BCI) Method
SAE J1538—Glossary of A Automotive Inflatable Restraint Terms
SAE J1630—Driver or Passenger Airbag Module Deployment Test Procedure
SAEJ1980—Guidelines for Evaluating Out-of-Position Vehicle Occupant Interactions with Deploying Airbags
SAEJ2238—Airbag Inflator Ballistic Tank Test Procedure Gas Generators Used in Inflatable Restraint Systems
SAE/USCAR-2—Standard for Automotive Electrical Connection Systems, August 1997

TO PLACE A DOCUMENT ORDER; (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS http://www.sae.org

2.1.2 FEDERAL PUBLICATIONS—Available from the Superintendent of Documents, U.S. Government Printing Office, Mail Stop: SSOP, Washington, DC 20402-9320.

49 CFR 571.205 Standard No. 205—Glazing Materials
49 CFR 571.208 Standard No. 208—Occupant Crash Protection
49 CFR 571.214 Standard No. 214—Side Impact Protection
49 CFR 171.8—Definitions and abbreviations
49 CFR 172.101—Purpose and use of hazardous materials table
49 CFR 173.54—Forbidden explosives

2.1.3 IEE PUBLICATION—Available from IEEE, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331.

IEEE STD-100-1992, "The New IEEE Standard Dictionary of Electrical and Electronics Terms" (Institute of Electrical and Electronics Engineers, New York, 1993)

2.1.4 MILITARY PUBLICATIONS—Available from DODSSP, Subscripton Services Desk, Building 4D, 700 Robins Avenue, Philadelphia, PA 19111-5094.

MIL-HDBK-83578, "Department of Defense Handbook: Critiera for Explosive Systems and Devices used on Space Vehicles," Preliminary, 20 April 1998
MIL-STD-202F, "Test Methods for Electronic and Electrical Component Parts," 1 April 1980, w/ Notice 13, 31 January 1996
MIL-STD-3318, "Fuze and Fuze Components, Environmental and Performance Tests for," 1 December 1989

2.1.5 OTHER PUBLICATION

Neyer, Barry T., "A D-Optimality Based Sensitivity Test," Technometrics, #36(1), February 1994, pp. 61-70

2.2 Related Publications—The following publications are for information purposes only and are not a required part of this specification.

2.2.1 FEDERAL PUBLICATION—Available from the Superintendent of Documents, U. S. Government Printing Office, Mail Stop: SSOP, Washington, DC 20402-9320.

DOT Title 49 Code of Federal Regulations, U. S. Government Printing Office

2.2.2 OTHER PUBLICATIONS

Mariott, F. H. C., ed., "A Dictionary of Statistical Terms (Longman Scientific & Technical, Harlow UK, 1990
Neyer, Barry T., "Sensitivity Testing and Analysis," Sixteenth International Pyrotechnics Seminar, Jönköping, Sweden, pp. 87-106, June 1991
Neyer, Barry T., "An Analysis of Sensitivity Test," MOUND Report MLM-3736, U.S. Department of Energy Contract No. DE-AC04-88DP43495, 6 March 1992
Young, Linda J., and Easterling, Robert G., "Estimation of Extreme Quantiles Based on Sensitivity Tests: A Comparative Study," Technometrics, #36(1), February 1994, pp. 48-60

3. Inflatable Restraint Terminology (Alphabetical) - General

3.1 ADI—Advanced Driver Inflator.

3.2 AECM—Airbag Electronic Control Module.

3.3 AMS—AII Mechanical Sensor.

3.4 API—Advanced Passenger Inflator.

3.5 Airbag—See Bag.

3.6 Airbag Module See—Module Assembly.

3.7 Airbag System—See Inflatable Restraint System.

3.8 ATD—Anthropomorphic Test Device. Reference FMVSS 208, part 572.

3.9 Augmented Inflator—See Hybrid Inflator.

3.10 Autoignition Material— A pyrotechnic material placed inside of an inflator that causes inflator to activate at a predetermined temperature threshold.

3.11 Bag—A flexible membrane, usually a fabric or coated fabric, forming an enclosed volume that receives the gas from the inflator/diffuser and provides restraining forces to an occupant impacting the inflated bag. May contain vents and /or tethering mechanisms.

3.12 Bag Fold—Description of pattern, or sequence, by which a bag is folded for containment within an airbag module assembly.

3.13 Ballistic Tank—Test device used to measure ballistic performance of an inflator, refer to SAE J2238.

3.14 Ballistic Test—Test to determine performance of a gas generating device (inflator). Generally, pressure versus time is recorded.

3.15 Barrier Test—Vehicle crash test, with a barrier, to evaluate vehicle and occupant crash performance.

3.16 BioSID—Biofidelic Side Impact Dummy (ATD). Used for side impact development testing.

3.17 Bonfire Test—The exposure of inflator and module assemblies to fire or associated high temperatures to confirm structural integrity when auto ignition occurs.

3.18 Booster/Enhancer—A pyrotechnic ignition material used in addition to the initiator for certain types of inflator designs. See Ignition Material.

3.19 Bridgewire—The electrically resistive element that provides heat to the pyrotechnic charge by contact conduction for the purpose of causing initiation. Wire, foil, thick film, and vacuum deposited thin film elements fall within the scope of this definition.

3.20 Bridge Element—The electrically resistive component that converts electrical energy to thermal energy to cause a pyrotechnic charge to chemically react. Bridgewires fall within the scope of this definition,

3.21 Burst Disc—A mechanical membrane designed to separate materials or gases until ruptured by either pressure, or by mechanical means during system deployment.

3.22 Burst Test—A pressurization test to establish strength of structural members (e.g., inflator assembly, bag).

3.23 Can—See Reaction Can.

3.24 Canister—A sealed device (generally hermetic) containing ignition train and/or gas generant. May contain an inner filter. Also module housing - see Reaction Can (preferred).

3.25 Chest G—An acceleration measurement of an occupant's chest in a crash situation. Typically calculated as defined in FMVSS 208 (over 3 ms duration “clip”).

3.26 Clock Spring—Device, mounted between steering wheel and column, that transfers electrical energy to airbag module via flexible ribbon cable.

3.27 Combustion Chamber—The structural housing which contains the canister and, in some designs, an inner filter. Also contains orifice holes for metering the inflation gas flow.

3.28 Competent Authority Letter—A letter issued by a Competent Authority that assigns the United Nations Proper Shipping name, Number and Explosive Classification Code for explosives and explosives devices. See 49 CFR §173.56 (New explosives definition and procedures for classification and approval).

3.29 Connector—A device that electrically interconnects the main wiring assembly to airbag components and associated hardware.

3.30 Cover—See protective cover. May be an inner cover for module.

3.31 Crash Sensor—A device designed to detect vehicle crash impacts by measuring acceleration or velocity.

3.32 Cushion—See Bag.

3.33 DAB—Driver Airbag.

3.34 D-Shaft—Sensor trigger device in AMS that releases firing pins to begin the ignition train.

3.35 DERM—Diagnostic Energy Reserve Module.

3.36 Deployment—The activation of an inflatable restraint system.

3.37 Deployment Door—See protective cover.

3.38 Diagnostic Module—A module containing electronic circuits that provides one or more of the following: system monitoring, system readiness, readiness indicator, pressure sensing, and warning indicator proveout features.

3.39 Diffuser (Inflator)—The outer structural housing on some inflator designs that contains a filter and port openings for distributing gas into airbags.

3.40 Diffuser (Module)—A structure in some module designs which meters and distributes the inflation gas into the bag(s).

3.41 Discriminating Sensor—See Primary Sensor.

3.42 Disk—A cylindrical grain of compacted gas generant. See gas generant.

3.43 Department of Transportation (D.O.T.)—Classifies for shipping hazardous materials. The D.O.T. is the competent authority for the United States. Refer to U.S. Department of Transport 49 CFR Section §173.54, for classifications.

3.44 Dummy, Crash—See ATD.

3.45 Drop Test—The release of an airbag module or inflator from a specified height and orientation, onto a steel plate supported by concrete, to determine if a device inadvertently functions or becomes inoperable as a result of the gravitational impact.

3.46 Dual Stage Inflator—Inflator design that can produce more than one ballistic performance pressure curve.

3.47 ECM—Electronic Control Module.

3.48 ECS—Electronic Crash Sensor: An electronic device which consists of a sensing element and electronic circuits that detect and evaluate vehicle crash severity. This type of sensor may also include an accelerometer and a diagnostic module.

3.49 ECU—Electronic Control Unit.

3.50 EMC—Electromagnetic Compatibility: The ability of electronic equipment to operate in its intended environment without suffering or causing unacceptable degradation of performance as a result of unintentional electromagnetic radiation of response.

3.51 EMI—Electromagnetic Interference: The electromagnetic phenomena which, either directly or indirectly, can contribute to the performance degradation of an electronic receiver or system.

3.52 EMI Test—Electromagnetic Interference Test: An exposure to electromagnetic interference with evaluation of effects.

3.53 EMS—Electromechanical Sensor.

3.54 ESD—Electrostatic Discharge: An electrical stress environment resulting from the accumulation of a static charge and the rapid discharge of same.

3.55 Effluent Test—A measurement of solid and/or gas composition, as measured in a test tank, chamber or vehicle.

3.56 Electrostatic Discharge (ESD)—An electrical stress environment resulting from the accumulation of a static electrical charge and the rapid discharge of same.

3.57 Energy Reserve Capacitor—An electrical device for storing and providing emergency electrical energy during a crash.

3.58 Eurobag—See Facebag (preferred).

3.59 EuroSID—European Side Impact Dummy (ATD), as specified for European validation testing.

3.60 Facebag—A small volume bag, generally less than 45 L, Used for belted, non-FMVSS 208 applications.

3.61 Femur Load—The compressive axial load on an occupant femur, typically limited to a maximum of 10 000 N (2250 lb) reference FMVSS 208.

3.62 Ferrite—Device for suppressing transmission of radio frequency interference or electromagnetic current to the initiator. (See Ferrite Balun in Section 4.)

3.63 Filter Assembly—Generally, an arrangement of metallic wire mesh material and nonmetallic fibers that absorb heat from the combustion gases and inhibits or prevents solid particles from exiting the inflator.

3.64 Gas Composition Tests—The quantitative and qualitative measurement of effluent gas from an inflator.

3.65 Gas Generant—A solid phase material composed of both oxidizer/reducer and fuel elements that rapidly burns to produce the gas that inflates the airbag.

3.66 Gas Generator—See Inflator Assembly.

3.67 Grain—See Gas Generant (preferred term).

3.68 Hazard Class—The category of hazard assigned to a hazardous material under the definitional criteria of 49 CFR §172.101 (Hazardous Materials Table) and 49 CFR §173 (Shippers General Requirements for Shipments and Packaging). Initiators for automotive applications are most frequently classified as Hazard Class 1, Division 4, Compatibility Group C or S.

3.69 HIC—Head Injury Criterion: A mathematical integration of the highest resultant acceleration of the center of gravity of the head over a specified time frame (36 ms, typically for 50th percentile ATD). Reference FMVSS 208 and SAE J885.

3.70 Heat Shield—Portion of bag, to protect from inflator gas.

3.71 Housing, Module—See Reaction Can.

3.72 Housing, Inflator—The outer structural housing on some designs that contains filter and port openings for distributing gas into airbags.

3.73 Hybrid Bag—Bag design that uses a coated front panel/uncoated rear panel.

3.74 Hybrid Inflator—An inflator that uses a combination of gas-generating materials and stored gas to provide inflation of an airbag.

3.75 Hydroburst—A destructive test, using water pressure to determine structural integrity of an inflator.

3.76 IRS—See Inflatable Restraint System.

3.77 Igniter Tube—A structural cylinder containing the ignition materials.

3.78 Ignition Material—Typically, a solid material composed of both oxidizer and fuel elements, which ignites the gas generant when it burns. The material is generally powder or granular in form.

3.79 I I I (13)—Inflation Induced Injury.

3.80 Impact Test—An impact to a component or system, to verify sensitivity, integrity, and/or function.

3.81 Inflatable Restraint System—A system consisting primarily of a sensor or sensors, diagnostics, inflator(s), and module(s) which inflates a bag in certain vehicle crashes to assist in preventing the occupant(s) from impacting the interior portion of the vehicle.

3.82 Inflator Assembly—A device consisting of structural components, gas-generating materials, and usually filtering material, which produces or stores the gas for inflation of the airbag.

3.83 Initiator—An electro-explosive device which receives an electrical signal from the sensor and starts the ignition material burning. Also called a Squib or Igniter. See Section 4.

3.84 Inner Cover—An inner structural airbag cover sometimes used with a protective or outer cover.

3.85 Knee Bag—A compartment within the main passenger bag or a separate bag that is inflated in some designs to provide restraint to the occupant's lower torso through the femurs.

3.86 Knee Bolster—A structural device to control lower torso displacement. Also called Knee Bar, Knee Bumper, or Knee Blocker. Knee Bolster is the preferred term.

3.87 Minibag—See Facebag (preferred).

3.88 Module Assembly—An assembly consisting of an inflator, bag, reaction can, and protective cover.

3.89 Module Deployment Test—A test for evaluating module assembly performance. Refer to SAE J1630.

3.90 No-Fire—The result obtained when a device does not function subsequent to the application of an electrical signal or other stress.

3.91 No-Fire Pulse—The particular signal applied to a device which will not cause function within a prescribed parameter envelope; i.e., time, temperature, etc.

3.92 OOPO—Out-Of-Position Occupant. Reference SAE J1980.

3.93 PAB—Passenger Airbag.

3.94 Particulate Composition Tests—A quantitative and qualitative measurement of effluent solids from an inflator and/or module system.

3.95 Pellet—A compacted unit of gas generant that is used in the inflator.

3.96 Pill—See Pellet.

3.97 Porosity—A measurement of permeability of the bag fabric.

3.98 Primary Sensor—The sensing element that independently discriminates crash severity.

3.99 Primer—A pyrotechnic initiator assembly that, when impacted by a firing pin, starts the burning of ignition material.

3.100 Propellant—See Gas Generant (preferred term).

3.101 Protective Cover/Outer Cover—An enclosure for the module assembly which serves to protect the bag from dirt and wear in the vehicle environment. It is sometimes called the Decorative, Trim Cover, or Door.

3.102 RFI—Radio Frequency Interference of sufficient magnitude to have an influence on the operation of other electronic equipment.

3.103 R.I.M/Scrim—Reaction Injected Molded with Scrim reinforcement, used in airbag doors/covers.

3.104 Reaction Can—Mounting plate, or housing, portion of module assembly to support inflator, bag, and protective cover.

3.105 Readiness Indicator—A device in the instrument panel that indicates for a short time period each time the ignition switch is turned on to show the readiness of the electrical circuits.

3.106 Recorder—A memory device that records selected pre-crash and/or crash information.

3.107 SAB—Side Airbag.

3.108 SDM—Sensor Diagnostic Module.

3.109 SID—Side Impact Dummy (ATD), as specified in FMVSS 214.

3.110 SIR—Supplemental Inflatable restraint. See Inflatable Restraint System.

3.111 SRS—Supplemental Restraint System. See Inflatable Restraint System.

3.112 Safety Switch—A safe and arm switch or sensor that may be used in the firing circuit of an electronic sensor.

3.113 Safing Sensor—A sensor element that provides confirmation of a crash, but does not discriminate severity.

3.114 Screen—Wire cloth, or similar material, used in the inflator filter assembly.

3.115 Screen Chamber—An outer structural housing on some designs, containing a filter and port openings to meter gas.

3.116 Secondary Sensor—See Safing Sensor.

3.117 Shorting Clip—A device installed on an initiator or connector that automatically shorts the initiator, for safety purposes, when the mating connector is removed.

3.118 Sled Test—A test using a mechanism that imparts accelerations and motion on test articles in order to simulate real world dynamic impact (crash) events.

3.119 Tablet—See Pellet.

3.120 Tank Test—The deployment of an inflator into a defined volume container at a given temperature level, to determine ballistic performance. Refer to SAE J2238.

3.121 Tear Seam

a. Stress riser designed in cover/door to permit cover/door to open upon deployment.
b. Rows of stitching on the bag, designed to rupture during pressurization

3.122 Tethers—The tethers or straps inside some bag designs, which limit bag extension during inflation and control the final shape of the bag.

3.123 Threshold, Deployment—The minimum impact level to deploy systems.

3.124 Thruster—A device used to calibrate a crash sensor.

3.125 Time to First Pressure (TTFP)—The time at which gas pressure is first detected from a gas-generating device, during deployment.

3.126 Torso Bag—A portion of the passenger bag assembly, in some designs, that provides restraint to the occupant's upper body.

3.127 Transfer Cord—A pyrotechnic material used to rapidly transmit a firing signal from one location to another.

3.128 VC—Vehicle Crash. Also see Barrier Test.

3.129 VC—Viscous Criterion. Mathematical combination of chest velocity and deflection. Refer to SAE J885.

3.130 Vents—The holes in some bag designs that control the expulsion of gas from the bag, to provide controlled occupant deceleration.

3.131 Wafer—See Gas Generant.

3.132 Wireshield/Wire Protector—Module component to protect inflator leadwires from potential damage.

4. Inflatable Restraint Terminology—Applicable to pyrotechnic initiators (alphabetical)

4.1 ALLFIRE Pulse 1—"The particular signal applied to a device in order to ensure function within defined statistical and confidence intervals for a prescribed parameter envelope; i.e., time, temperature, etc." SAE J1538, 3.8. 2. The electrical signal cited in the ALLFIRE Specification statement.

4.2 ALLFIRE Signal—Any electrical signal that is calculated to function the initiator with a known reliability based on a validated ALLFIRE Specification.

4.3 ALLFIRE Specification—A performance specification stating the minimum amplitude of an electrical pulse that will function the initiator at a given reliability and confidence over temperature with full details of the firing circuit being given. The specification is validated by an Electrical Sensitivity Test. Text examples for Switched Constant-Current Signal and Switched Thevenin Signal variations follow.

a. Device shall function at 0.99999 reliability, 95% confidence, over –0 to +85 °C, upon application of a 2.0 ms duration pulse delivered by a constant-current source, 1.2 A, minimum.
b. Device shall function at 0.999999 reliability, 95% confidence, over –0 to +85 °C, upon application of a 200 us duration pulse delivered by a series connected network comprised of a constant resistance, 1.2 Ω, and a regulated voltage source having an amplitude of 6.5 V, minimum.

4.4 ALLFIRE Sufficient—An electrical circuit is said to be ALLFIRE Sufficient with respect to a given initiator ALLFIRE Specification if it can be proven that the circuit will operate the initiator with a reliability equal to or exceeding that expressed in the specification throughout the range of environmental conditions expressed in the specification.

4.5 Amphenol Connector—See European Standard Connector.

4.6 Armed—For an initiator firing circuit as implemented in a Fireset, in a vehicle Electronic Control Unit, or in an Electronic Initiator, the condition whereupon (1) the local energy storage reservoir is adequately charged, and (2) the associated switching circuitry is ready to immediately service a Demand-to-Fire Signal. To Arm a firing circuit means to bring the circuitry to the Armed state and to maintain the circuitry in this state. Compare to Disarmed.

4.7 Autoignition Temperature—For an Energetic Material, the temperature at which a sample deflagrates under contact heating conditions. Data is reported in degrees Celsius (°C).

4.8 Ballistic Face—The surface of a Plug that supports the Bridge.

4.9 Ballistic Function Time (BFT)—The observed duration between the onset of an ALLFIRE Signal applied to an initiator and the first indication of ballistic functioning (flash, sound, pressure, etc). Data is reported in seconds.

4.10 Ballistic Peak Pressure—In a Closed Bomb Ballistic Test of an initiator, the maximum pressure observed. Data is reported in pascals.

4.11 Ballistic Pressure—The pressure-time response of an initiator fired in a Closed Bomb during a Ballistic Test. Data is reported in pascals.

4.12 Ballistic Rise Time—In a Closed Bomb Ballistic Test of an initiator, the time interval measured from occurrence of the First Pressure event until the time when a sensor registers a specified percentage of the recorded Ballistic Peak Pressure, typically 80% or 95%. Data is reported in seconds.

4.13 Ballistic Test—A test intended to measure Ballistic Function Time, Ballistic Pressure, Functional Gas Seal response, or some other defined initiator performance parameter.

4.14 Ballistomechanically Correct—An electroxplosive device that conforms to cited specifications for dimensions external materials, colors, and ballistic performance, but may deviate from electrical requirements.

4.15 Binder—An additive intended to agglomerate one or more materials in a pyrotechnic composition.

4.16 Bomb—A fixture designed to accommodate an initiator and (optionally) a sensor for a Ballistic Test. See Closed Bomb and Vented Bomb.

4.17 Bondwire—A solid electrical conductor, typically Gold or Aluminum, used to bond a Monolithic Bridge to adjoining electrical conductors.

4.18 Breakdown Voltage—The voltage at which a disruptive electrical discharge takes place through or over the surface of a dielectric. See IEEE STD-100-1992.

4.19 Bridge—A 2-terminal element that heats an abutting pyrotechnic Ignition Charge to its reaction temperature when an electrical current is compelled to flow through same. The heating may result from the Joule Effect if the bridge is resistive or from the Peltier Effect if the bridge incorporates a junction of dissimilar conductive materials. The term applies to implementations in the form of Bridgewires and Monolithic Bridges.

4.20 Bridge Circuit—The electrical network consisting of the Bridge and the initiator's electrical terminations.

4.21 Bridge Circuit Resistance (BCR)—The direct current (DC) electrical resistance of a 2-terminal initiator. Data is reported in ohms with test temperature noted.

4.22 Bridged Plug—A subassembly comprised of a PIug with a Bridge bonded thereon.

4.23 Bridgewire—A Bridge formed from a length of drawn resistance wire. See MIL-HDBK83578.

4.24 Brisance—The shattering effect achieved by pyrotechnic functioning of the initiator.

4.25 Bruceton—An Electrical Sensitivity Test as described in MIL-STD-331B, Test D2 (Projectile Fuze Arming Distance), §5.1.4 (Bruceton Method).

4.26 Bundesanstalt fhr Materialforschung und Prhfung (BAM)—The Federal Institute for Material Research and Testing, Berlin, Federal Republic of Germany. This agency is the Competent Authority for Europe. Web Site: http://www.bam.de.

4.27 Burning Rate—The rate at which a solid pyrotechnic composition burns normal to its surface at a specified ambient pressure and temperature.

4.28 Bus Command—A serially encoded message generated by the Restraint Control Module or Test Set and received by the Electronic Initiator via the Vehicle Restraint Bus.

4.29 Bus Interface Module (BIM)—In an Electronic Initiator, the electronic circuit package comprised of (1) the Encoder/Decoder Subsystem and (2) the Ignition Subsystem, said package providing a communications and control interface between the Vehicle Restraint Bus and the Initiator's pyrotechnic Squib. See Figure 3.

4.30 Case—An electrical node as designated on the initiator's electrical schematic diagram, usually corresponding to a metallic mounting component or housing that is electrically isolated from the Bridge Circuit.

4.31 Charge Cup—An initiator component providing containment for the one or more of the pyrotechnic charges. See Figures 1 and 2. A.K.A. Charge Can.

4.32 Charge Sleeve—See Ignition Charge Holder.

4.33 Closed Bomb—A Bomb having a fixed-volume chamber that is gas-tight over the full pressurization range for the initiator being tested.

4.34 Coaxial—A metallic squib or initiator is said to be coaxial if the pyrotechnic chamber has no more than two distinct electrical conductors, one being the metal casing that contains and encompasses the pyrotechnic material, and the other being an electrically isolated metal electrode, with the Bridge being bonded to each conductor so as to span an insulating gap between the two. Thus, any electrical potential applied between the two conductors results in a proportional current circulating through the Bridge Circuit. See Figure 1. The term is used in the topological sense and does not imply physical symmetry of the squib components about a common axis. Compare to Twinaxial.

4.35 Common Pin—In a metallic Squib, an initiator Pin bonded to the Bridge and electrically common to the Charge Cup. See Figure 1. A.K.A Shield Pin.

4.36 Compatibility Group Letter—A designated alphabetical letter used to categorize different types of explosive substances and articles for purposes of stowage and segregation. See 49 CFR §171.8.

4.37 Competent Authority—"A national agency responsible under its national law for the control or regulation of a particular aspect of the transportation of hazardous materials (dangerous goods)." 49 CFR §171.8.

4.38 Connection Style—The initiator style as it pertains to the method of electrical connection to the vehicle wiring harness, e.g., leadwire-style, pin-style.

4.39 Connector Port—A socket-shaped initiator feature that includes the squib pins, accommodates a mating electrical connector, and frequently includes a shorting clip.

4.40 Connector Position Assurance (CPA)—A connector feature that provides an indication that the connector is locked into the initiator's connector port. See SAE/USCAR-2.

4.41 Consolidation Pressure—In initiator manufacturing, the pressure applied to a pyrotechnic charge by a Press Pin. In a finished initiator, the effective loading borne by the charge in situ.

4.42 Consolidation Ram—See Press Pin.

4.43 Cook-Off—The deflagration of an initiator's energetic material caused by externally applied heat.

4.44 Cook-Off Temperature—The lowest temperature at which Cook-Off is observed. Report data in °C. See MIL-HDBK-83578.

4.45 Corrosive Burning—The deflagration of an oxidizer rich propellant in a vessel such that exposed metal surfaces are eroded by an oxidation reaction.

4.46 Crazing—In a Monolithic Bridge, a fine fracture pattern observed following the application of high voltage test signals.

4.47 Cruciform—A cross-shaped indentation stamped into the bottom of a Charge Cup to provide for controlled opening of same during ballistic function. See Hexaform and Octaform.

4.48 Decay Time (Electrical)—For a constant amplitude electrical pulse, the time interval observed for the trailing edge to fall from 90% to 10% of the pulse's peak amplitude.

4.49 Deflagration

a. The chemical decomposition (burning) of an energetic material in which the reaction zone advances into the unreacted material at a slower rate than a sonic signal will propagate in the Unreacted material.
b. Very rapid combustion. See MIL-HDBK-83578.

4.50 Degradation—An initiator is said to be degraded by a conditioning environment if, for a sample of initiators that have been conditioned and then evaluated with subsequent performance tests, a statistical analysis would refute the claim that 0.999 of the parent population of conditioned devices would comply with all performance specifications. The analysis does not rely on performance data from an Unconditioned sample.

4.51 Demand-to-Fire Signal—General term for a firing pulse applied to a DUT, not necessarily known to comply with the ALLFIRE Specification.

4.52 Device-Under-Test (DUT)—An initiator that is undergoing a test.

4.53 Disarmed—For an initiator firing circuit as implemented in a Fireset, in a vehicle Electronic Control Unit, or in an Electronic Initiator, the condition whereupon (1) the local energy storage reservoir is sufficiently depleted such that a Demand-to-Fire Signal or any other circuit fault condition could not function the initiator. To Disarm a firing circuit means to bring the circuitry to the Disarmed state and to maintain the circuitry in this state. Compare to Armed.

4.54 Dud—An initiator that has failed to function when a valid ALLFIRE Signal was applied. See Misfire. See MIL-HDBK-83578. To cause the initiator's electrical sensitivity to diminish through the use of electrical and physical environments.

4.55 Electrical Sensitivity Test—A quantal response test intended to furnish estimates of the initiator's sensitivity to an electrical stimulus signal having one continuously adjustable parameter. The response variate is two-valued, {0, X}, with the 0-value indicating that the initiator did not fire and the X-value indicating that the initiator did fire upon application of the stimulus signal. The stimulus may be a Switched Constant-Current Signal, Switched Thévenin Signal, or other such defined electrical circuit signal. See ALLFIRE Specification, Bruceton, Langlie, and Neyer D-Optimal. See also Marriott (1990).

4.56 Electrical Type—A letter code designation for an electrical specification set that includes the Bridge Circuit Resistance, the ALLFIRE Sensitivity Specification and the NOFIRE Sensitivity Specification.

4.57 Electrically Correct Inert—An Inert having an in-specification Bridge Circuit Resistance.

4.58 Electrode—See Pin.

4.59 Electro-Explosive Device (EED)—Any device (squib, initiator, detonator, cartridge, gas generator, actuator, etc.) that is operated by an electrical demand-to-fire signal. See MILHDBK-83578.

4.60 Electronic Initiator—An initiator that responds to digitally encoded signals to arm, self-test, disarm, and fire. See TRWES30315677A. (2) An initiator used as the first stage of a Gas Generator's propellant ignition train, said initiator incorporating an electronic Bus Interface Module and a pyrotechnic Squib, and having features permitting electrical connection to a Vehicle Restraint Bus, digital communications with a remote Electronic Control Unit via said bus, and fire control of the Squib. See Figure 1. (3) See Integriente Zund Einheit.

4.61 Electrothermal Response—See Thermal Transient. A nondestructive test intended to measure an initiators bridge circuit voltage-time response, V(t), to a low power Switched Constant-Current Signal.

4.62 Electrothermally Correct Inert—An Electrically Correct Inert device having the following properties: (1) the Bridge Circuit Resistance (BCR) falls within a prescribed BCR specification band before and after a prescribed Monitor Current environment is applied, (2) the Bridge remains intact following a prescribed direct current NOFIRE signal pulse, and (3) the Bridge fuses to an open-circuit condition following a prescribed ALLFIRE signal pulse.

4.63 Encoder/Decoder Subsystem—In an Electronic Initiator's Bus Interface Module, the electronic circuitry that (1) managees digital data exchanges via the vehicle Restraint Bus, (2) provides for electrostatic discharge and transient pulse protection, (3) stores the device's bus address, (4) monitors the Ingition Subsystem's Ignition State, (5) provides internal power management functions, and (6) controls the Ingition Subsystem for the purpose of running diagnostic self-test sequences, arming the initiator, disarming the initiator and firing the squib on command.

4.64 Energetic Material—See Pyrotechnic.

4.65 Energy Dump Dissipator—In a Bus Interface Module's Ignition Subsystem, a dissipative circuit element used as a discharge bleeder resistance during disarming. See IEEE Std 100-1992, "Bleeder."

4.66 Energy Storage Capacitor—In a Bus Interface Module's Ignition Subsystem, a capacitor that supplies energy to the squib upon closure of the appropriate circuit switch(es).

4.67 Enhancer Assembly—A Pyrotechnic charge housed in a containment that is distinct from the Squib. A.K.A. Output Shell.

4.68 European Standard Connector—A connector and connector-port interface convention, the latter having a socket diameter of 10 mm. A.K.A. Amphenol Connector. See Latchpin.

4.69 Eyelet—In a metal Plug, the machined ring-shaped component that mates with the Charge Cup. See Figures 1 and 2.

4.70 Ferrite Balun—An RFI Suppression Filter implemented by passing the initiator's bridge Circuit conductors (Leadwires or Pins) through parallel channels in a block of lossy ferrimagnetic material, thus constructing a 2-turn common mode choke. A.K.A. ferrite bead.

4.71 Fireset—An electrical test instrument that generates an initiator firing pulse having operator selected attributes, e.g., pulse amplitude, duration, etc.

4.72 First Light—In a Ballistic Test of an initiator, the first observed emission of optical energy following a demand-to-fire signal.

4.73 First Pressure—In a Closed Bomb Ballistic Test of an initiator, the first observation of chamber pressurization following a demand-to-fire signal.

4.74 Flow Agent—An additive to a particulate material intended to enhance or improve its flow characteristics.

4.75 Functional Gas Seal Test—A Closed Bomb quantal response test intended to test the Initiator's gas seal against the pressures generated in the bomb. The response variate is two-valued: leak or no-leak.

4.76 Gas Generator—An Initiator that primarily emits high pressure gas to operate a piston, linear or rotary, for providing motive power in a Pretensioner.

4.77 Getter—An additive to a pyrotechnic charge that facilitates execution of the Leak Test by slowly absorbing and desorbing the leak detection gas.

4.78 Glass-to-Metal-Seal (GTMS)—A construction sometimes used for Plugs that provides for gas-tight seams between one or more Pins and between the pins and the Eyelet. See Figures 1 and 2.

4.79 Green Gas—The gaseous and particulate emissions from a Gas Generator that are known to be non-toxic and non-hazardous.

4.80 Hangfire

a. A Hangfire is said to occur if an initiator is functioned with a valid ALLFIRE Signal and the observed Ballistic Function Time exceeds the pulse duration called out in the relevant ALLFIRE Specification.
b. Any out-of-specification delay in the pyrotechnic functioning of an initiator following a Demand-to-Fire Signal.

4.81 Header—See Plug.

4.82 Hexaform—A symmetric indentation pattern stamped into the bottom of a Charge Cup to provide for controlled opening of same during ballistic function. The pattern is that corresponding to the three crossing lines that connect opposing vertices of a regular hexagon. See Cruciform.

4.83 Hotwire Device—An Electro-Explosive Device incorporating a Bridgewire.

4.84 Ignition Charge—A temperature-sensitive pyrotechnic composition designed to ignite with contact heating, usually at a well defined temperature. The first pyrotechnic composition in an ignition train that ignites. Compare to Output Charge.

4.85 Ignition Charge Holder—An Initiator component mounted on the Plug's Ballistic Face that supports a compacted Ignition Charge, holding same in contact with the Bridge. A.K.A. Charge Sleeve.

4.86 Ignition Droplet—An ignition charge that is applied to the Bridge in liquid form and subsequently cured or dried to form a solid adhering mass.

4.87 Ignition Element—An ignition subsystem consisting of the Bridge and an abutting Ignition Charge.

4.88 Ignition State—The vector describing the combined state of the Ignition Subsystem's Energy Storage Capacitor, i.e., charged so as to be Armed, Disarmed, or Indeterminate, and the conduction condition (open or closed) of all switches in the charging and discharging circuits involving the Energy Storage Capacitor and the Squite. See IEEE Std 100-1992, "System State."

4.89 Ignition Subsystem—In an Electronic Initiator, the electronic circuitry that controls (1) charging of the Energy Storage Capacitor, (2) discharging of same, (3) detecting the charge state of same, and (4) routing stored power to either the internal Energy Dump Dissipator or to the Squib at the direction of the Encoder/Decoder Subsystem.

4.90 Igniter

a. An Initiator that emits flame, a flux of burning particles and shock energy for igniting gas generant propellants in an Inflator Assembly.
b. "Article containing one or more explosive substances used to start deflagration of an explosive train." 49 CFR §173.59.
c. "An assembly generally consisting of electrically resistive material and pyrotechnics used to initiate a combustion." SAE J1538. Compare to Gas Generator.

4.91 Inert—A device that is completely free of energetic material. See Electrically Correct Inert.

4.92 Informational Firing—The measurement of Ballistic Function Time for an unexpended initiator that is presumed to have been degraded by a previous test, e.g., a device that survived an Electrical Sensitivity Test. Data is reported in seconds.

4.93 Initiator—General term for an Electro-explosive Device incorporating a Squib, an electrical insulation system, features for electrical connection to the vehicle wiring harness, e.g., Leadwires or a Connector Port, and features for attachment to an inflator or to a pretensioner. Initiators are classified by application as Igniters or as Gas Generators.

4.94 Insulation Cover—For an initiator, the cup-shaped thermoplastic or thermoset component that electrically insulates the exterior surface of the Charge Cup alone.

4.95 Insulation Jacket—For an initiator, the thermoplastic or thermoset structure that electrically insulates the Bridge Circuit from the device's external surface and/or mounting features.

4.96 Insulation Resistance—The direct current electrical resistance between any initiator pin and any other feature that is not electrically bonded to the Bridge Circuit. The measurement is conducted at conditions of prescribed voltage and duration to verify that electrical breakdown has not occurred. Initiator pins may be shunted for the test. Data is reported in megohms.

4.97 Integrierte Zund Einheit (IZE)—Integrated Ignition Unit. See Electronic Initiator.

4.98 Isolated Pin—An initiator pin bonded directly to the bridge and electrically common to no other conductor. See Figure 1.

4.99 Joule Effect—The evolution of thermal energy produced by an electric current in a conductor as a consequence of the electric resistance of the conductor. IEEE STD-100-1992.

4.100 Jumper—A wiring harness component consisting of a multi-conductor cable subassembly, terminated at one end with a single in-line connector that mates with the vehicle wiring harness, and terminated at the other end with one or more connectors to mate with initiator Connector Ports.

4.101 Langlie—An Electrical Sensitivity Test as described in MIL-STD-331 B, Test D2 (Projectile Fuze Arming Distance), § 5.1.2 (Langlie Method).

4.102 Latchpin—An initiator feature implemented as a molded thermoplastic structure that is designed to engage with a European Standard (Amphenol) Connector.

4.103 Leadwire—An electrical cable having thermoplastic insulation sheath over a stranded copper conductor, the latter typically AWG #18 or #20.

4.104 Leak Rate Specification (Squib)—A performance specification stating the maximum leak rate that will be allowed for the squib's pyrotechnic material chamber. The statement identifies a leak detection fluid, the test pressure differential across the squib's chamber wall, and the test methods. Validation generally requires separate non-destructive detection tests for gross and fine leaks. A text example follows:

a. Device pyrotechnic chamber shall be leaktight to 1 OE-5 cc/second (Helium), maximum, at 1atmosphere differential pressure. Validate with distinct gross and fine leak tests per MIL-STD-202F, METHOD 112E (Seal), Condition D (Gross Leak Bubble Test, Fluorocarbon Liquid), and Condition C (Tracer Gas Test), Procedure IIIb (Radioactive Gas), respectively.

4.105 Leak Test (Squib)—A non-destructive performance confirmation test intended to validate the initiator's Leak Rate Specification (Squib) to a given detection reliability.

4.106 Locking Groove—An initiator connector port feature intended to receive connector locking tabs.

4.107 Lot Acceptance Test (LAT)—A test or sequence of tests required to demonstrate specification compliance of a squib or initiator lot.

4.108 Mechanically Correct Inert—An inert device that conforms to cited specifications for dimensions external materials, and colors.

4.109 Microgas Generator (MGG)—See Gas Generator, 3.66.

4.110 Misfire—The failure of an initiator to function when a valid ALLFIRE Signal was applied.

4.111 Mode—The circuit connection method by which an electrical signal from a 2-terminal source is impressed upon the electrical conductors of an initiator as in pin-to-pin (p-p), pinto-case, and shorted-pins-to-case. See Pin and Case.

4.112 Monitor Current—An electrical stress environment. Text examples of continuous and pulsed monitor current specification statements follow.

a. Device shall withstand a continuous direct current of 200 mA, minimum, at +95 °C for 3000 h without Degradation.
b. Device shall withstand a periodic current pulse train with amplitude of 200 milliamperes, minimum, pulse duration 5 ms, pulse repetition period, 1000 ms, at +95 °C for 1000 h without Degradation.

4.113 Monolithic Bridge—A Bridge formed as a planar feature imposed on a single monolithic “chip.” The term includes screen printed thick resistive film on ceramic substrate, vacuum deposited thin resistive film on ceramic substrate, diffusion doped semiconductor junction devices on silicon substrates, etc.

4.114 National Institute for Occupational Safety and Health (NIOSH)—A U.S. Government agency responsible for conducting research and making recommendations for the prevention of work-related illnesses and injuries. NIOSH was established by the Occupational Safety and Health Act of 1970. Web Site: http://www.cdc.gov/niosh/.

4.115 Neyer D-Optimal—An Electrical Sensitivity Test as described in Neyer (1994) and MILSTD-331C, Test G1 (in draft). See MIL-HDBK-83578.

4.116 NOFIRE Specification—A performance specification stating the maximum amplitude of an electrical pulse that will not function the initiator at a given reliability and confidence over temperature with full details of the firing circuit being given. The specification is validated by an Electrical Sensitivity Test. A text example for a switched constant-current signal specification follows.

Device shall not function at 0.999 reliability, 95% confidence, over –40 to +85 °C, upon application of a 10s duration pulse delivered by a constant-current source, 0.4 A, maximum.

4.117 Non-Destructive Sequencing—For an Electronic Initiator undergoing a validation test, the condition of being connected to an active Vehicle Restraint Bus, being electrically energized and processing a prescribed sequence of bus commands that cause the device to recurrently cycle through all possible non-destructive internal states.

4.118 Non-Serviceable Connector—A connector designed for one-time insertion into the Connector Port. The connector can not be removed from the port without incurring visible damage. It is not intended for disconnection in the field. Compare to Serviceable Connector.

4.119 Octaform—A symmetric indentation pattern stamped into the bottom of a Charge Cup to provide for controlled opening of same during ballistic function. The pattern is that corresponding to the four crossing lines that connect opposing vertices of a regular octagon. See Cruciform.

4.120 Output Charge—A pyrotechnic composition intended to provide the initiator's main ballistic effect. The last pyrotechnic composition in an ignition train that ignites. Compare to Ignition Charge.

4.121 Output Shell—See Enhancer Assembly.

4.122 Overhang—The portion of a Bridgewire that is located near the bridge weld points and is suspended over the metallic features of the Plug, i.e., the pin and/or the header.

4.123 Peltier Effect—The absorption or evolution of thermal energy at a junction, e.g,. a p-n semiconductor junction, through which an electric current flows. IEEE STD-100-1992.

4.124 Petal—A sector-shaped portion of a charge cup bounded, in part, by the stamped indentations on same.

4.125 Pin—A metal terminal electrically bonded to a Bridge node. Pins are usually formed from 1.0 mm diameter wire. A.K.A. Electrode.

4.126 Plug—An initiator subassembly incorporating the Pins and features for mounting the Bridge and Charge Cup thereto. Plugs may be constructed as insert-molded thermoplastic parts or as Glass-to-Metal-Seals. A.K.A. Header.

4.127 Polarity Independence—An initiator is said to be polarity independent if its electrical or functional response to a DC signal does not differ significantly with a change in the polarity of said signal. Initiators may exhibit small signal effects due to thermocouple junction potentials and still fall within the scope of this definition.

4.128 Popcorn—Term referring to a pin-style initiator formed from a Squib seated within a biconical-shaped electrical insulation jacket. A.K.A. European format initiator.

4.129 Post-Fire Resistance—For an expended initiator, the Bridge Circuit Resistance at a specified time following the onset of the ALLFIRE Signal.

4.130 Press Pin—A press tool used to compress a pyrotechnic charge into a Charge Cup or Ignition Charge Holder.

4.131 Protected Gap—In an initiator, any physical line path situated between two electrical conductors that is entirely or partially within the pyrotechnic material chamber. The electrical Breakdown Voltage of this gap is designated as V_p. See Spark Gap.

4.132 Protective Gap—An electrical breakdown (spark) feature consisting of two conductors and a dielectric region (commonly air) separating them. It is located physically outside of the pyrotechnic chamber and is electrically parallel to the Protected Gap. The electrical breakdown voltage of this gap is designated as V_s. See IEEE STD-100-1992. A.K.A. Spark Gap.

4.133 Pyrotechnic—A material or chemical composition that rapidly combusts or decomposes to release heat, light and gas. A.K.A. Energetic Material.

4.134 Radio Frequency Interference (RFI)

a. Radio frequency energy of sufficient magnitude to affect operation of the initiator.
b. "Radio Frequency Interference of sufficient magnitude to have an influence on the operation of other electronic equipment." SAE J1538, 3.101.

4.135 Rear Support—A structural feature of a Gas Generator that implements the Connector Port.

4.136 Restraint Control Module (RCM)—TBD (FORD).

4.137 Restraint Module—An electrically controlled airbag module assembly, seatbelt pretensioner or seatbelt retractor employed in a vehicle restraint system. See SAE J1538 (APR95), "Airbag Module."

4.138 Rise Time (Electrical)—For a constant amplitude pulse, the time interval observed for the pulse's leading edge to transition from 10% to 90% of the peak amplitude.

4.139 RF Absorbed Power Environment—A test environment where the prescribed RF stress is required to be fully absorbed by the RFI Suppression Filter in the DUT (initiator), i.e., the power flow is transmitted across the filter's input port plane.

4.140 RF Induced Power Environment—A test environment where the RF signal power is transformer coupled into a circuit consisting of the DUT (initiator) and a wiring harness segment. See SAE J1113-4.

4.141 RF Radiated Power Environment—A test environment where the RF signal power is radiated at the DUT (initiator) from a signal source equipped with an antenna.

4.142 RFI Suppression Filter—A 2-port inline low-pass filter incorporated in the initiator's Bridge Circuit to attenuate RF signal energy. The filter, a common mode choke, is typically built into leadwire-style initiators or into the connector mating to pin-style initiators.

4.143 Service Life—For an initiator installed in an on-the-road restraint system device, the minimum time that it can be expected to be fully capable with regard to established performance specifications.

4.144 Serviceable Connector—A connector that may be repeatedly inserted and removed from the Connector Port without incurring damage. Compare to Non-Serviceable Connector.

4.145 Shield Pin—See Common Pin.

4.146 Shock Tube

a. An instrument designed to measure the ballistic velocity and intensity of the atmospheric shock wave resulting from pyrotechnic functioning of an initiator.
b. An explosive shock wave transmission line constructed as a flexible- thermoplastic tube with an explosive composition coated in the inside surface.

4.147 Shorting Clip—A safety device, installed in a pin-style initiator's connector port or in a leadwire-style initiator's terminating connector, which automatically shorts the initiator's Bridge Circuit when the mating connector is removed. See SAE J1538.

4.148 Shunt Resistance—The Bridge Circuit Resistance with a shunt or Shorting Clip installed.

4.149 Slag—The residual solid product of a propellant deflagration reaction, typically a mass of metal salts and oxides.

4.150 Slurry—A fluid suspension of an Energetic Material and a carrier (or binder). See Ignition Droplet.

4.151 Solenoid Choke—An RFI Suppression Filter implemented as a multi-turn inductive winding over a core of lossy ferromagnetic material. This component is wired in series with one leg of the initiator's Bridge Circuit and is usually housed within a mating connector.

4.152 Spark Gap

a. A general term describing an ESD protection mechanism comprised of a Protective Gap located external to the pyrotechnic material chamber and a Protected Gap located internal to said chamber.
b. Specifically, the Protective Gap. See IEEE STD-100-1992

4.153 Squib—An Electro-explosive Device incorporating one or more Bridges and one or more pyrotechnic compositions, all in close proximity within a sealed chamber with separate electrical contacts providing access to said bridges. See MIL-HDBK-83578.

4.154 Stand-Alone—For an Electronic Initiator undergoing a validation test, the condition of being disconnected from any Vehicle Restraint Bus emulator and being electrically unenergized, i.e., as the device would be in a shipping state with the pins not connected to anything.

4.155 Switched Constant-Current Signal—A Fireset test signal, {I, w}, from a series connected circuit having a regulated current source with amplitude, I, and a low-loss switch with closure time, w.

4.156 Switched Thévenin Signal—A Fireset test signal, {V, R, w}, from a series connected circuit having a regulated voltage source with amplitude, V, a fixed resistance, R, and a low-loss switch with closure time, w.

4.157 Teardown—The disassembly of an initiator or squib for the purpose of examining the internal condition of same. This is a common evaluation test in a Design Validation.

4.158 Terminated Power Loss (TPL)—The attenuation provided by an inline filter terminated with a stated resistive load. Specifically, TPL = 10 $\log(P_{IN}/P_{OUT})$, where P_{IN} is the power transmitted through the filter's input port plane and P_{OUT} is the power dissipated in the stated load resistance, typically 2.0 Ω for automotive airbag-applications.

4.159 Thermal Transient—A nondestructive test intended to measure a 2-terminal initiator's voltage-time response, V(t), to a constant-current signal, I. Report data as a series of incremental voltages, {$V(t_1)$ - V(0), $V(t_2)$ - V(0),... $V(t_N)$ - V(0)}, for $0 < t_1 < t_2$ . .' t_N).

4.160 Time-to-First-Light (TTFL)—In a Ballistic Test, the time interval as measured from the onset of a demand-to-fire signal until occurrence of First Light. Report data in seconds.

4.161 Time-to-First-Pressure (TTFP)—In a Closed Bomb Ballistic Test, the time interval as measured from the onset of a demand-to-fire signal until occurrence of First Pressure. Report data in seconds.

4.162 Time-to-Fuse—In a Ballistic Test, the time interval as measured from the onset of a demand-to-fire signal until the measured Bridge Circuit Resistance indicates pyrotechnic initiation or opening of the Bridge Circuit, whichever is first. Report data in seconds.

4.163 Touchdown—The phenomenon whereby the Electrical Length of the Bridgewire is reduced when the Overhang segments make electrical contact with the underlying metallic surfaces of the Plug.

4.164 TRWIC—A connector and connector-port interface convention, the latter having a socket diameter of 11 mm and a Locking Groove feature. A.K.A. the TRW Integral Connector.

4.165 Twinaxial—A 2-temminal metallic squib or initiator is said to be twinaxial if the pyrotechnic chamber has at least three distinct electrical conductors, one being the metal casing that contains and encompasses the pyrotechnic material, the second and third being electrically isolated metal electrodes, with the Bridge being bonded to each electrode so as to span an insulating gap between the two. See Figure 2. Compare to Coaxial.

4.166 Vehicle Restraint Bus—A Local Area Network (LAN) connecting a Master Station embodied within an Electronic Control Unit (ECU, a.k.a. RCM) with one or more Restraint Modules, each incorporating one or more Electronic Initiators, each functioning as an addressable Slave node. See IEEE Std 100-1992, “Bus (signals and paths)” “Local Area Network,” “Master Station,” and “Slave (2).”

4.167 Vented Bomb—A test Bomb having an orifice that vents the internal chamber to atmosphere.

4.168 Weibull One-Shot Transformed Response—An Electrical Sensitivity Test as described in MIL-STD-331 B, Test D2 (Projectile Fuze Arming Distance), §5.1 .3 (OSTR Method).

4.169 Withstand Level—The intensity of an electromagnetic, mechanical or thermal stress applied to an initiator that will neither cause the initiator to function nor cause any degradation of its performance parameters to values beyond specification limits.