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| **ГОСТ 8509-93**  **МЕЖГОСУДАРСТВЕННЫЙ СТАНДАРТ**  **УГОЛКИ СТАЛЬНЫЕ  ГОРЯЧЕКАТАНЫЕ  РАВНОПОЛОЧНЫЕ**  **СОРТАМЕНТ**  **МЕЖГОСУДАРСТВЕННЫЙ СОВЕТ  ПО СТАНДАРТИЗАЦИИ, МЕТРОЛОГИИ И СЕРТИФИКАЦИИ**  Минск  Предисловие  1 РАЗРАБОТАН Украинским научно-исследовательским институтом металлов  ВНЕСЕН Госстандартом Украины  2 ПРИНЯТ Межгосударственным Советом по стандартизации, метрологии и сертификации (протокол № 3от 17.02.93)  За принятие проголосовали:   | Наименование государства | Наименование национального органа по стандартизации | | --- | --- | | Республика Армения | Армгосстандарт | | Республика Белоруссия | Белстандарт | | Республика Казахстан | Госстандарт Республики Казахстан | | Республика Молдова | Молдовастандарт | | Российская Федерация | Госстандарт России | | Туркменистан | Туркменглавгосинспекция | | Республика Узбекистан | Узгосстандарт | | Украина | Госстандарт Украины |   3 Постановлением Комитета Российской Федерации по стандартизации, метрологии и сертификации от 20.02.96 № 85 межгосударственный стандарт ГОСТ 8509-93 введен в действие непосредственно в качестве государственного стандарта Российской Федерации с 1 января 1997 г.  4 ВЗАМЕН ГОСТ 8509-86  **МЕЖГОСУДАРСТВЕННЫЙ СТАНДАРТ**   |  |  | | --- | --- | | **УГОЛКИ СТАЛЬНЫЕ ГОРЯЧЕКАТАНЫЕ РАВНОПОЛОЧНЫЕ**  **Сортамент**  Hot-rolled steel equal-leg angles.  Dimensions | **ГОСТ  8509-93** |   **Дата введения 1997-01-01**  1 Настоящий стандарт распространяется на уголки стальные горячекатаные равнополочные.  2 Размеры уголков, площадь поперечного сечения, справочные величины для осей и масса 1 м уголков должны соответствовать указанным на [рисунке 1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i18716) и в [таблице 1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i22968), а при поставках на экспорт - рекомендуемым [приложениям А](http://www.docload.ru/Basesdoc/3/3969/index.htm#i52038) и [Б](http://www.docload.ru/Basesdoc/3/3969/index.htm#i71691).  Untitled-1  Рисунок 1  Таблица 1   | Номер уголка | *b* | *t* | | | *R* | *r* | *F*, см2 | Справочные значения величин для осей | | | | | | | | | | | Масса 1 м, кг | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | *х - х* | | | | *x*0 *- x*0 | | *у*0 *- у*0 | | | *Ixy*, см4 | *x*0*,* см | | мм | | | | | | *Ix,* см4 | *Wx,* см3 | | *ix,* см | *Ix*0 *max,* см4 | *iх*0 *max,* см | *Iy*0 *min,* см4 | *Wy*0*,* см3 | *iy*0 *min,* см | | 2 | 20 | | 3 | 3,5 | | 1,2 | 1,13 | 0,40 | 0,28 | | 0,59 | 0,63 | 0,75 | 0,17 | 0,20 | 0,39 | 0,23 | 0,60 | 0,89 | | 4 | 3,5 | | 1,2 | 1,46 | 0,50 | 0,37 | | 0,58 | 0,78 | 0,73 | 0,22 | 0,24 | 0,38 | 0,28 | 0,64 | 1,15 | | 2,5 | 25 | | 3 | 3,5 | | 1,2 | 1,43 | 0,81 | 0,46 | | 0,75 | 1,29 | 0,95 | 0,34 | 0,33 | 0,49 | 0,47 | 0,73 | 1,12 | | 4 | 3,5 | | 1,2 | 1,86 | 1,03 | 0,59 | | 0,74 | 1,62 | 0,93 | 0,44 | 0,41 | 0,48 | 0,59 | 0,76 | 1,46 | | 2,8 | 28 | | 3 | 4,0 | | 1,3 | 1,62 | 1,16 | 0,58 | | 0,85 | 1,84 | 1,07 | 0,48 | 0,42 | 0,55 | 0,68 | 0,80 | 1,27 | | 3 | 30 | | 3 | 4,0 | | 1,3 | 1,74 | 1,45 | 0,67 | | 0,91 | 2,30 | 1,15 | 0,60 | 0,53 | 0,59 | 0,85 | 0,85 | 1,36 | | 4 | 4,0 | | 1,3 | 2,27 | 1,84 | 0,87 | | 0,90 | 2,92 | 1,13 | 0,77 | 0,61 | 0,58 | 1,08 | 0,89 | 1,78 | | 3,2 | 32 | | 3 | 4,5 | | 1,5 | 1,86 | 1,77 | 0,77 | | 0,97 | 2,80 | 1,23 | 0,74 | 0,59 | 0,63 | 1,03 | 0,89 | 1,46 | | 4 | 4,5 | | 1,5 | 2,43 | 2,26 | 1,00 | | 0,96 | 3,58 | 1,21 | 0,94 | 0,71 | 0,62 | 1,32 | 0,94 | 1,91 | | 3,5 | 35 | | 3 | 4,5 | | 1,5 | 2,04 | 2,35 | 0,93 | | 1,07 | 3,72 | 1,35 | 0,97 | 0,71 | 0,69 | 1,37 | 0,97 | 1,60 | | 4 | 4,5 | | 1,5 | 2,67 | 3,01 | 1,21 | | 1,06 | 4,76 | 1,33 | 1,25 | 0,88 | 0,68 | 1,75 | 1,01 | 2,10 | | 5 | 4,5 | | 1,5 | 3,28 | 3,61 | 1,47 | | 1,05 | 5,71 | 1,32 | 1,52 | 1,02 | 0,68 | 2,10 | 1,05 | 2,58 | | 4 | 40 | | 3 | 5,0 | | 1,7 | 2,35 | 3,55 | 1,22 | | 1,23 | 5,63 | 1,55 | 1,47 | 0,95 | 0,79 | 2,08 | 1,09 | 1,85 | | 4 | 5,0 | | 1,7 | 3,08 | 4,58 | 1,60 | | 1,22 | 7,26 | 1,53 | 1,90 | 1,19 | 0,78 | 2,68 | 1,13 | 2,42 | | 5 | 5,0 | | 1,7 | 3,79 | 5,53 | 1,95 | | 1,21 | 8,75 | 1,52 | 2,30 | 1,39 | 0,78 | 3,22 | 1,17 | 2,98 | | 4,5 | 45 | | 3 | 5,0 | | 1,7 | 2,65 | 5,13 | 1,56 | | 1,39 | 8,13 | 1,75 | 2,12 | 1,24 | 0,89 | 3,00 | 1,21 | 2,08 | | 4 | 5,0 | | 1,7 | 3,48 | 6,63 | 2,04 | | 1,38 | 10,52 | 1,74 | 2,74 | 1,54 | 0,89 | 3,89 | 1,26 | 2,73 | | 5 | 5,0 | | 1,7 | 4,29 | 8,03 | 2,51 | | 1,37 | 12,74 | 1,72 | 3,33 | 1,81 | 0,88 | 4,71 | 1,30 | 3,37 | | 5 | 50 | | 3 | 5,5 | | 1,8 | 2,96 | 7,11 | 1,94 | | 1,55 | 11,27 | 1,95 | 2,95 | 1,57 | 1,00 | 4,16 | 1,33 | 2,32 | | 4 | 5,5 | | 1,8 | 3,89 | 9,21 | 2,54 | | 1,54 | 14,63 | 1,94 | 3,80 | 1,95 | 0,99 | 5,42 | 1,38 | 3,05 | | 5 | 5,5 | | 1,8 | 4,80 | 11,20 | 3,13 | | 1,53 | 17,77 | 1,92 | 4,63 | 2,30 | 0,98 | 6,57 | 1,42 | 3,77 | | 6 | 5,5 | | 1,8 | 5,69 | 13,07 | 3,69 | | 1,52 | 20,72 | 1,91 | 5,43 | 2,63 | 0,98 | 7,65 | 1,46 | 4,47 | | 5,6 | 56 | | 4 | 6,0 | | 2,0 | 4,38 | 13,10 | 3,21 | 1,73 | | 20,79 | 2,18 | 5,41 | 2,52 | 1,11 | 7,69 | 1,52 | 3,44 | | 5 | 6,0 | | 2,0 | 5,41 | 15,97 | 3,96 | 1,72 | | 25,36 | 2,16 | 6,59 | 2,97 | 1,10 | 9,41 | 1,57 | 4,25 | | 6,3 | 63 | | 4 | 7,0 | | 2,3 | 4,96 | 18,86 | 4,09 | 1,95 | | 29,90 | 2,45 | 7,81 | 3,26 | 1,25 | 11,00 | 1,69 | 3,90 | | 5 | 7,0 | | 2,3 | 6,13 | 23,10 | 5,05 | 1,94 | | 36,80 | 2,44 | 9,52 | 3,87 | 1,25 | 13,70 | 1,74 | 4,81 | | 6 | 7,0 | | 2,3 | 7,28 | 27,06 | 5,98 | 1,93 | | 42,91 | 2,43 | 11,18 | 4,44 | 1,24 | 15,90 | 1,78 | 5,72 | | 7 | 70 | | 4,5 | 8,0 | | 2,7 | 6,20 | 29,04 | 5,67 | 2,16 | | 46,03 | 2,72 | 12,04 | 4,53 | 1,39 | 17,00 | 1,88 | 4,87 | | 5 | 8,0 | | 2,7 | 6,86 | 31,94 | 6,27 | 2,16 | | 50,67 | 2,72 | 13,22 | 4,92 | 1,39 | 18,70 | 1,90 | 5,38 | | 6 | 8,0 | | 2,7 | 8,15 | 37,58 | 7,43 | 2,15 | | 59,64 | 2,71 | 15,52 | 5,66 | 1,38 | 22,10 | 1,94 | 6,39 | | 7 | 8,0 | | 2,7 | 9,42 | 42,98 | 8,57 | 2,14 | | 68,19 | 2,69 | 17,77 | 6,31 | 1,37 | 25,20 | 1,99 | 7,39 | | 8 | 8,0 | | 2,7 | 10,67 | 48,16 | 9,68 | 2,12 | | 76,35 | 2,68 | 19,97 | 6,99 | 1,37 | 28,20 | 2,02 | 8,37 | | 7,5 | 75 | | 5 | 9,0 | | 3,0 | 7,39 | 39,53 | 7,21 | 2,31 | | 62,65 | 7,91 | 16,41 | 5,74 | 1,49 | 23,10 | 2,02 | 5,80 | | 6 | 9,0 | | 3,0 | 8,78 | 46,57 | 8,57 | 2,30 | | 73,87 | 2,90 | 19,28 | 6,62 | 1,48 | 27,30 | 2,06 | 6,89 | | 7 | 9,0 | | 3,0 | 10,15 | 53,34 | 9,89 | 2,29 | | 84,61 | 2,89 | 22,07 | 7,43 | 1,47 | 31,20 | 2,10 | 7,96 | | 8 | 9,0 | | 3,0 | 11,50 | 59,84 | 11,18 | 2,28 | | 94,89 | 2,87 | 24,80 | 8,16 | 1,47 | 35,00 | 2,15 | 9,02 | | 9 | 9,0 | | 3,0 | 12,83 | 66,10 | 12,43 | 2,27 | | 104,72 | 2,86 | 27,48 | 8,91 | 1,46 | 38,60 | 2,18 | 10,07 | | 8 | 80 | | 5,5 | 9,0 | | 3,0 | 8,63 | 52,68 | 9,03 | 2,47 | | 83,56 | 3,11 | 21,80 | 7,10 | 1,59 | 30,90 | 2,17 | 6,78 | | 6 | 9,0 | | 3,0 | 9,38 | 56,97 | 9,80 | 2,47 | | 90,40 | 3,11 | 23,54 | 7,60 | 1,58 | 33,40 | 2,19 | 7,36 | | 7 | 9,0 | | 3,0 | 10,85 | 65,31 | 11,32 | 2,45 | | 103,60 | 3,09 | 26,97 | 8,55 | 1,58 | 38,30 | 2,23 | 8,51 | | 8 | 9,0 | | 3,0 | 12,30 | 73,36 | 12,80 | 2,44 | | 116,39 | 3,08 | 30,32 | 9,44 | 1,57 | 43,00 | 2,27 | 9,65 | | 9 | 90 | | 6 | 10,0 | | 3,3 | 10,61 | 82,10 | 12,49 | 2,78 | | 130,00 | 3,50 | 33,97 | 9,88 | 1,79 | 48,10 | 2,43 | 8,33 | | 7 | 10,0 | | 3,3 | 12,28 | 94,30 | 14,45 | 2,77 | | 149,67 | 3,49 | 38,94 | 11,15 | 1,78 | 55,40 | 2,47 | 9,64 | | 8 | 10,0 | | 3,3 | 13,93 | 106,11 | 16,36 | 2,76 | | 168,42 | 3,48 | 43,80 | 12,34 | 1,77 | 62,30 | 2,51 | 10,93 | | 9 | 10,0 | | 3,3 | 15,60 | 118,00 | 18,29 | 2,75 | | 186,00 | 3,46 | 48,60 | 13,48 | 1,77 | 68,00 | 2,55 | 12,20 | | 10 | 100 | | 6,5 | 12,0 | | 4,0 | 12,82 | 122,10 | 16,69 | | 3,09 | 193,46 | 3,89 | 50,73 | 13,38 | 1,99 | 71,40 | 2,68 | 10,06 | | 7 | 12,0 | | 4,0 | 13,75 | 130,59 | 17,90 | | 3,08 | 207,01 | 3,88 | 54,16 | 14,13 | 1,98 | 76,40 | 2,71 | 10,79 | | 8 | 12,0 | | 4,0 | 15,60 | 147,19 | 20,30 | | 3,07 | 233,46 | 3,87 | 60,92 | 15,66 | 1,98 | 86,30 | 2,75 | 12,25 | | 10 | 12,0 | | 4,0 | 19,24 | 178,95 | 24,97 | | 3,05 | 283,83 | 3,84 | 74,08 | 18,51 | 1,96 | 110,00 | 2,83 | 15,10 | | 12 | 12,0 | | 4,0 | 22,80 | 208,90 | 29,47 | | 3,03 | 330,95 | 3,81 | 86,84 | 21,10 | 1,95 | 122,00 | 2,91 | 17,90 | | 14 | 12,0 | | 4,0 | 26,28 | 237,15 | 33,83 | | 3,00 | 374,98 | 3,78 | 99,32 | 23,49 | 1,94 | 138,00 | 2,99 | 20,63 | | 16 | 12,0 | | 4,0 | 29,68 | 263,82 | 38,04 | | 2,98 | 416,04 | 3,74 | 111,61 | 25,79 | 1,94 | 152,00 | 3,06 | 23,30 | | 11 | 110 | | 7 | 12,0 | | 4,0 | 15,15 | 175,61 | 21,83 | | 3,40 | 278,54 | 4,29 | 72,68 | 17,36 | 2,19 | 106,00 | 2,96 | 11,89 | | 8 | 12,0 | | 4,0 | 17,20 | 198,17 | 24,77 | | 3,39 | 314,51 | 4,28 | 81,83 | 19,29 | 2,18 | 116,00 | 3,00 | 13,50 | | 12,5 | 125 | | 8 | 14,0 | | 4,6 | 19,69 | 294,36 | 32,20 | | 3,87 | 466,76 | 4,87 | 121,98 | 25,67 | 2,49 | 172,00 | 3,36 | 15,46 | | 9 | 14,0 | | 4,6 | 22,00 | 327,48 | 36,00 | | 3,86 | 520,00 | 4,86 | 135,88 | 28,26 | 2,48 | 192,00 | 3,40 | 17,30 | | 10 | 14,0 | | 4,6 | 24,33 | 359,82 | 39,74 | | 3,85 | 571,04 | 4,84 | 148,59 | 30,45 | 2,47 | 211,00 | 3,45 | 19,10 | | 12 | 14,0 | | 4,6 | 28,89 | 422,23 | 47,06 | | 3,82 | 670,02 | 4,82 | 174,43 | 34,94 | 2,46 | 248,00 | 3,53 | 22,68 | | 14 | 14,0 | | 4,6 | 33,37 | 481,76 | 54,17 | | 3,80 | 763,90 | 4,78 | 199,62 | 39,10 | 2,45 | 282,00 | 3,61 | 26,20 | | 16 | 14,0 | | 4,6 | 37,77 | 538,56 | 61,09 | | 3,78 | 852,84 | 4,75 | 224,29 | 43,10 | 2,44 | 315,00 | 3,68 | 29,65 | | 14 | 140 | | 9 | 14,0 | | 4,6 | 24,72 | 465,72 | 45,55 | | 4,34 | 739,42 | 5,47 | 192,03 | 35,92 | 2,79 | 274,00 | 3,76 | 19,41 | | 10 | 14,0 | | 4,6 | 27,33 | 512,29 | 50,32 | | 4,33 | 813,62 | 5,46 | 210,96 | 39,05 | 2,78 | 301,00 | 3,82 | 21,45 | | 12 | 14,0 | | 4,6 | 32,49 | 602,49 | 59,66 | | 4,31 | 956,98 | 5,43 | 248,01 | 44,97 | 2,76 | 354,00 | 3,90 | 25,50 | | 16 | 160 | | 10 | 16,0 | | 5,3 | 31,43 | 774,24 | 66,19 | | 4,96 | 1229,10 | 6,25 | 319,33 | 52,52 | 3,19 | 455,00 | 4,30 | 24,67 | | 11 | 16,0 | | 5,3 | 34,42 | 844,21 | 72,44 | | 4,95 | 1340,06 | 6,24 | 347,77 | 56,53 | 3,18 | 496,00 | 4,35 | 27,02 | | 12 | 16,0 | | 5,3 | 37,39 | 912,89 | 78,62 | | 4,94 | 1450,00 | 6,23 | 375,78 | 60,53 | 3,17 | 537,00 | 4,39 | 29,35 | | 14 | 16,0 | | 5,3 | 43,57 | 1046,47 | 90,77 | | 4,92 | 1662,13 | 6,20 | 430,81 | 68,15 | 3,16 | 615,00 | 4,47 | 34,20 | | 16 | 16,0 | | 5,3 | 49,07 | 1175,19 | 102,64 | | 4,89 | 1865,73 | 6,17 | 484,64 | 75,92 | 3,14 | 690,00 | 4,55 | 38,52 | | 18 | 16,0 | | 5,3 | 54,79 | 1290,24 | 114,24 | | 4,87 | 2061,03 | 6,13 | 537,46 | 82,08 | 3,13 | 771,00 | 4,63 | 43,01 | | 20 | 16,0 | | 5,3 | 60,40 | 1418,85 | 125,60 | | 4,85 | 2248,26 | 6,10 | 589,43 | 90,02 | 3,12 | 830,00 | 4,70 | 47,41 | | 18 | 180 | | 11 | 16,0 | | 5,3 | 38,80 | 1216,44 | 92,47 | | 5,60 | 1933,10 | 7,06 | 499,78 | 72,86 | 3,59 | 716,00 | 4,85 | 30,47 | | 12 | 16,0 | | 5,3 | 42,19 | 1316,62 | 100,41 | | 5,59 | 2092,78 | 7,04 | 540,45 | 78,15 | 3,58 | 776,00 | 4,89 | 33,12 | | 20 | 200 | | 12 | 18,0 | | 6,0 | 47,10 | 1822,78 | 124,61 | | 6,22 | 2896,16 | 7,84 | 749,40 | 98,68 | 3,99 | 1073,00 | 5,37 | 36,97 | | 13 | 18,0 | | 6,0 | 50,85 | 1960,77 | 134,44 | | 6,21 | 3116,18 | 7,83 | 805,35 | 105,07 | 3,98 | 1156,00 | 5,42 | 39,92 | | 14 | 18,0 | | 6,0 | 54,60 | 2097,00 | 144,17 | | 6,20 | 3333,00 | 7,81 | 861,00 | 111,50 | 3,97 | 1236,00 | 5,46 | 42,80 | | 16 | 18,0 | | 6,0 | 61,98 | 2362,57 | 163,37 | | 6,17 | 3755,39 | 7,78 | 969,74 | 123,77 | 3,96 | 1393,00 | 5,54 | 48,65 | | 20 | 18,0 | | 6,0 | 76,54 | 2871,47 | 200,37 | | 6,12 | 4860,42 | 7,72 | 1181,92 | 146,62 | 3,93 | 1689,00 | 5,70 | 60,08 | | 25 | 18,0 | | 6,0 | 94,29 | 3466,21 | 245,59 | | 6,06 | 5494,04 | 7,63 | 1438,38 | 172,68 | 3,91 | 2028,00 | 5,89 | 74,02 | | 30 | 18,0 | | 6,0 | 111,54 | 4019,60 | 288,57 | | 6,00 | 6351,05 | 7,55 | 1698,16 | 193,06 | 3,89 | 2332,00 | 6,07 | 87,56 | | 22 | 220 | | 14 | 21,0 | | 7,0 | 60,38 | 2814,36 | 175,18 | | 6,83 | 4470,15 | 8,60 | 1158,56 | 138,62 | 4,38 | 1655,00 | 5,91 | 47,40 | | 16 | 21,0 | | 7,0 | 68,58 | 3175,44 | 198,71 | | 6,80 | 5045,37 | 8,58 | 1305,52 | 153,34 | 4,36 | 1869,00 | 6,02 | 53,83 | | 25 | 250 | | 16 | 24,0 | | 8,0 | 78,40 | 4717,10 | 258,43 | | 7,76 | 7492,10 | 9,78 | 1942,09 | 203,45 | 4,98 | 2775,00 | 6,75 | 61,55 | | 18 | 24,0 | | 8,0 | 87,72 | 5247,24 | 288,82 | | 7,73 | 8336,69 | 9,75 | 2157,78 | 223,39 | 4,96 | 3089,00 | 6,83 | 68,86 | | 20 | 24,0 | | 8,0 | 96,96 | 5764,87 | 318,76 | | 7,71 | 9159,73 | 9,72 | 2370,01 | 242,52 | 4,94 | 3395,00 | 6,91 | 76,11 | | 22 | 24,0 | | 8,0 | 106,12 | 6270,32 | 348,26 | | 7,69 | 9961,30 | 9,69 | 2579,04 | 260,52 | 4,93 | 3691,00 | 7,00 | 83,31 | | 25 | 24,0 | | 8,0 | 119,71 | 7006,39 | 391,72 | | 7,65 | 11125,52 | 9,64 | 2887,26 | 287,14 | 4,91 | 4119,00 | 7,11 | 93,97 | | 28 | 24,0 | | 8,0 | 133,12 | 7716,86 | 434,25 | | 7,61 | 12243,84 | 9,59 | 3189,89 | 311,98 | 4,90 | 4527,00 | 7,23 | 104,50 | | 30 | 24,0 | | 8,0 | 141,96 | 8176,82 | 462,11 | | 7,59 | 12964,66 | 9,56 | 3388,98 | 327,82 | 4,89 | 4788,00 | 7,31 | 111,44 | | 35 | 24,0 | | 8,0 | 163,71 | 9281,05 | 530,11 | | 7,53 | 14682,73 | 9,47 | 3879,37 | 366,13 | 4,87 | 5401,68 | 7,53 | 128,51 |   Примечания:  1 Площадь поперечного сечения и справочные величины вычислены по номинальным размерам. Плотность стали - 7,85 г/см3.  2 Радиусы закругления, указанные на [рисунке 1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i18716) и в [таблице 1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i22968), даны для построения калибра и на профиле не контролируются.  Условные обозначения к [рисунку 1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i18716) и [таблице 1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i22968):  *b -* ширина полки;  *t* - толщина полки;  *R -* радиус внутреннего закругления;  *r -* радиус закругления полок;  *F-* площадь поперечного сечения;  *I* - момент инерции;  *x*0 *-* расстояние от центра тяжести до наружной грани полки;  *Ixy* - центробежный момент инерции;  *i -* радиус инерции.  3 По точности прокатки уголки изготавливают:  А - высокой точности;  В - обычной точности.  4 Предельные отклонения по размерам уголков не должны превышать указанных в [таблице 2](http://www.docload.ru/Basesdoc/3/3969/index.htm#i31663).  Таблица 2   | Номер уголка | Предельные отклонения, мм | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | | по ширине полки | по толщине полки | | | | | | | до 6 включ. | | от 6,5 до 9 включ. | | свыше 9 | | | А | В | А | В | А | В | | От 2 до 4,5 | ±1,0 | +0,2 | +0,3 | - | - | - | - | | -0,3 | -0,4 | | » 5 » 9 | ±1,5 | +0,2 | +0,3 | +0,2 | +0,3 | +0,3 | +0,4 | | -0,4 | -0,5 | -0,5 | -0,6 | -0,5 | -0,6 | | » 10 » 15 | ±2,0 | - | - | +0,3 | +0,4 | +0,3 | +0,4 | | -0,5 | -0,6 | -0,6 | -0,7 | | » 16 » 20 | ±3,0 | - | - | - | - | +0,4 | +0,5 | | -0,7 | -0,8 | | » 22 » 25 | ±4,0 | - | - | - | - | +0,4 | +0,5 | | -0,8 | -0,9 |   5 По согласованию изготовителя с потребителем допускается изготовление уголков со смещением предельных отклонений по толщине полки в пределах допускаемых отклонений соответствующей точности.  6 По согласованию с потребителем отклонения по толщине полки допускается заменять предельными отклонениями по массе в соответствии с [таблицей 3](http://www.docload.ru/Basesdoc/3/3969/index.htm#i43918).  Таблица 3   | Номер уголка | Предельные отклонения по массе, % | | | --- | --- | --- | | 1 класс | II класс | | От 2 до 7,5 включ. | +3 | +3  -5 | | -5 | | Свыше 7,5 | ±2,5 |   7 Отклонение от прямого угла при вершине не должно превышать 35′.  По согласованию изготовителя с потребителем отклонение от прямого угла при вершине не должно превышать:  1,0 мм - для уголков с шириной полки до 50 мм включительно;  2,0 мм - для уголков с шириной полки свыше 50 до 100 мм включительно;  3,0 мм - для уголков с шириной полки свыше 100 до 200 мм.  8 Притупление внешних углов (в том числе и угла при вершине) не контролируется.  По требованию потребителя притупление внешних углов (в том числе и угла при вершине) не должно превышать:  0,3 толщины полки - для уголков толщиной до 10 мм включительно;  3,0 мм - для уголков толщиной свыше 10 до 16 мм включительно;  5,0 мм - для уголков толщиной свыше 16 мм.  9 Уголки изготавливают длиной от 4 до 12 м:  мерной длины;  мерной длины с немерной в количестве не более 5 % массы партии;  кратной мерной длины,  кратной мерной длины с немерной в количестве не более 5 % массы партии;  немерной длины;  ограниченной длины в пределах немерной.  9.1 По согласованию изготовителя с потребителем уголки изготавливают мерной и кратной мерной длины с немерными длинами более 5 % массы партии.  9.2 Допускается изготовление уголков длиной не менее 3 м и свыше 12 м.  10 Предельные отклонения по длине уголков мерной длины или кратной мерной не должны превышать:  + 30 мм - при длине до 4 м включительно;  + 50 мм - при длине свыше 4 до 6 м включительно;  + 70 мм - при длине свыше 6 м.  По требованию потребителя для уголков длиной свыше 4 до 7 м предельные отклонения длины не должны превышать + 40 мм, более 7 м - + 5 мм на каждый следующий метр.  11 Кривизна уголков не должна превышать 0,4 % длины. По требованию потребителя изготавливают уголки, кривизна которых не превышает 0,2 % длины. Для уголков от № 2 до 4,5 включительно кривизну проверяют на длине 1 м.  12 Размеры поперечного сечения уголков, притупление углов измеряют на расстоянии не менее 500 мм от торца штанги.  *ПРИЛОЖЕНИЕ А*  *(рекомендуемое)*  **ПРОФИЛИ СТАЛЬНЫЕ ГОРЯЧЕКАТАНЫЕ**  **ЧАСТЬ 1. УГОЛКИ РАВНОПОЛОЧНЫЕ. РАЗМЕРЫ  (ИСО 657-1-89)**  **1 Область распространения**  Эта часть ИСО 657 включает размеры горячекатаных равнополочных уголков.  2 Настоящий стандарт содержит условия данной части ИСО 657. По состоянию на время публикации данное издание являлось действующим.  Все стандарты пересматриваются, поэтому необходимо использовать стандарты наиболее позднего издания.  Страны-члены МЭК и ИСО должны обеспечиваться действующими международными стандартами.  ИСО 657-5-76. Горячекатаные стальные профили, часть 5. Равнополочные и неравнополочные уголки, предельные отклонения в метрической и дюймовой сериях.  **3 Размеры**  3.1 Предпочтительные размеры выделены полужирным шрифтом.  3.2 Радиусы внутреннего закругления даны для информации и приведены в [таблице А.1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i65316).  3.3 Радиус закругления полок не определен, но при необходимости может быть рассчитан.  **4 Свойства профиля**  Масса, площадь поперечного сечения и справочные значения величин равнополочных уголков приведены для информации в [таблице A.1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i65316) и рассчитаны при условии, что радиус закругления полок имеет 1/2 значения радиуса внутреннего закругления.  **5 Допуски**  Допускаемые отклонения на размеры приведены в [таблице Б.1 приложения Б](http://www.docload.ru/Basesdoc/3/3969/index.htm#i88579).  Untitled-1  Таблица А.1   | Размер | Масса кг/м | *S*, см2 | Величины | | | Расстояние от центра тяжести | | | Справочные значения величин для осей | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | *х-х=у-у* | | | | *u-u* | | | *v-v* | | | | *А*, мм | *t*, мм | *rroot*, мм | *Cx=Cy*, см | *Cu*, см | *Cv*, см | *Ix=Iy*, см4 | *rx=ry*, см3 | *Zx=Zy*, см | | *Iu*, см4 | *ru*, см | | *Iv*, см4 | *rv*, см | *Zv*, см3 | | 20×20×3 | 0,88 | 1,12 | 20 | 3 | 3,5 | 0,598 | 1,41 | 0,846 | 0,392 | 0,590 | 0,279 | | 0,618 | 0,742 | | 0,165 | 0,383 | 0,195 | | 25×25×3 | 1,12 | 1,42 | 25 | 3 | 3,5 | 0,723 | 1,77 | 1,02 | 0,803 | 0,751 | 0,452 | | 1,27 | 0,945 | | 0,334 | 0,484 | 0,326 | | 25×25×4 | 1,45 | 1,85 | 25 | 4 | 3,5 | 0,762 | 1,77 | 1,08 | 1,02 | 0,741 | 0,586 | | 1,61 | 0,931 | | 0,430 | 0,482 | 0,399 | | 30×30×3 | 1,36 | 1,74 | 30 | 3 | 5 | 0,835 | 2,12 | 1,18 | 1,40 | 0,899 | 0,649 | | 2,22 | 1,13 | | 0,585 | 0,581 | 0,496 | | 30×30×4 | 1,78 | 2,27 | 30 | 4 | 5 | 0,878 | 2,12 | 1,24 | 1,80 | 0,892 | 0,850 | | 2,85 | 1,12 | | 0,754 | 0,577 | 0,607 | | 35×35×4 | 2,09 | 2,67 | 35 | 4 | 5 | 1,00 | 2,47 | 1,42 | 2,95 | 1,05 | 1,18 | | 4,68 | 1,32 | | 1,23 | 0,678 | 0,865 | | 35×35×5 | 2,57 | 3,28 | 35 | 5 | 5 | 1,04 | 2,47 | 1,48 | 3,56 | 1,04 | 1,45 | | 5,64 | 1,31 | | 1,49 | 0,675 | 1,01 | | 40×40×3 | 1,84 | 2,35 | 40 | 3 | 6 | 1,07 | 2,83 | 1,52 | 3,45 | 1,21 | 1,18 | | 5,45 | 1,52 | | 1,44 | 0,783 | 0,949 | | 40×40×4 | 2,42 | 3,08 | 40 | 4 | 6 | 1,12 | 2,83 | 1,58 | 4,47 | 1,21 | 1,55 | | 7,09 | 1,52 | | 1,86 | 0,777 | 1,17 | | 40×40×5 | 2,97 | 3,79 | 40 | 5 | 6 | 1,16 | 2,83 | 1,64 | 5,43 | 1,20 | 1,91 | | 8,60 | 1,51 | | 2,26 | 0,773 | 1,38 | | 45×45×4 | 2,74 | 3,49 | 45 | 4 | 7 | 1,23 | 3,18 | 1,75 | 6,43 | 1,36 | 1,97 | | 10,2 | 1,71 | 2,68 | | 0,876 | 1,53 | | 45×45×5 | 3,38 | 4,30 | 45 | 5 | 7 | 1,28 | 3,18 | 1,81 | 7,84 | 1,35 | 2,43 | | 12,4 | 1,70 | 3,26 | | 0,871 | 1,80 | | 50×50×4 | 3,06 | 3,89 | 50 | 4 | 7 | 1,36 | 3,54 | 1,92 | 8,97 | 1,52 | 2,46 | | 14,2 | 1,91 | 3,73 | | 0,979 | 1,94 | | 50×50×5 | 3,77 | 4,80 | 50 | 5 | 7 | 1,40 | 3,54 | 1,99 | 11,0 | 1,51 | 3,05 | | 17,4 | 1,90 | 4,55 | | 0,973 | 2,29 | | 50×50×6 | 4,47 | 5,69 | 50 | 6 | 7 | 1,45 | 3,54 | 2,04 | 12,8 | 1,50 | 3,61 | | 20,3 | 1,89 | 5,34 | | 0,968 | 2,61 | | 60×60×5 | 4,57 | 5,82 | 60 | 5 | 8 | 1,64 | 4,24 | 2,32 | 19,4 | 1,82 | 4,45 | | 30,7 | 2,30 | 8,03 | | 1,17 | 3,46 | | 60×60×6 | 5,42 | 6,91 | 60 | 6 | 8 | 1,69 | 4,24 | 2,39 | 22,8 | 1,82 | 5,29 | | 36,1 | 2,29 | 9,44 | | 1,17 | 3,96 | | 60×60×8 | 7,09 | 9,03 | 60 | 8 | 8 | 1,77 | 4,24 | 2,50 | 29,2 | 1,80 | 6,89 | | 46,1 | 2,26 | 12,2 | | 1,16 | 4,86 | | 65×65×6 | 5,91 | 7,53 | 65 | 6 | 9 | 1,80 | 4,60 | 2,55 | 29,2 | 1,97 | 6,21 | | 46,3 | 2,48 | 12,1 | | 1,27 | 4,74 | | 65×65×8 | 7,73 | 9,85 | 65 | 8 | 9 | 1,89 | 4,60 | 2,67 | 37,5 | 1,95 | 8,13 | | 59,4 | 2,46 | 15,6 | | 1,26 | 5,84 | | 70×70×6 | 6,38 | 8,13 | 70 | 6 | 9 | 1,93 | 4,95 | 2,73 | 36,9 | 2,13 | 7,27 | | 58,5 | 2,68 | 15,3 | | 1,37 | 5,60 | | 70×70×7 | 7,38 | 9,40 | 70 | 7 | 9 | 1,97 | 4,95 | 2,79 | 42,3 | 2,12 | 8,41 | | 67,1 | 2,67 | 17,5 | | 1,36 | 6,28 | | 75×75×6 | 6,85 | 8,73 | 75 | 6 | 9 | 2,05 | 5,30 | 2,90 | 45,8 | 2,29 | 8,41 | | 72,7 | 2,89 | 18,9 | | 1,47 | 6,53 | | 75×75×8 | 8,99 | 11,4 | 75 | 8 | 9 | 2,14 | 5,30 | 3,02 | 59,1 | 2,27 | 11,0 | | 93,8 | 2,86 | 24,5 | | 1,46 | 8,09 | | 80×80×6 | 7,34 | 9,35 | 80 | 6 | 10 | 2,17 | 5,66 | 3,07 | 55,8 | 2,44 | 9,57 | | 88,5 | 3,08 | 23,1 | | 1,57 | 7,55 | | 80×80×8 | 9,63 | 12,3 | 80 | 8 | 10 | 2,26 | 5,66 | 3,19 | 72,2 | 2,43 | 176 | | 115 | 3,06 | 29,9 | | 1,56 | 9,37 | | 80×80×10 | 11,9 | 15,1 | 80 | 10 | 10 | 2,34 | 5,66 | 3,30 | 87,5 | 2,41 | 15,4 | | 139 | 3,03 | 36,4 | | 1,55 | 11,0 | | 90×90×7 | 9,61 | 12,2 | 90 | 7 | 11 | 2,45 | 6,36 | 3,47 | 92,5 | 2,75 | 14,1 | | 147 | 3,46 | 38,3 | | 1,77 | 11,0 | | 90×90×8 | 10,9 | 13,9 | 90 | 8 | 11 | 2,50 | 6,36 | 3,53 | 104 | 2,74 | 16,1 | | 166 | 3,45 | 43,1 | | 1,76 | 12,2 | | 90×90×9 | 12,2 | 15,5 | 90 | 9 | 11 | 2,54 | 6,36 | 3,59 | 116 | 2,73 | 17,9 | | 184 | 3,44 | 47,9 | | 1,76 | 13,3 | | 90×90×10 | 15,0 | 17,1 | 90 | 10 | 11 | 2,58 | 6,36 | 3,65 | 127 | 2,72 | 19,8 | | 201 | 3,42 | 52,6 | | 1,75 | 14,4 | | 100×100×8 | 12,2 | 15,5 | 100 | 8 | 12 | 2,74 | 7,07 | 3,87 | 145 | 3,06 | 19,9 | | 230 | 3,85 | 59,9 | | 1,96 | 15,5 | | 100×100×10 | 15,0 | 19,2 | 100 | 10 | 12 | 2,82 | 7,07 | 3,99 | 177 | 3,04 | 24,6 | | 280 | 3,83 | 73,0 | | 1,95 | 18,3 | | 100×100×12 | 17,8 | 22,7 | 100 | 12 | 12 | 2,90 | 7,07 | 4,11 | 207 | 3,02 | 29,1 | | 328 | 3,80 | 85,7 | | 1,94 | 20,9 | | 120×120×8 | 14,7 | 18,7 | 120 | 8 | 13 | 3,23 | 8,49 | 4,56 | 255 | 3,69 | | 29,1 | 405 | 4,65 | | 105 | 2,37 | 23,1 | | 120×120×10 | 18,2 | 23,2 | 120 | 10 | 13 | 3,31 | 8,49 | 4,69 | 313 | 3,67 | | 36,0 | 497 | 4,63 | | 129 | 2,36 | 27,5 | | 120×120×12 | 21,6 | 27,5 | 120 | 12 | 13 | 3,40 | 8,49 | 4,80 | 368 | 3,65 | | 42,7 | 584 | 4,60 | | 152 | 2,35 | 31,6 | | 125×125×8 | 15,3 | 19,5 | 125 | 8 | 13 | 3,35 | 8,84 | 4,74 | 290 | 3,85 | | 31,7 | 461 | 4,85 | | 120 | 2,47 | 25,3 | | 125×125×10 | 19,0 | 24,2 | 125 | 10 | 13 | 3,44 | 8,84 | 4,86 | 356 | 3,84 | | 39,3 | 565 | 4,83 | | 146 | 2,46 | 30,1 | | 125×125×12 | 22,6 | 28,7 | 125 | 12 | 13 | 3,52 | 8,84 | 4,98 | 418 | 3,81 | | 46,6 | 664 | 4,81 | | 172 | 2,45 | 34,6 | | 150×150×10 | 23,0 | 29,3 | 150 | 10 | 16 | 4,03 | 10,6 | 5,71 | 624 | 4,62 | | 56,9 | 990 | 5,82 | | 258 | 2,97 | 45,1 | | 150×150×12 | 27,3 | 34,8 | 150 | 12 | 16 | 4,12 | 10,6 | 5,83 | 737 | 4,60 | | 67,7 | 1170 | 5,80 | | 303 | 2,95 | 52,0 | | 150×150×15 | 33,8 | 43,0 | 150 | 15 | 16 | 4,25 | 10,6 | 6,01 | 898 | 4,57 | | 83,5 | 1430 | 5,76 | | 370 | 2,93 | 61,6 | | 180×180×15 | 40,9 | 52,1 | 180 | 15 | 18 | 4,98 | 12,7 | 7,05 | 1590 | 5,52 | | 122 | 2520 | 6,96 | | 653 | 3,54 | 92,7 | | 180×180×18 | 48,6 | 61,9 | 180 | 18 | 18 | 5,10 | 17,7 | 7,22 | 1870 | 5,49 | | 145 | 2960 | 6,92 | | 768 | 3,52 | 106 | | 200×200×16 | 48,5 | 61,8 | 200 | 16 | 18 | 5,52 | 14,1 | 7,81 | 2340 | 6,16 | | 162 | 3720 | 7,76 | | 960 | 3,94 | 123 | | 200×200×20 | 59,9 | 76,3 | 200 | 20 | 18 | 5,68 | 14,1 | 8,04 | 2850 | 6,11 | | 199 | 4530 | 7,70 | | 1170 | 3,92 | 146 | | 200×200×24 | 71,1 | 90,6 | 200 | 24 | 18 | 5,84 | 14,1 | 8,26 | 3330 | 6,06 | | 235 | 5280 | 7,64 | | 1380 | 3,90 | 167 | | 250×250×28 | 104 | 133 | 250 | 28 | 18 | 7,24 | 17,7 | 10,2 | 7700 | 7,62 | | 433 | 1220 | 9,61 | | 3170 | 4,89 | 309 | | 250×250×35 | 128 | 163 | 250 | 35 | 18 | 7,50 | 17,7 | 10,6 | 9260 | 7,54 | | 529 | 1470 | 9,48 | | 3860 | 4,87 | 364 |   Примечания  1 Страны-члены ИСО могут включать в национальные стандарты требуемые им размеры уголков.  Из приведенного в таблице сортамента на равнополочные уголки в национальный стандарт могут быть включены те размеры уголков, которые обеспечиваются на прокатных станах.  2 Площадь поперечного сечения вычисляют по формуле  ,  где *S -* площадь поперечного сечения, см2;  *t* - толщина, мм;  *rroot -* радиус внутреннего закругления, мм;  *rtoс -* радиус закругления полок, мм;  *А -* ширина полки, мм.  3 При вычислении массы 1 м плотность стали принята 7,85 кг/дм3.  *ПРИЛОЖЕНИЕ Б*  *(рекомендуемое)*  **ПРОФИЛИ СТАЛЬНЫЕ ГОРЯЧЕКАТАНЫЕ**  **ЧАСТЬ 5. УГОЛКИ РАВНОПОЛОЧНЫЕ И НЕРАВНОПОЛОЧНЫЕ В МЕТРИЧЕСКОЙ И ДЮЙМОВОЙ СЕРИЯХ. ДОПУСКИ**  **(ИСО 657-5-76)**  **1 Предмет стандарта и область применения**  Настоящий международный стандарт регламентирует предельные отклонения размеров горячекатаных стальных равнополочных и неравнополочных уголков в метрической и дюймовой сериях. Размеры уголков в метрической серии должны соответствовать ИСО 657-1 и ИСО 657-2, в дюймовой - ИСО 657-3 и ИСО 657-4.  **2 Предельные отклонения по ширине полки**  Предельные отклонения по ширине полки должны соответствовать приведенным в [таблице Б.1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i88579).  Таблица Б.1 Предельные отклонения по ширине   | Метрическая серия, мм | | | Дюймовая серия, дюйм | | | | --- | --- | --- | --- | --- | --- | | Ширина полки 1 | | Предельные отклонения | Ширина полки 1 | | Предельные отклонения | | Свыше | От и до включ. | Свыше | От и до включ. | | - | 50 | ±1,0 | - | 2 | ±0,04 | | 50 | 100 | ±1,5 | 2 | 4 | ±0,06 | | 100 | 150 | ±2,0 | 4 | 6 | ±0,08 | | 150 | 200 | ±3,0 | 6 | 8 | ±0,12 | | 1 Для неравнополочных уголков как базовая берется ширина большей полки. | | | | | |   **3 Предельные отклонения по толщине полки**  Предельные отклонения по толщине равнополочных и неравнополочных уголков должны соответствовать приведенным в [таблице Б.2](http://www.docload.ru/Basesdoc/3/3969/index.htm#i97967).  Таблица Б.2 Предельные отклонения по толщине   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Метрическая серия, мм | | | Дюймовая серия, дюйм | | | | Ширина полки 1 | | Предельные отклонения | Ширина полки 1 | | Предельные отклонения | | Свыше | От и до включ. | Свыше | От и до включ. | | - | 50 | ±0,5 | - | 2 | ±0,02 | | 50 | 100 | ±0,8 | 2 | 4 | ±0,03 | | 100 | 150 | ±1,0 | 4 | 6 | ±0,04 | | 150 | 200 | ±1,2 | 6 | 8 | ±0,05 | | 1 Для неравнополочных уголков как базовая берется ширина большей полки. | | | | | | | Примечание - Для уголков с длиной полки свыше 75 мм предельные отклонения по массе составляют ± 2,5 % на единицу длины и могут быть заменены предельными отклонениями по толщине. Масса единицы длины уголков приведена в приложении А. | | | | | |   **4 Предельные отклонения при порезке на длины**  Предельные отклонения по длине при порезке на нормальные и точные длины равнополочных и неравнополочных уголков должны соответствовать приведенным в [таблицах Б.3](http://www.docload.ru/Basesdoc/3/3969/index.htm#i101375) и [Б.4](http://www.docload.ru/Basesdoc/3/3969/index.htm#i117249) соответственно.  Таблица Б.3 Предельные отклонения для нормальных длин   | Метрическая серия | | Дюймовая серия | | | --- | --- | --- | --- | | Длина | Предельные отклонения | Длина | Предельные отклонения | | Все длины | ± 100 мм | Все длины | ± 4 дюйма |   Таблица Б.4 Предельные отклонения для точных длин   | Метрическая серия | | | Дюймовая серия | | | | --- | --- | --- | --- | --- | --- | | Длина, м | | Предельные отклонения, мм | Длина, фут | | Предельные отклонения, дюйм | | Свыше | От и до включ. | Свыше | От и до включ. | | - | 12 | +75 | - | 40 | +3 | | 0 | 0 | | 12 | - | +100 | 40 | - | +4 | | 0 |   **5 Кривизна**  5.1 Максимально допустимая кривизна для равнополочных и неравнополочных уголков должна соответствовать приведенной в [таблице Б.5](http://www.docload.ru/Basesdoc/3/3969/index.htm#i128903).  Таблица Б.5   | Метрическая серия, мм | | | Дюймовая серия, дюйм | | | | --- | --- | --- | --- | --- | --- | | Ширина полки 1 | | Кривизна | Ширина полки 1 | | Кривизна | | Свыше | От и до включ. | Свыше | От и до включ. | | 50 | 150 | 0,4 % длины | 2 | 6 | 0,4 % длины | | 150 | 200 | 0,25 % длины | 6 | 8 | 0,25 % длины | | 1 Для неравнополочных уголков как базовая берется ширина большей полки. | | | | | |   5.2 Кривизна должна быть измерена как показано на [рисунке Б.1](http://www.docload.ru/Basesdoc/3/3969/index.htm#i145778).  **6 Неперпендикулярность (непараллельность, отклонение от прямого угла)**  6.1 Полки должны быть перпендикулярными относительно друг друга в пределах отклонений концов согласно [таблице Б.6](http://www.docload.ru/Basesdoc/3/3969/index.htm#i131385).  Таблица Б.6 Отклонение от прямого угла   | Метрическая серия, мм | | | Дюймовая серия, дюйм | | | | --- | --- | --- | --- | --- | --- | | Ширина полки 1 | | Отклонение | Ширина полки 1 | | Отклонение | | Свыше | От и до включ. | Свыше | От и до включ. | | - | 50 | 1,0 | - | 2 | 0,04 | | 50 | 100 | 2,0 | 2 | 4 | 0,08 | | 100 | 200 | 3,0 | 4 | 8 | 0,12 | | 1 Для неравнополочных уголков как базовая берется ширина большей полки. | | | | | |   Untitled-1  Рисунок Б.1  6.2 Отклонение от прямого угла измеряется на концах полок уголков ([рисунок Б.2](http://www.docload.ru/Basesdoc/3/3969/index.htm#i158582)).  Untitled-1  Рисунок Б.2  **7 Предельные отклонения по массе**  Имеющиеся предельные отклонения по массе на единицу длины являются контрольными предельными отклонениями и предварительно должны быть включены в соответствующие национальные стандарты. |