Subject Index

Α	Ceramics, identification standards, 39	type, database classification, 27-30
	Certification, data sets, 62-63	type or statistical significance of
Access	Characterization, engineering materials, 35	numeric values, 69
CAD/CAM/CAE, 101-102	Classification	unintentional alterations, 73
methods, 32–33	by type of material data, 27-30	uploading limitations, 73
Allowed value, 3-4	by user group, 30-31	validation, 60–62
Alloys, standards for identification, 36-37	Coatings, identification standards, 41, 44	criteria, 70
Alpha testing, 22–23	Code sets, EDIFACT, 91–92	values exceeding known physical limits,
Aluminum alloys, standards for	Composite materials	58
identification, 37	data transfer, 80	see also Raw data
Application	identification standards, 39-40, 42	construction, 99–102
databases, 29-30	mechanical property data recording	definition, 1
data transfer between, 31	formats, 49	moving between types, 31
defining, 93	Computer-aided acquisition and logistical	peripheral, costs, 74
identification, 7	support, 80	testing, 73
types, 31	Computing facilities, 15	Data dictionary, 3 15–16
Arc welds, data recording formats, 51	Conceptual schema, 16	interlinking capability, 16
ASCII, data recording format, 88	Consensus seeking group model, for	internal consistency, 15–16
Associativities, 87–88	validation, 62	Data element
ASTM Committee E-49 on	Conversion, unit of measurement, 21, 63,	definition, 3
Computerization of Material and	70	dictionary, building, 9-11
Chemical Property Data, 4-6	Correlation, methods, 59-60	grouping, 10
ASTM D 4000, 39, 44	Corrosion, data recording formats, 50-51	identification, 8–9
ASTM E-39, 88	Costs, 73–74	Data entry, 16–17, 77
ASTM E 380, 10, 99	estimating, 93	validation, 100–101
ASTM E 1308, 39, 97	_	Data format
ASTM E 1309, 9, 35, 40, 42, 99	D	generic, 46–48
ASTM E 1313, 8–9, 15, 46		"neutral," 76
annexes to, 48–49	Data	standard, 45–46
ASTM E 1338, 9, 15, 37	compilations of known pedigree, 54	Data provider, 7
ASTM E 1339, 15, 37	completeness, 69-70	contribution, 13
ASTM E 1339, 15, 37 ASTM E 1407, 8	completeness, 69-70 consistency and quality, 70	contribution, 13 Data record
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9-10, 49, 97	completeness, 69-70 consistency and quality, 70 constraints, 16	contribution, 13 Data record essential fields, 47
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9-10, 49, 97 ASTM E 1471, 9, 40, 42, 97	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60	contribution, 13 Data record essential fields, 47 property descriptions, 48
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9-10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9-10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46-48 test and specimen description, 47 test conditions, 47-48
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet,	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46-48 test and specimen description, 47 test conditions, 47-48 test results, 48
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58-	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46-48 test and specimen description, 47 test conditions, 47-48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48-50
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9-10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43 B-C	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16 harmonization, 59	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48–50 NDE, 50–51
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43 B-C Benefits, 1–3	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16 harmonization, 59 nature of, 45	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48–50 NDE, 50–51 physical properties, 48
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43 B-C Benefits, 1–3 estimating, 95	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16 harmonization, 59 nature of, 45 provided on different storage media, 17	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46-48 test and specimen description, 47 test conditions, 47-48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48-50 NDE, 50-51
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43 B-C Benefits, 1–3 estimating, 95 Beta testing, 23	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16 harmonization, 59 nature of, 45 provided on different storage media, 17 quality	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48–50 NDE, 50–51 physical properties, 48 standard guides, 46–48
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9–10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43 B-C Benefits, 1–3 estimating, 95 Beta testing, 23 Black-box testing, 23	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16 harmonization, 59 nature of, 45 provided on different storage media, 17 quality indicators, 59-60, 63-64	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48–50 NDE, 50–51 physical properties, 48 standard guides, 46–48 wear, 50
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9-10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43 B-C Benefits, 1-3 estimating, 95 Beta testing, 23 Black-box testing, 23 Brief display, 20	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16 harmonization, 59 nature of, 45 provided on different storage media, 17 quality indicators, 59-60, 63-64 standards, 21	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48–50 NDE, 50–51 physical properties, 48 standard guides, 46–48 wear, 50 Data reporting format, 16
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1407, 8 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43 B-C Benefits, 1–3 estimating, 95 Beta testing, 23 Black-box testing, 23 Brief display, 20 CAD/CAM/CAE, access to database,	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16 harmonization, 59 nature of, 45 provided on different storage media, 17 quality indicators, 59-60, 63-64 standards, 21 security, 73	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48–50 NDE, 50–51 physical properties, 48 standard guides, 46–48 wear, 50 Data reporting format, 16 conversion software, 17
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1434, 9-10, 49, 97 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43 B-C Benefits, 1-3 estimating, 95 Beta testing, 23 Black-box testing, 23 Brief display, 20	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16 harmonization, 59 nature of, 45 provided on different storage media, 17 quality indicators, 59-60, 63-64 standards, 21 security, 73 sorting and organizing, 73	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46–48 test and specimen description, 47 test conditions, 47–48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48–50 NDE, 50–51 physical properties, 48 standard guides, 46–48 wear, 50 Data reporting format, 16 conversion software, 17 Data sets
ASTM E 1339, 15, 37 ASTM E 1407, 8 ASTM E 1407, 8 ASTM E 1471, 9, 40, 42, 97 ASTM E 1484, 60, 64, 66 ASTM G 107, 50 Automotive Composites Consortium composite material/process data sheet, 95 database physical file, 101 material information organization, 97 specimen location template, 94 structural property data set, 96 AWS A9.1, 40, 43 B-C Benefits, 1–3 estimating, 95 Beta testing, 23 Black-box testing, 23 Brief display, 20 CAD/CAM/CAE, access to database, 101–102	completeness, 69-70 consistency and quality, 70 constraints, 16 correlation, 59-60 costs assembling, 73 evaluation, 73 locating, 73 critical assessment of sources, 57 dealing with gaps, 59 definition, 2, 53 discontinuities, 65-66 downloading, 77 evaluation methods and procedures, 58- 60, 70 existence, 16 harmonization, 59 nature of, 45 provided on different storage media, 17 quality indicators, 59-60, 63-64 standards, 21 security, 73	contribution, 13 Data record essential fields, 47 property descriptions, 48 standard, 46-48 test and specimen description, 47 test conditions, 47-48 test results, 48 validity criteria, 48 Data recording format arc welds, 51 ASCII, 88 corrosion, 50 erosion, 50 high explosives, 51 mechanical properties, 48-50 NDE, 50-51 physical properties, 48 standard guides, 46-48 wear, 50 Data reporting format, 16 conversion software, 17 Data sets certification, 62-63

unified coding systems, 41–44

see also Specific materials

Engineering products, specification, 80–82

reporting of test data, 65	Erosion, data recording formats, 51	M-N
test method description, 65	Error handling, 19	M. h
groups of nominally compatible, examination, 58-60	Essential field, definition, 3 Expert system, 1	Machine-readable products, cost of producing, 73-74
individual, examination, 57–58	using materials databases, 31	Mainframe packages, 33
unified evaluated, extraction, 59	Explosives, data recording formats, 51	Maintenance, 24–25, 64, 69
Data terminology, 2-4	EXPRESS, 81, 89	Management, operations, 68-69
Data transfer	model database example, 93-103	MAP/TOP, 82-83
between databases, 78–79	External schema, 16	Material identifiers, 50
between materials applications, 31 CALS, 80	Fabrication and service history fields, 36 Fields, 16	Materials identification, data transfer, 84 Materials index, data transfer, 79-80
catalogue-based formats, 89	functional dependency, 86	Materials information, modeling, 98
classes, 76–79	Files, 16	Material source, 35
databases and user interfaces, 77	Formats	Mechanical property, data recording
database to other software packages, 77	alternative presentations, 86	formats, 48–50
data entry, 77	associativities, 87–88	Menus, 17–19
difficulties, 75 EXPRESS, 81	capability for general expression, 84 catalogue-based, 89	Messages, cryptic, 19 Metadata, 1–2
express, 91	complexity, 88–89	ASTM E 1313, 47
format issues, 83–84	data transfer, 82-83	definition, 2, 66
history, 76	extended, 87	Metals
ISO 10303, 80–82	integrity restriction, 86	mechanical property data recording
item-based formats, 87–89 MAP/TOP, 82–83	item-based, 87–89 multiple tuples, 86	formats, 48–49 standards for identification, 36–37
materials index, 79–80	multitabular, 86	MiniMAP, 82–83
miniMAP, 82-83	restrictions, 86	Multitabular format, 86
"neutral" data formats, 76	SAE Aerospace Standard 4159, 85	Names, data transfer, 83-84
open distributed processing, 83	simplicity, 86	NDE, data recording formats, 50–51
OSI, 82	table-based, 84–87 tabular, criteria, 85–86	Networks, 72 testing, 73
passive, 76 product data cycle, 79	user-editing and, 86	Nonmaterials expert, using materials
raw data, 79	xBase, 85-86	databases, 32
software, 75-76	see also Data recording format; Data	Numerical modeling, using materials
table-based formats, 84-87	reporting format	databases, 32
techno-economic materials data, 80	Full display, 20	Numeric data, 20
X.12, 80 Data visualization, graphics facilities, 21	Full-screen mode interface, 18 Functional dependency, fields, 84	Numeric values, type or statistical significance, 69
Debugging	Functional requirements, defining, 8	5.5
alpha testing, 22–23	Functions, 1–2	O-Q
beta testing, 23	0.1	Object and adultable and 70, 70
Demonstration system, 14 building, 14	G-L	Object-oriented databases, 78–79 Object-oriented model, creating, 97
importance, 14	Glossary, 19	Online systems, 32
Design, elements, 96–99	Graphics facilities, data visualization, 21	ease of access, 72
Display	Groups	use, 72
brief, 20	relationships between, 11	Open distributed processing, 83
full, 20 Document, identification, 10	retrieval characteristics, 10-11 Handbooks, databases derived from, 29	Open system interconnection, 82 "Open-World" information, ISO 10303, 81
Documentation 10	quality indications, 63	82
software, 18	Hardware, 93–95	Operations, management, 68-69
user, 23	selection, 8	OSI, 82
Downloading, 20	Help, 19	Part of sample detail fields, 36
E-F	"context sensitive," 19 offline, 73	Performance requirements, defining, 8 Personal computer packages, 32
L-T	online, 73	Personnel, qualifications, 68–69
EDIFACT	services, user, 72–73	Physical file, schema based, building, 99–
code sets, 91-92	High explosives, data recording formats,	100
data transfer, 80	51	Physical property, data recording formats
Engineering materials characterization, 35	Implicitly nested data, 88 Indexing, 19–20	48 Physical schema, 16
descriptions, 69–70	Information transfer, "active," 78	Planning, materials databases, 6–11
fabrication and service history, 36	International Standards Organization,	Polymers
generic description, 35-36	STEP Materials Team, 5-6, 31	data recording formats, 50
identification, 34	ISO/DIS 10303, 31	distinguishing from polymer matrix
material source, 35 objectives, 34–35	data transfer, 76–77	composite, 39
part of sample detail fields, 36	invisibility, 82 "Open-World" information, 81–82	identification standards, 36–41 matrix composite, distinguishing from
primary identifiers, 35	recommendations, 82	polymers, 39
processing history, 36	Joints between materials, identification	Primary identifiers, 35
reference test results, 35	standards, 40	Processing history fields, 36
specifications, 35	Laboratory notebook databases, 28	Product data cycle, data transfer, 79
unified coding systems, 41-44	License agreements, 24	Project leader, 7

License agreements, 24 Line-by-line mode, data display, 17–18 Linings, identification standards, 41, 44

Project reads, 7
Project manager, support, 14
Project team, selection, 7

Property descriptions, 48	Software engineer, 7	Terminology, 2-4, 53, 65-66
Prototype, 14	responsibility, 13-14	data transfer, 83
Quality	Software packages, data transfer from	diversity in, 6
assurance programs, auditing, 69	databases, 79-82	standardized, 6
control database, 7	Sources	Test and specimen description, 49
indications, 63–64	of data	Test conditions, 47–48, 70
Query language, SQL, 78	critical assessment, 57 locating, 55–56	Testing, quality control and assessment, 63-64
R-S	rating an establishment, 59	Test method descriptors, 70
K-S	Specification fields, 35	Test procedure description, 50
D 1.	Specimen Specimen	Test results, 48
Raw data	description, 50	Thesaurus, 4, 22
data about data, 54	test parameters, 50	Tuples, multiple, 86
data transfer, 79	Spreadsheet, 1	Unified coding systems, engineering
definition, 65	SQL, 78	materials, 41, 44
different sets, 55	Standard procedures, and practices, 69	Unified Numbering System for Metals and
formats, 79	ceramic identification, 39, 41	Alloys, 38
locating sources, 55–56		• •
nature of, 53–54	composite materials identification,	Unit conversions, 21, 70
nonstandard test data, 79	39–40, 42	quality indications, 63
precautions when collecting data, 56	EDIFACT, 80	Unit of measurement, 4, 70
refinement, 56	identification of	Updating, 69
resources, 54–56	coatings and linings, 41, 44	User
from tests, 54	joints between materials, 40–43	community, vision of, 13
theoretically predicted data, 54	metals and alloys, 36	help services, 72–73
Recording format, 3	MAT/TOP, 82–83	involvement, in planning, 7-8
Records, 16	miniMAP, 82-83	groups, database classification by,
Reference contacts, 73	open distributed processing, 83	30–31
Reference test results, 35	organizations, 4–6	manual, 71–72
Relational database, schema creation, 98-	OSI, 82	User interface
99	polymer identification, 37–39	data display, 17
Report databases, 28-29	X.12, 80	data sets, 77
Research database, 7	Statistical analysis, 22	full-screen mode, 18
Retrieval, group characteristics, 10–11	Statistical tools, data analysis, 59-60	Validation
SAE Aerospace Standard 4159, 85	Status lines, 19	criteria, 48, 70
Schema, 2–3, 16	Steels, standards for identification, 37	data, 60-62
development, 11	Subschema, see External schema	entry, 100–101
Security, 18–19, 75	Supplemental information fields, 36	as group activity, 61
Software, 93–96	Synonyms, partial, 88	management, 61-62
alpha testing, 22-23	System	methodology, 61
announcing new releases, 24	capabilities, 70–71	remedy evaluation process limitations,
automated installation, 23-24	content, 71	60-61
beta testing, 23-24	demonstrating, 26	definition, 65
conversion, for alternative formats, 17	System architecture, 15–18	Value, of database, 1–2
documentation, 18	data dictionary, 15–16	Values, data transfer, 83–84
error handling, 19	schema and subschemas, 16	Value set, 3
fine tuning, 23		Video monitor, display area, 17
license agreements, 24	T-V	Visual real estate, 17
modules, 19		WV
runtime packages, 24	Technical support	W-X
selection, 8	data, 24	Wear, data recording formats, 50
technical support, 24	software, 24	White-box testing, 23
translator, 75–76	Techno-economic materials data, data	Workstation packages, 32
user documentation, 23	transfer, 80	xBase, 85–86