HLA-C\*04 (101.612-12/12u) Lot No: 6N4 Expiry Date: 2025-10-01

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sample ID:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DNA Conc.(ng/ul):\_\_\_\_\_\_\_\_\_

Test Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Tested By:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Review Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reviewed By:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Interpretation:\_\_\_\_\_\_\_\_\_\_\_ Failed lanes: \_\_\_\_\_\_\_\_\_\_\_\_ Comments:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

**Gel Picture**

|  |
| --- |
| PHOTO DOCUMENT |







Abbreviations

ICB: Internal Control Band

AmpS Amplicon Size

**Notes:**

Product sizes are approximate. For detailed information, see the lot-specific Specificity Table and Interpretation Table.

This table is intended as a guide. For interpretation always use the Interpretation Table and/or Specificity Table.

HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

Primer mixes 7, 24, 31, 36 and 38 may have a tendency to giving rise to primer oligomer formation.

Primer mixes 4, 5, 11, 14, 15, 26, 31, 43, 44, 47 and 48 may have tendencies of unspecific amplification.

Primer mix 16 may give rise to a lower yield of HLA-specific PCR product than the other C\*04 primer mixes.

Primer mix 28 may give rise to a long unspecific amplification product of approximately 500 bp. This should be disregarded when interpreting the C\*04 typings.

In primer mix 27 the positive control band may be weaker than for other HLA-C\*04 primer mixes.

Primer mix 64 contains a negative control, which will amplify the majority of HLA amplicons as well as the amplicons generated by the control primer pairs matching the human growth hormone gene. HLA-specific PCR product sizes range from 75 to 200 base pairs and the PCR product generated by the HGH positive control primer pair is 200 base pairs.





















**1**HLA-C\*04 alleles in bold lettering are listed as confirmed alleles on the IMGT/HLA web page [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla), release 3.26.0, October 2016.

**2**Alleles that have been deleted from or renamed in the official WHO HLA Nomenclature up to and including the last IMGT/HLA database release can be retrieved from web page <http://hla.alleles.org/alleles/deleted.html>.

**3**The following HLA-C\*04 primer mixes have two or more product sizes:

|  |  |  |  |
| --- | --- | --- | --- |
| Primer Mix | Size of spec. PCR product | Amplified HLA-C\*04 alleles | Other amplified HLA Class I alleles |
| **6** | 95 bp  215 bp | \*04:05  \*04:112, 04:169 | \*14:73, 15:36 |
| **9** | 110 bp  180 bp  220 bp | \*04:35:01  \*04:30, 04:427  \*04:09N |  |
| **10** | 190 bp  220 bp | \*04:31, 04:91  \*04:10-04:11, 04:36, 04:55, 04:153, 04:169, 04:210, 04:214-04:215N, 04:347, 04:414 | \*01:177, 03:231, 03:557, 05:78:01-05:78:02, 08:163, 08:183, 15:36, 16:150 |
| **12** | 125 bp  165 bp | \*04:11, 04:29, 04:36, 04:55, 04:172, 04:214w, 04:449w  \*04:11, 04:33, 04:169, 04:172, 04:414 | \*01:186, 03:231, 03:248, 07:125:01-07:125:02, 07:356, 07:531, 12:194, 16:62, **B\*07:267, B\*56:62**  \*01:186, 02:104, 03:248, 05:141, 12:194, 15:100, 16:62, **B\*07:267, B\*56:62** |
| **13** | 120 bp  215 bp  270 bp | \*04:255N  \*04:12, 04:132  \*04:52, 04:55, 04:405 | \*03:231 |
| **14** | 155 bp  185 bp | \*04:16, 04:163, 04:223:01-04:223:02  \*04:18 | \*02:104, 03:248, 05:64:01-05:64:02, 08:19:01-08:19:02, 15:100, **A\*24:52** |
| **16** | 85 bp  130 bp | \*04:123N  \*04:15:01-04:15:03, 04:17, 04:37, 04:294, 04:367, 04:443 | \*18:07N  \*01:02:68, 01:02:71, 02:02:38, 02:02:53, 03:05:01:01-03:05:01:02, 03:13:01:01-03:13:02, 03:17:02, 03:25, 03:27, 03:35:01-03:35:02:02, 03:135, 03:167, 03:198, 03:292, 03:296:01-03:296:02, 03:302, 03:335, 03:386, 03:407, 03:482, 03:494, 03:555, 05:18:05, 05:215, 07:141:03, 07:857, 08:01:07, 08:02:07, 08:33:02, 12:02:19, 14:09, 14:45, **B\*15:78:03, B\*15:524, B\*40:01:49-40:01:50** |
| **17** | 245 bp  320 bp | \*04:234N  \*04:17, 04:80, 04:100 | \*01:50, 01:131, 01:212, 14:54, 14:92 |
| **18** | 125 bp  220 bp | \*04:70  \*04:19, 04:94:01-04:94:02, 04:410N | \*02:182, 06:101, 06:304, 12:10:01-12:10:02, 18:03, **B\*15:27:01:01-15:27:03, B\*15:109, B\*15:327, B\*15:344, B\*15:398** |
| **19** | 120 bp  150 bp  430 bp | \*04:35:01, 04:37  \*04:20, 04:40, 04:242  \*04:238 | \*01:02:68, 01:02:71, 03:302, 14:45  \*03:135, 07:953 |
| **20** | 165 bp  250 bp  545 bp | \*04:44  \*04:47, 04:170N, 04:209  \*04:15:02, 04:17, 04:100, 04:178, 04:224, 04:230, 04:242, 04:360, 04:370, 04:387, 04:422 | \*03:231, 03:557, 05:78:01-05:78:02, 08:163, 08:183, 12:269, 15:36, 16:150, **A\*01:118, A\*02:109, A\*02:709, A\*33:52** |
| **21** | 90 bp  145 bp  240 bp | \*04:23, 04:108, 04:218, 04:335  \*04:38  \*04:39, 04:121 |  |
| **22** | 120 bp  170 bp  360 bp | \*04:24, 04:139-04:140, 04:166:01-04:166:03, 04:220  \*04:26  \*04:226 | \*01:186, 06:335, 07:125:01-07:125:02, 07:356, 07:531  \*02:104, 15:100 |
| **23** | 85 bp  215 bp  235 bp | \*04:25  \*04:41  \*04:144 | \*01:200, 02:170, 03:171, 03:211:01, 05:93, 06:73, 08:20, 08:40, 12:109, 15:221 |
| **24** | 130 bp  170 bp | \*04:24  \*04:30, 04:42:01-04:42:02, 04:220, 04:427 | \*06:335, 07:125:01-07:125:02, 07:356, 07:531 |
| **25** | 160 bp  200 bp | \*04:163  \*04:43, 04:94:01-04:94:02, 04:171 | **A\*24:52**  \*02:182, 06:101, 06:304, 12:10:01-12:10:02, 18:03, **B\*15:27:01:01-15:27:03, B\*15:109, B\*15:327, B\*15:344, B\*15:398** |
| **26** | 210 bp  245 bp | \*04:45, 04:86  \*04:250 |  |
| **27** | 125 bp  255 bp  280 bp | \*04:50  \*04:204  \*04:46, 04:120 | \*05:64:01-05:64:02, 08:19:01-08:19:02, 08:101, 08:143 |
| **28** | 120 bp  160 bp  215 bp  255 bp | \*04:75  \*04:223:01-04:223:02  \*04:48  \*04:204 | \*06:249  \*05:64:01-05:64:02, 08:19:01-08:19:02 |
| **29** | 105 bp  195 bp  245 bp | \*04:82:01-04:82:02, 04:159, 04:387  \*04:49, 04:132  \*04:170N, 04:249 |  |
| **30** | 75 bp  125 bp | \*04:53  \*04:234N | \*05:49, **B\*07:90**  \*06:152N, **A\*66:39N, B\*15:528N** |
| **31** | 130 bp  170 bp  360 bp | \*04:95N, 04:139  \*04:51, 04:145  \*04:226 | \*02:104, 15:100 |
| **32** | 105 bp  235 bp  275 bp | \*04:78, 04:141  \*04:59Q, 04:121, 04:428Q  \*04:77 | **B\*40:100** |
| **33** | 90 bp  180 bp | \*04:72, 04:218  \*04:58, 04:65:01:01-04:65:01:02, 04:160:01-04:160:02, 04:203N, 04:368 | \*07:08, 07:108:01-07:108:02, **B\*40:100** |
| **34** | 75 bp  200 bp  270 bp | \*04:96  \*04:13:01:01-04:13:01:02, 04:58, 04:61N, 04:68, 04:160:01-04:160:02, 04:253N, 04:291  \*04:120, 04:201:01 | \*07:08, 07:108:01-07:108:02, 08:101, 08:143, 16:117, **B\*47:09**  \*05:64:01-05:64:02, 08:19:01-08:19:02, 08:101, 08:143 |
| **35** | 85 bp  120 bp  145 bp  175 bp | \*04:62  \*04:255N  \*04:115N  \*04:76, 04:137 |  |
| **36** | 115 bp  150 bp | \*04:57, 04:63  \*04:117 |  |
| **37** | 110 bp  135 bp | \*04:63, 04:73  \*04:74, 04:125 |  |
| **38** | 95 bp  140 bp | \*04:83, 04:123N  \*04:74, 04:117 | \*03:232, 18:07N |
| **39** | 110 bp  140 bp  330 bp | \*04:113  \*04:71, 04:95N , 04:436N  \*04:79 | \*14:71  \*01:02:34, 01:21, 05:200 |
| **40** | 140 bp  205 bp  265 bp | \*04:56  \*04:86  \*04:64:01-04:64:02, 04:201:01 |  |
| **41** | 135 bp  165 bp  280 bp | \*04:105N  \*04:131  \*04:54:01-04:54:02, 04:313:01:01-04:313:01:02, 04:360, 04:367, 04:381 | \*01:54, 01:97, 01:102, 01:152, 14:02:01:01-14:24:01, 14:25, 14:27-14:53, 14:56-14:78, 14:80-14:91, 14:93N-14:135 |
| **43** | 170 bp  255 bp | \*04:81, 04:137  \*04:88N, 04:209 |  |
| **44** | 90 bp  115 bp  140 bp | \*04:108, 04:202  \*04:254, 04:393  \*04:40, 04:60, 04:125, 04:242 | \*03:81, 03:175, 03:199, 03:245, 03:317, 03:388, 05:215, 14:24:01, **B\*15:78:03, B\*15:524, B\*40:01:49-40:01:50**  \*07:953 |
| **45** | 130 bp  165 bp | \*04:66, 04:233N  \*04:16, 04:26, 04:103:01-04:103:02, 04:145 | \*02:104, 03:248, 05:141, 12:194, 15:100, 16:62 |
| **46** | 120 bp  160 bp  190 bp  300 bp | \*04:93N, 04:254, 04:393  \*04:131, 04:205N  \*04:187  \*04:67 | \*06:128N  \*06:135, 07:719 |
| **47** | 50 bp  295 bp | \*04:114, 04:383  \*04:146, 04:161 | \*01:59, 01:118, 02:65, 03:130, 03:140:01:01-03:140:01:02, 03:243, 05:20, 06:82, 06:210, 07:49, 07:210, 07:238, 07:247, 07:403, 12:54, 12:188, 14:04, 14:64, 14:77, 15:85, 15:181, 16:57, **A\*03:267, A\*68:46, B\*07:253**  **\***02:200, 03:205w, 03:492, 03:497, 07:708, 12:254, 12:280, 15:97 |
| **48** | 390 bp  415 bp | \*04:195  \*04:84 | \*01:159, 03:206, 03:212, 06:288, 08:128, 12:339, 16:155 |
| **50** | 295 bp  335 bp | \*04:161  \*04:162 | \*03:205w |
| **51** | 260 bp  390 bp | \*04:165  \*04:195 |  |
| **52** | 110 bp  185 bp  240 bp | \*04:150  \*04:203N  \*04:155 |  |
| **54** | 140 bp  235 bp  270 bp | \*04:115N, 04:219  \*04:249  \*04:27 |  |
| **55** | 190 bp  245 bp | \*04:191N, 04:215N, 04:225N, 04:300N, 04:436N  \*04:250 |  |
| **56** | 425 bp  470 bp | \*04:28  \*04:144 | \*01:200, 02:170, 03:171, 03:211:01, 05:93, 06:73, 08:20, 08:40, 12:109, 15:221 |
| **57** | 150 bp  245 bp | \*04:205N  \*04:182, 04:233N | \*06:128N  \*06:78, 07:309 |
| **58** | 170 bp  275 bp | \*04:217N  \*04:196 | **A\*11:289** |
| **61** | 160 bp  285 bp | \*04:236N  \*04:206 | \*07:246:02, **A\*11:92** |
| **62** | 105 bp  205 bp | \*04:141  \*04:253N |  |

**4**The following HLA-C\*04 alleles can be distinguished by the different sizes of the HLA-specific PCR product:

|  |  |  |  |
| --- | --- | --- | --- |
| Alleles | Primer mix | Alleles | Primer mix |
| C\*04:05, 04:112 | 6 | C\*04:62, 04:76 | 35 |
| C\*04:20, 04:238 | 19 | C\*04:65:01:01-04:65:01:02, 04:72 | 33 |
| C\*04:23, 04:38, 04:39 | 21 | C\*04:67, 04:93N, 04:187 | 46 |
| C\*04:25, 04:41 | 23 | C\*04:70, 04:410N | 18 |
| C\*04:44, 04:47 | 20 | C\*04:79, 04:113 | 39 |
| C\*04:46, 04:50 | 27 | C\*04:81, 04:88N | 43 |
| C\*04:54:01, 04:105N, 04:313:01:01-04:313:01:02 | 41 | C\*04:114, 04:146 | 47 |
| C\*04:56, 04:64:01-04:64:02 | 40 | C\*04:139, 04:226 | 22, 31 |
| C\*04:59Q, 04:78, 04:428Q | 32 | C\*04:150, 04:155 | 52 |
| C\*04:61N, 04:96 | 34 |  |  |

Abbreviations

w: might be weakly amplified.