

**AEROSPACE
MATERIAL
SPECIFICATION**

AMS 3824A
Superseding AMS 3824

Issued 11-15-72
Revised 1-1-84

**CLOTH, GLASS
Finished for Resin Laminates**

1. SCOPE:

1.1 Form: This specification covers "E" glass in the form of woven cloth.

1.2 Application: Primarily as a reinforcing material for structural plastic laminates with finishes suitable for use with various resin matrices.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D123 - Definitions of Terms Relating to Textiles

ASTM D374 - Thickness of Solid Electrical Insulation

ASTM D578 - Testing Glass Fiber Yarns

ASTM D579 - Testing Greige Woven Glass Fabrics

ASTM D1777 - Measuring Thickness of Textile Materials

ASTM D1910 - Construction Characteristics of Woven Fabrics

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

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3. TECHNICAL REQUIREMENTS:

3.1 Material:

3.1.1 Color: Shall be essentially white to light tan.

3.1.2 Finish: The finish, as specified by the purchaser, shall be compatible with, and produce the required performance characteristics for, the resin system specified in the applicable impregnated glass cloth specification, the laminate specification, or the procuring document.

3.1.3 Yarn: The cloth shall be woven from yarns as specified in Table I.

3.1.4 Weave: Shall be as specified in Table I.

3.1.5 Indicator Yarn: When specified, the warp direction of the finished cloth shall be marked by colored direction-indicator yarns running warpwise in the cloth. Color and spacing of the indicator yarns, when specified, shall be as agreed upon by purchaser and vendor.

3.2 Properties: Shall be as specified in Table I except that finish content shall be as agreed upon by purchaser and vendor; conformance to these requirements shall be determined by the following methods:

Weight	ASTM D1910, Small Sample Method
Nominal Thickness	ASTM D374, Method C, and ASTM D1777
Fabric Count	ASTM D1910
Finish, %	ASTM D578
Breaking Strength	ASTM D579

3.3 Quality: Cloth, as received by purchaser, shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from imperfections detrimental to usage of the cloth. For U.S. Military purchases, the occurrence of defects shall not exceed the applicable acceptable quality level.

3.3.1 Imperfections: In any 100 yd (90 m) of cloth supplied in nominal width of 38 in. (965 mm), there shall be no more than the equivalent of 10 major imperfections (2 minors = 1 major), based on the following classification: for nominal widths of 50 in. (1250 mm) and 60 in. (1500 mm), there shall be no more than the equivalent of 13 and 16 major imperfections, respectively. For U.S. Military purchases, visual examination shall be as outlined in 4.3.1. Definition of terms shall be in accordance with ASTM D123.

Imperfection	Description	Classification
Bias or bowed filling	Distorted from perpendicular to the selvage edge more than 3 in. (75 mm) for 38 in. (965 mm) width and proportionately for all other widths.	Minor
Baggy, ridgy, or wavy cloth	Clearly noticeable.	Major
Cut or tear	2 in. (50 mm) or more in combined directions.	Major
	Less than 2 in. (50 mm) but greater than 1/4 in. (6.5 mm) in combined directions.	Minor
Ø	Any cut or tear less than 1/4 in. (6.5 mm)	Minor
Hole	1/2 in. (12.5 mm) or more in diameter.	Major
	Less than 1/2 in. (12.5 mm) in diameter.	Minor
Spots, streaks, or stains	Clearly noticeable 2 in. (50 mm) or more in combined directions.	Major
	Clearly noticeable less than 2 in. (50 mm) in combined directions.	Minor
Tender or weak spot	Clearly noticeable 2 in. (50 mm) or more in combined directions.	Major
	Clearly noticeable less than 2 in. (50 mm) but greater than 1/4 in. (6.5 mm) in combined directions.	Minor
Smash	3 in. (75 mm) or more in combined directions.	Major
	Less than 3 in. (75 mm) in combined directions.	Minor
Broken or missing ends or picks	3 or more contiguous regardless of length or 2 contiguous more than 36 in. (900 mm) in length.	Major
	2 contiguous less than 36 in. (900 mm) in length.	Minor
Floats and skips	2 in. (50 mm) or more in combined directions.	Major
	Less than 2 in. (50 mm) in combined directions.	Minor

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Imperfection	Description	Classification
Coarse or light place	Over 1/2 in. (12.5 mm) in width causing thickness outside of limits specified in Table I.	Minor
Selvage defects Ø	Cut or torn 1/4 in. (6.5 mm) and over in length.	Major
	Cut or torn less than 1/4 in. (6.5 mm) in length.	Minor
	Curled or folded under.	Minor
Crease	Hard, embedded, and folded over on self.	Major
Brittle or fused area	Any.	Major
Uneven finish	Thin areas where finishing compound is missing or insufficient.	Major

3.4 Sizes and Tolerances: Unless otherwise specified, standard lengths and widths shall be as specified in 3.4.1 and 3.4.2; tolerances shall conform to the following:

3.4.1 Length of Roll: Shall be 100 yd \pm 25 (90 m \pm 23), or as agreed upon by purchaser and vendor.

3.4.2 Width: Shall be 38, 50, or 60 in. (965, 1250, or 1500 mm), as ordered, and shall be within \pm 1/2 in. (\pm 12.5 mm) of the ordered width.

3.4.3 Weight: Shall not vary from the values in Table I by more than the following:

Nominal Weight		Permissible Variation, % plus and minus
oz per sq yd	g per m ²	
Up to 4.00, incl	Up to 135, incl	10
Over 4.00	Over 135	6

3.4.4 Thread Count:

3.4.4.1 Warp: The average count of warp ends shall be within \pm 2 ends from the nominal count listed in Table I.

3.4.4.2 Fill: The average count of filling picks shall be within \pm 2 picks from the nominal count listed in Table I.

- 3.4.5 Thickness: Permissible variation in thickness shall be as specified in Table II.

TABLE II

PERMISSIBLE VARIATIONS IN THICKNESS OF FABRICS

Nominal Thickness Inch	Permissible Variation, Inch plus and minus
Up to 0.0030, incl	0.0005
Over 0.0030 to 0.0100, incl	0.0010
Over 0.0100 to 0.0150, incl	0.0020
Over 0.0150	0.0030

TABLE II (SI)

Nominal Thickness Millimetre	Permissible Variation, Millimetre plus and minus
Up to 0.075, incl	0.012
Over 0.075 to 0.250, incl	0.025
Over 0.250 to 0.375, incl	0.050
Over 0.375	0.075

4. QUALITY ASSURANCE PROVISIONS:

- 4.1 Responsibility for Inspection: The vendor of cloth shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.6. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the cloth conforms to the requirements of this specification.

4.2 Classification of Tests:

- 4.2.1 Acceptance Tests: Tests to determine conformance to requirements for weight, nominal dimensions, thread count, finish percent, and breaking strength (3.2), quality (3.3), imperfections (3.3.1), and tolerances (3.4) are classified as acceptance tests and shall be performed on each lot.
- 4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of cloth to a purchaser, when a change in material or processing, or both, requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

- 4.2.2.1 For direct U.S. Military procurement, substantiating test data, including flexural strength properties (dry and wet) of laminates to an appropriate laminate specification, and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows:

- 4.3.1 For Acceptance Tests: Each lot of cloth shall be 100% visually examined for quality (3.3) and sampled at random for all other tests; the number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three, taken from 3 yd (3 m) of full width cloth.

- 4.3.1.1 A lot shall be all cloth produced in a single production run under the same fixed conditions and submitted for vendor's inspection at one time. An inspection lot shall not exceed 5000 yd (4600 m). A lot may be packaged in small quantities under the basic lot approval provided the lot identification is maintained.

- 4.3.1.2 When a statistical sampling plan and acceptance quality level (AQL) in accordance with MIL-STD-105 have been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.5.1 shall state that such plan was used.

- 4.3.1.3 For direct U.S. Military procurement, the entire yardage of each roll of cloth shall be examined on the face side for imperfections listed in 3.3.1.

- 4.3.1.3.1 All imperfections shall be counted regardless of their proximity to one another, except where two or more imperfections represent a single local condition on the end item, in which case only the more serious imperfection shall be counted. A continuous imperfection shall be counted as one imperfection, the sample unit one roll. The sample size shall be in accordance with inspection Level I of MIL-STD-105. Acceptable quality levels (AQL's) shall be 2.5 major and 6.5 total (major and minor combined) percent defective or as per contract.

- 4.3.2 For Preproduction Tests: As agreed upon by purchaser and vendor.

4.4 Approval:

- 4.4.1 Sample cloth shall be approved by purchaser before cloth for production use is supplied, unless such approval be waived by purchaser. Results of tests on production cloth shall be essentially equivalent to those on the approved sample.

- 4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production cloth which are essentially the same as those used on the approved sample cloth. If necessary to make any
Ø change in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed change in material or processing, or both, and, when requested, sample cloth. Production cloth made by the revised procedures shall not be shipped prior to receipt of reapproval.

4.5 Reports:

- 4.5.1 The vendor of cloth shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the cloth conforms to the other technical requirements of this specification. This report shall include the purchase order number, AMS 3824A, fabric style number, vendor's material and finish designation, date of finishing, and quantity.
- 4.5.2 The vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, AMS 3824A, fabric style number, finish number, contractor or other direct supplier of cloth supplier's material and finish designation, and quantity. When cloth for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of cloth to determine conformance to the requirements of this specification and shall include in the report either a statement that the cloth conforms or copies of laboratory reports showing the results of tests to determine conformance.

- 4.6 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the cloth may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the cloth represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification:

- 5.1.1 Each roll of cloth shall have attached a tag showing not less than the manufacturer's name or trademark and "CLOTH, GLASS, STYLE _____, FINISH NUMBER _____".
- 5.1.2 Each roll shall be wrapped in a suitable polyethylene film not less than
Ø 0.004 in. (0.10 mm) thick in such a manner as to ensure that the cloth, during shipment and storage, will be protected against damage from exposure to moisture, weather, or any other normal hazard.

- 5.1.3 Each package shall be marked to show not less than the following
Ø information; characters shall be of such size as to be legible and shall not be obliterated by normal handling:

CLOTH, GLASS, FABRIC STYLE _____, FINISH DESIGNATION _____
AMS 3824A
YARDAGE _____
WIDTH _____
PURCHASE ORDER NUMBER _____
MANUFACTURER'S IDENTIFICATION _____
LOT NUMBER _____

- 5.1.4 Packages shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations
Ø pertaining to the handling, packaging, and transportation of the cloth to ensure carrier acceptance and safe delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

- 5.1.5 For direct U.S. Military procurement, packaging shall be in accordance
Ø with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.1.2 and 5.1.4 will be acceptable if it meets the requirements of Level C.

6. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS: Material not conforming to this specification or to modifications authorized by the purchaser will be subject to rejection.

8. NOTES:

- 8.1 Marginal Indicia: The phi (Ø) symbol is used to indicate technical changes from the previous issue of this specification.

- 8.2 Definitions: For definition of terms, refer to ASTM D123.

- 8.3 Dimensions in inch/pound units are primary; dimensions in SI units are shown as the approximate equivalents of the inch/pound units and are presented only for information.

- 8.4 For direct U.S. Military procurement, purchase documents should specify not less than the following:

Title, number, and date of this specification
Style and finish number of cloth desired
Width of cloth desired
Quantity of cloth desired
Applicable level of packaging (See 5.1.5)

8.5 Cloth meeting the requirements of this specification has been classified under Federal Supply Classification (FSC) 8305.

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This specification is under the jurisdiction of AMS Committee "C", (NOMETCOM).

TABLE I

TYPE "E" GLASS CLOTH CONSTRUCTION AND PHYSICAL PROPERTIES

Fabric Style No.	Yarn Count per in.	Warp Yarn	Filling Yarn	Weave	Weight oz per sq yd	Thickness in.	Breaking Strength, min lb per in.
104	60 x 52	D900 1/0	D1800 1/0	Plain	0.56	0.0011	15 x 5
325	90 x 44	D900 1/0	D1800 1/0	Plain	0.70	0.0013	17 x 5
106	56 x 56	D900 1/0	D900 1/0	Plain	0.73	0.0014	12 x 12
107	60 x 35	D900 1/2	D900 1/0	Plain	1.01	0.0018	24 x 7
1070	60 x 35	D450 1/0	D900 1/0	Plain	1.03	0.0017	24 x 7
108	60 x 47	D900 1/2	D900 1/2	Plain	1.40	0.0022	24 x 20
1080	60 x 47	D450 1/0	D450 1/0	Plain	1.40	0.0023	24 x 20
112	40 x 39	D450 1/2	D450 1/2	Plain	2.10	0.0035	40 x 35
2112	40 x 39	D225 1/0	D225 1/0	Plain	2.10	0.0035	40 x 35
1125	40 x 39	D450 1/2	G150 1/0	Plain	2.60	0.0041	40 x 45
2125	40 x 39	D225 1/0	G150 1/0	Plain	2.60	0.0041	40 x 45
1610	32 x 28	G150 1/0	G150 1/0	Plain	2.35	0.0036	35 x 30
113	60 x 64	D450 1/2	D900 1/2	Plain	2.45	0.0034	50 x 25
2113	60 x 64	D225 1/0	D450 1/0	Plain	2.38	0.0032	50 x 25
119	54 x 50	D450 1/2	D450 1/2	Plain	2.71	0.0039	60 x 50
1674	40 x 32	G150 1/0	G150 1/0	Plain	2.80	0.0043	50 x 35

TABLE I (Cont'd.)

Fabric Style No.	Yarn Count per in.	Warp Yarn	Filling Yarn	Weave	Weight oz per sq yd	Thickness in.	Breaking Strength, min lb per in.
1675	40 x 32	DE150 1/0	DE150 1/0	Plain	2.83	0.0044	50 x 35
1116	60 x 58	D450 1/2	D450 1/2	Plain	3.10	0.0040	60 x 55
2116	60 x 58	D225 1/0	D225 1/0	Plain	3.10	0.0040	60 x 55
1165	60 x 52	D450 1/2	G150 1/0	Plain	3.60	0.0044	55 x 60
2165	60 x 52	D225 1/0	G150 1/0	Plain	3.62	0.0048	55 x 60
120	60 x 58	D450 1/2	D450 1/2	Crowfoot	3.14	0.0042	60 x 55
2120	60 x 58	D225 1/0	D225 1/0	Crowfoot	3.12	0.0042	60 x 55
1677	40 x 40	DE150 1/0	DE150 1/0	Plain	3.14	0.0044	60 x 50
1681	56 x 36	DE150 1/0	DE150 1/0	Plain	3.60	0.0048	60 x 45
125	36 x 34	D450 2/2	D450 2/2	Plain	3.70	0.0057	60 x 55
118	90 x 60	D450 1/2	D450 1/2	Crowfoot	3.90	0.0052	75 x 60
1676	56 x 48	DE150 1/0	DE150 1/0	Plain	4.00	0.0048	70 x 60
ø 1510	32 x 29	G150 1/2	G150 1/2	Plain	4.78	0.0050	55 x 45
126	34 x 32	D450 3/2	D450 3/2	Plain	5.30	0.0076	80 x 55
1526	34 x 32	G150 1/2	G150 1/2	Plain	5.27	0.0071	80 x 55
ø 7626	34 x 32	G75 1/0	G75 1/0	Plain	5.20	0.0062	80 x 55
ø 1557	57 x 30	G150 1/2	D225 1/0	Crowfoot	5.27	0.0058	125 x 25

TABLE I (Cont'd.)

Fabric Style No.	Yarn Count per in.	Warp Yarn	Filling Yarn	Weave	Weight oz per sq yd	Thickness in.	Breaking Strength, min lb per in.
Ø 1680	72 x 70	DE150 1/0	DE150 1/0	8H Satin	5.56	0.006	95 x 80
7533	18 x 18	G75 1/2	G75 1/2	Plain	5.65	0.0092	90 x 85
3733	18 x 18	G37 1/0	G37 1/0	Plain	5.60	0.0078	90 x 85
127	42 x 32	D450 3/2	D450 3/2	Plain	5.80	0.0078	80 x 55
128*	42 x 32	D225 1/3	D225 1/3	Plain	5.80	0.0072	80 x 55
1528	44 x 32	G150 1/2	G150 1/2	Plain	5.95	0.0069	80 x 55
7628	44 x 32	G75 1/0	G75 1/0	Plain	5.95	0.0069	80 x 55
76281	44 x 32	G75 1/0	G75 1/0	Crowfoot	5.95	0.0069	80 x 55
7637	44 x 22	G75 1/0	G37 1/0	Plain	6.70	0.0082	80 x 80
7532	16 x 14	G75 1/3	G75 1/3	Plain	7.05	0.012	115 x 100
2532	16 x 14	H25 1/0	H25 1/0	Plain	6.85	0.0097	100 x 95
7520	18 x 17	G75 1/3	G75 1/3	Plain	8.22	0.0099	105 x 100
141*	32 x 21	D225 3/2	D225 3/2	Plain	8.50	0.0115	125 x 90
7641	32 x 21	G75 1/2	G75 1/2	Plain	8.50	0.0105	125 x 90
1143*	49 x 30	D225 3/2	D450 1/2	Crowfoot	8.30	0.0086	250 x 20
1543*	49 x 30	G150 2/2	D225 1/0	Crowfoot	8.30	0.0086	250 x 20
3743*	49 x 30	G37 1/0	D225 1/0	Crowfoot	8.30	0.0086	250 x 20

TABLE I (Cont'd.)

Fabric Style No.	Yarn Count per in.	Warp Yarn	Filling Yarn	Weave	Weight oz per sq yd	Thickness in.	Breaking Strength, min lb per in.
341*	30 x 49	D450 1/2	D225 3/2	Crowfoot	8.68	0.0095	30 x 250
1581	57 x 54	G150 1/2	G150 1/2	8H Satin	8.60	0.0092	150 x 130
7781	60 x 54	DE75 1/0	DE75 1/0	8H Satin	8.82	0.0092	150 x 130
7500	16 x 14	G75 2/2	G75 2/2	Plain	9.55	0.0145	150 x 120
1800	16 x 14	K18 1/0	K18 1/0	Plain	9.68	0.0130	150 x 120
7743	120 x 20	DE75 1/0	G150 1/0	8H Satin	10.0	0.0096	275 x 35
1523	28 x 20	G150 3/2	G150 3/2	Plain	11.5	0.0140	160 x 140
2523	28 x 20	H25 1/0	H25 1/0	Plain	11.28	0.0140	190 x 130
162*	28 x 16	D225 2/5	D225 2/5	Plain	11.70	0.0165	190 x 125
164*	20 x 18	D225 4/3	D225 4/3	Plain	12.4	0.0160	190 x 160
1564	20 x 18	G150 4/2	G150 4/2	Plain	12.25	0.0150	190 x 160
7664	20 x 18	G75 2/2	G75 2/2	Plain	12.50	0.0165	190 x 160
3732	48 x 32	G37 1/0	G37 1/0	Crowfoot	12.5	0.0125	175 x 150
182*	60 x 56	D225 2/2	D225 2/2	8H Satin	12.2	0.0135	180 x 160
1582	60 x 56	G150 1/3	G150 1/3	8H Satin	13.75	0.0155	160 x 150
1527	17 x 17	G150 3/3	G150 3/3	Plain	12.0	0.0170	180 x 170
183*	54 x 48	D225 3/2	D225 3/2	8H Satin	16.0	0.0185	250 x 225

TABLE I (Cont'd.)

Fabric Style No.	Yarn Count per in.	Warp Yarn	Filling Yarn	Weave	Weight oz per sq yd	Thickness in.	Breaking Strength, min lb per in.
1583	54 x 48	G150 2/2	G150 2/2	8H Satin	16.0	0.0180	250 x 225
1544	28 x 14	G150 4/2	G150 4/4	2/1 Basket	17.7	0.0220	190 x 160
7544	28 x 14	G75 2/2	G75 2/4	2/1 Basket	17.7	0.0220	190 x 160
7587	40 x 21	G75 2/2	G75 2/2	Mock Leno	20.0	0.0315	300 x 170
184*	42 x 36	D225 4/3	D225 4/3	8H Satin	25.0	0.0300	300 x 250
1584	44 x 35	G150 4/2	G150 4/2	8H Satin	25.2	0.0300	300 x 250
1884	44 x 35	K18 1/0	K18/10	8H Satin	25.0	0.0280	300 x 250

*ECE 225 yarn originally required for this cloth has been replaced by ECD 225 yarn because of unavailability. When available, ECE 225 may be used.

TABLE I (SI)

TYPE "E" GLASS CLOTH CONSTRUCTION AND PHYSICAL PROPERTIES

Fabric Style No.	Yarn Count per 50 mm	Warp Yarn	Filling Yarn	Weave	Weight g/m ²	Thickness mm	Breaking Strength, min N
104	118 x 102	EC5 5.5 1x0	EC5 2.75 1x0	Plain	19.0	0.028	131 x 44
325	177 x 86	EC5 5.5 1x0	EC5 2.75 1x0	Plain	23.7	0.033	149 x 44
106	110 x 110	EC5 5.5 1x0	EC5 5.5 1x0	Plain	24.7	0.036	105 x 105
107	118 x 69	EC5 5.5 1x2	EC5 5.5 1x0	Plain	34.2	0.046	210 x 61
1070	118 x 69	EC5 11 1x0	EC5 5.5 1x0	Plain	34.9	0.043	210 x 61
108	118 x 92	EC5 5.5 1x2	EC5 5.5 1x2	Plain	47.5	0.056	210 x 175
1080	118 x 92	EC5 11 1x0	EC5 11 1x0	Plain	47.5	0.058	210 x 175
112	78 x 77	EC5 11 1x2	EC5 11 1x2	Plain	71.2	0.089	350 x 306
2112	78 x 77	EC5 22 1x0	EC5 22 1x0	Plain	71.2	0.089	350 x 306
1125	78 x 77	EC5 11 1x2	EC9 33 1x0	Plain	88.2	0.104	350 x 394
2125	78 x 77	EC5 22 1x0	EC9 33 1x0	Plain	88.2	0.104	350 x 394
1610	63 x 55	EC9 33 1x0	EC9 33 1x0	Plain	79.7	0.091	306 x 262
113	118 x 126	EC5 11 1x2	EC5 5.5 1x2	Plain	83.1	0.086	438 x 219
2113	118 x 126	EC5 22 1x0	EC5 11 1x0	Plain	80.7	0.081	438 x 219
119	106 x 99	EC5 11 1x2	EC5 11 1x2	Plain	92.1	0.099	525 x 438
1674	78 x 63	EC9 33 1x0	EC9 33 1x0	Plain	94.9	0.109	438 x 306