Subject: Re: BufferPainter::Clear() optimization
Posted by mirek on Mon, 18 May 2020 11:33:20 GMT
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So I kept digging and found that the reason why Fill3 performed great with CLANG and less great with MSC was that CLANG understand what I mean with that ugly array based code to fill 4 color values into the xmm register while MSC really created that 'm' array, stored 4 values into memory and then fetched them into xmm... :)

Fixed Fill3 seems to perform well with MSC too:

```
void Fill3(RGBA *t, RGBA c, int len)
{
 __m128i val4 = _mm_set1_epi32(*(int*)&c);
 auto Set4 = [&](int at) { _mm_storeu_si128((__m128i *)(t + at), val4); };
 auto Set4S = [&](int at) { _mm_stream_si128((__m128i *)(t + at), val4); };
 if(len >= 16) {
  if(len > 1024*1024 / 16 && ((uintptr_t)t & 3) == 0) { // for really huge data, bypass the cache
   while((uintptr_t)t & 15) { // align to 16 bytes for SSE
    *t++ = c;
    len--;
   }
   do {
    Set4S(0);
    Set4S(4);
    Set4S(8);
    Set4S(12);
    t += 16;
    len -= 16;
   }
   while(len >= 16);
   _mm_sfence();
  }
  else
   do {
    Set4(0);
    Set4(4);
    Set4(8);
    Set4(12);
    t += 16;
    len -= 16;
   }
   while(len >= 16);
 }
 if(len & 8) {
  Set4(0);
  Set4(4);
```

```
  t += 8;
 }
 if(len & 4) {
  Set4(0);
  t += 4;
 }
 if(len & 2) {
  t[0] = t[1] = c;
  t += 2;
 }
 if(len & 1)
  t[0] = c;
}
```

Mirek
