

THE REQUIREMENTS FOR ACQUIRING THE PRODUCT(S) DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE ISSUE OF THE FOLLOWING SPECIFICATION LISTED IN THAT ISSUE OF THE DDSSS SPECIFIED IN THE SOLICITATION: NONE

THIS SPECIFICATION IS APPROVED FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE.

Form Approved
OMB No. 0704-0188

COUNTERSUNK WASHER
(FOR USE UNDER BOLT HEAD)

PLAIN WASHER
(FOR USE UNDER NUT)

TABLE I. WASHER DIMENSIONS AND WEIGHTS

NOMINAL SIZE	DASH NUMBER		$\phi B(a)$		$\phi D(a)$		ϕA		V		E	FLATNESS MAX	WASHER APPROX. WEIGHT LBS/100	
	CSK	PLAIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	$\pm 1^\circ$		CSK	PLAIN
.1900	C3	3	.387	.377	.195	.191	.290	.280	.069	.057	45	.007	.15	.15
.2500	C4	4	.491	.481	.255	.251	.350	.340	.069	.057	45		.23	.24
.3125	C5	5	.598	.588	.318	.314	.412	.402	.069	.057	45		.33	.35
.3750	C6	6	.712	.702	.380	.376	.507	.497	.085	.071	45		.56	.49
.4375	C7	7	.831	.821	.443	.439	.569	.559	.085	.071	45		.79	.67
.5000	C8	8	.950	.940	.505	.501	.632	.622	.085	.071	45		1.03	.88
.5625	C9	9	1.069	1.059	.568	.564	.694	.684	.085	.071	45	.010	1.30	1.12
.6250	C10	10	1.192	1.182	.631	.627	.788	.778	.085	.071	45		2.31	1.40
.7500	C12	12	1.433	1.423	.756	.752	.913	.903	.085	.071	45		3.32	2.03
.8750	C14	14	1.668	1.658	.881	.877	1.038	1.028	.085	.071	45		6.71	2.75
1.0000	C16	16	1.905	1.895	1.006	1.002	1.163	1.153	.119	.099	45		8.71	3.59
1.1250	C18	18	2.150	2.140	1.131	1.127	1.288	1.278	.119	.099	45		11.00	4.48
1.2500	C20	20	2.391	2.381	1.256	1.252	1.445	1.435	.119	.099	45	.015	13.61	5.68
1.3750	C22	22	2.637	2.627	1.381	1.377	1.570	1.560	.119	.099	45		19.84	6.93
1.5000	C24	24	2.884	2.874	1.506	1.502	1.695	1.685	.119	.099	45		23.69	8.31

(a) MINIMUM BEARING AREA BASED ON A BEARING STRESS OF 125% OF MATERIAL COMPRESSION YIELD (=45 KSI) AND 67% OF BOLT ULTIMATE TENSILE VALUE OF 260 KSI.

Ⓐ ENTIRE SPECIFICATION REVISED

INCH-POUND

PREPARING ACTIVITY: DLA-IS CUSTODIANS: ARMY- AV NAVY- AS AIR FORCE- 11 DLA- REVIEW: USER: PROJECT NUMBER: 5310-2001	MILITARY SPECIFICATION SHEET TITLE WASHER, COUNTERSUNK AND PLAIN, FOR USE WITH BOLTS AND NUTS UP TO AND INCLUDING 260 KSI Flu	SPECIFICATION SHEET NUMBER MS21299 30 SEP 1994 REV A SUPERSEDING MS21299 28 JAN 1972 AMSC- N/A FSC 5310
--	---	--

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Page 1 of 2

THE REQUIREMENTS FOR ACQUIRING THE PRODUCT(S) DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE ISSUE OF THE FOLLOWING SPECIFICATION LISTED IN THAT ISSUE OF THE DODISS SPECIFIED IN THE SOLICITATION: NONE

THIS SPECIFICATION IS APPROVED FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE.

Form Approved
OMB No. 0704-0188

REQUIREMENTS:

1. **MATERIAL:** STEEL, ALLOY IN ACCORDANCE WITH MIL-S-6758 OR MIL-S-18729.
CRES, 17-4PH IN ACCORDANCE WITH AMS 5604, CONDITION H 1025.
2. **HARDNESS:** STEEL ALLOY HRc 39-45, CRES 17-4PH HRc 35-42.
3. **FINISH:** 17-4PH MATERIAL - PASSIVATE IN ACCORDANCE WITH QQ-P-35.
STEEL, ALLOY - CADMIUM PLATE IN ACCORDANCE WITH QQ-P-416, TYPE II, CLASS 2.
4. **SURFACE TEXTURE:** 125 MICROINCHES IN ACCORDANCE WITH ANSI/ASME B46.1.
5. EXAMPLE OF PART NUMBER:

MS21299 - 3 K = WASHER, PLAIN, .1900 NOM. SIZE, CRES.

ABSENCE OF LETTER INDICATES STEEL, ALLOY
LETTER 'K' INDICATES CRES
INDICATES NOMINAL SIZE (SEE TABLE I)
ABSENCE OF LETTER INDICATES PLAIN WASHER
LETTER 'C' INDICATES COUNTERSUNK WASHER
BASIC MS NUMBER

NOTES:

1. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.
2. INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100.
3. WASHER SHALL BE FREE FROM ALL HANGING BURRS AND SLIVERS WHICH MIGHT BECOME DISLOGED UNDER USAGE.
4. DESIGN AND USAGE INFORMATION: THESE WASHERS ARE PRIMARILY FOR USE WITH MS21296, MS21134, MS21297 AND MIL-B-8906/2 BOLTS.
5. IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS DOCUMENT AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS DOCUMENT TAKES PRECEDENCE.
6. UNLESS OTHERWISE SPECIFIED, ISSUES OF REFERENCED DOCUMENTS ARE THOSE IN EFFECT AT THE TIME OF SOLICATION.

PREPARING ACTIVITY: DLA-IS
CUSTODIANS: ARMY- AV NAVY- AS
AIR FORCE- 11 DLA-
REVIEW:
USER:
PROJECT NUMBER: 5310-2001

MILITARY SPECIFICATION SHEET

TITLE
WASHER, COUNTERSUNK AND PLAIN,
FOR USE WITH BOLTS AND NUTS UP
TO AND INCLUDING 260 KSI Ftu

SPECIFICATION SHEET NUMBER

MS21299

30 SEP 1994
REV A

SUPERSEDING
MS21299 28 JAN 1972

AMSC- N/A FSC 5310

DISTRIBUTION STATEMENT

A. Approved for public release; distribution is unlimited.

Page 2 of 2