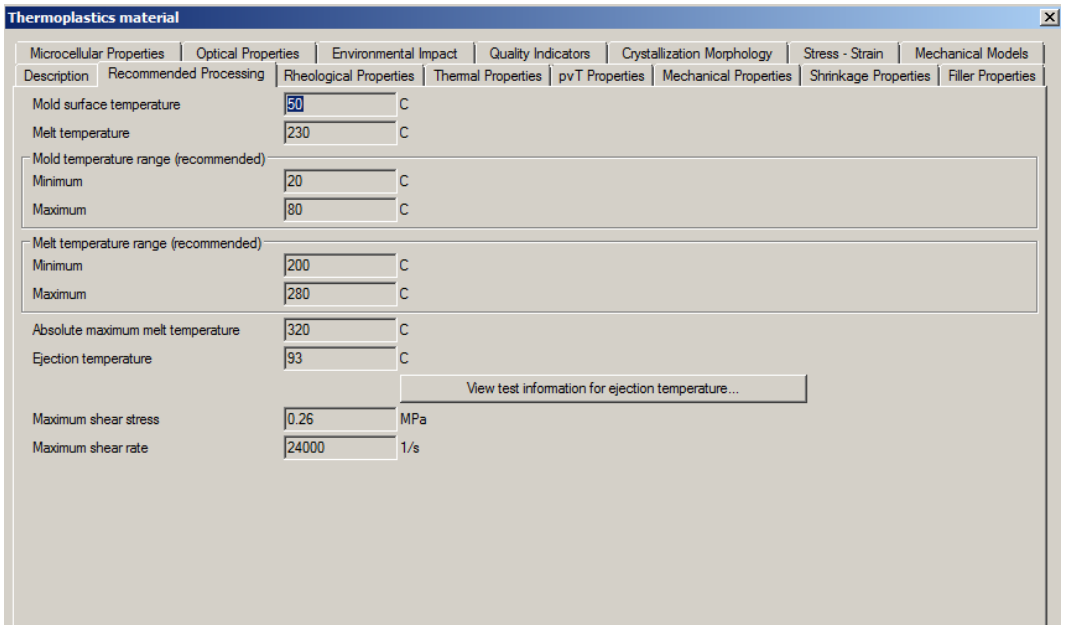
LAMPIRAN

1. Perhitungan diameter *gate*



Diketahui :

Tebal produk = 1 dan diameter gate asumis = 0,9 mm= 0,09 cm

r = asumsi diameter gate < tebal produk

r = 0,095 cm

shot volume/ total volume = 16,42 cm3

fill time = 1 s

maximum shear rate material = 24000 1/s

Ditanya :

Shear rate diameter 0,9... ?

Jawab :

$r = \sqrt[3]{\frac{4Q}{3{,}14 \cdot shear\ rate}}$

Share rate = $\frac{4 \cdot Q}{3{,}14 \cdot r^3}$

$Q = \frac{shot\ volume}{injection\ time}$

$Q = \frac{16{,}4\ cm3}{1\ s} = 16{,}4\ cm^3/s$

Share rate = $\frac{4 \cdot 16{,}4\ cm3/s}{3{,}14 \cdot 0{,}045 cm3/s}$ = 464,26 1/s < 240001/s dengan asumsi diameter paling mendekati tebal produk didapatkan shere rate maksimal pada diameter 0,9 mm adalah 464,26 1/s

2. Perhitungan diameter *runner*

Diketahui :

ρ material PP = 0,905 gram/cm3

V = 13,044 cm3

L (panjang runner) = runner primer 40 mm & runner sekunder 8 mm

W = V· ρ material PP = 13,044 cm3 · 0,905 gram/cm3 = 11,804 gram

Ditanya :

Diameter runner primer ?

Diameter runner sekunder ?

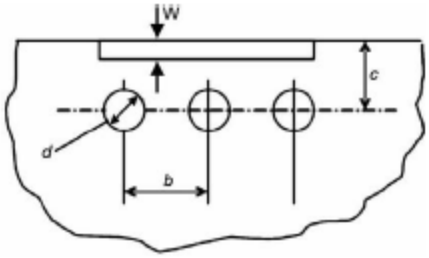
Jawab :

$$D = \frac{W^{\frac{1}{2}} \cdot L^{\frac{1}{4}}}{3,7}$$

$$D \text{ primer} = \frac{11,804^{\frac{1}{2}} \cdot 40\ mm^{\frac{1}{4}}}{3,7} = 2,3 \text{ mm diameter minimal}$$

$$D \text{ sekunder} = \frac{11,804^{\frac{1}{2}} \cdot 8\ mm^{\frac{1}{4}}}{3,7} = 1,6 \text{ mm diameter minimal}$$

3. Perhitungan diameter cooling



Part thickness W	Channel Diameter d
2 mm ·····	8–10 mm
4 mm	10–12 mm
6 mm	12–15 mm
$c = 2d$ to $3d$	$b = 3d$ to $4d$

Diketahui :

d = 10 mm

w = 2 mm

Ditanya :

a (jarak cooling dengan produk) ?

b (jarak cooling dengan cooling)?

Jawab

a = 2·d = 2·10 mm = 20 mm

b = 3·d = 3·10 mm = 30 mm

4. Tabel *holding and cooling values*

Table 8.10 Holding and cooling values											
Mould temperature under 60 °C						Mould temperature above 60 °C					
d	t_{kn}	t_n	t_{n1}	t_{n2}	t_k	d	t_{kn}	t_n	t_{n1}	t_{n2}	t_k
1.0	3.0	0.9	0.6	0.3	2.1	1.0	3.9	1.2	0.8	0.4	2.7
1.1	3.6	1.1	0.7	0.4	2.5	1.1	4.6	1.4	1.0	0.4	3.2
1.2	4.1	1.3	0.9	0.4	2.8	1.2	5.3	1.6	1.1	0.5	3.7
1.3	4.7	1.4	1.0	0.4	3.3	1.3	6.1	1.9	1.3	0.6	4.2
1.4	5.4	1.7	1.1	0.6	3.7	1.4	7.0	2.1	1.4	0.7	4.9
1.5	6.0	1.8	1.2	0.6	4.2	1.5	7.8	2.4	1.6	0.8	5.4
1.6	6.8	2.1	1.4	0.7	4.7	1.6.	8.8	2.7	1.8	0.9	6.1
1.7	7.5	2.3	1.6	0.7	5.2	1.7	9.8	3.0	2.1	0.9	6.8
1.8	8.3	2.5	1.7	0.8	5.8	1.8	10.8	3.3	2.3	1.0	7.5
1.9	9.2	2.8	2.0	0.8	6.4	1.9	11.9	3.6	2.5	1.1	8.3
2.0	10.0	3.0	2.1	0.9	7.0	2.0	13.0	3.9	2.7	1.2	9.1
2.1	11.0	3.3	2.3	1.0	7.7	2.1	14.2	4.2	3.0	1.3	10.0
2.2	11.9	3.6	2.5	1.1	8.3	2.2	15.5	4.7	3.3	1.4	10.8
2.3	12.9	3.9	2.7	1.2	9.0	2.3	16.8	5.1	3.5	1.6	11.7
2.4	14.0	4.2	3.0	1.2	9.8	2.4	18.1	5.5	3.8	1.7	12.6
2.5	15.0	4.5	3.1	1.4	10.5	2.5	19.5	5.9	4.1	1.8	13.6
2.6	16.2	4.9	3.4	1.5	11.3	2.6	21.0	6.3	4.4	1.9	14.7
2.7	17.3	5.2	3.6	1.6	12.1	2.7	22.5	6.8	4.7	2.1	15.7
2.8	18.5	5.5	4.0	1.6	13.0	2.8	24.1	7.3	5.1	2.2	16.8
2.9	19.8	6.0	4.2	1.8	13.8	2.9	25.7	7.7	5.4	2.4	18.0
3.0	21.0	6.3	4.4	1.9	14.7	3.0	27.3	8.2	5.7	2.5	19.1
3.1	22.4	6.8	4.7	2.1	15.6	3.1	29.1	8.8	6.1	2.7	20.3
3.2	23.7	7.2	5.0	2.2	16.5	3.2	30.8	9.3	6.5	2.8	21.5
3.3	25.1	7.6	5.3	2.3	17.5	3.3	32.6	9.8	6.8	3.0	22.8
3.4	26.6	8.0	5.6	2.4	18.6	3.4	34.5	10.4	7.2	3.2	24.1
3.5	28.0	8.4	5.8	2.6	19.6	3.5	36.4	11.0	7.7	3.3	25.4
3.6	29.6	8.9	6.2	2.7	20.7	3.6	38.4	11.6	8.1	3.5	26.8
3.7	31.1	9.4	6.5	2.9	21.7	3.7	40.4	12.2	8.5	3.7	28.2
3.8	32.7	9.9	6.9	3.0	22.8	3.8	42.5	12.8	9.0	3.8	29.7
3.9	34.4	10.4	7.2	3.2	24.0	3.9	44.7	13.5	9.4	4.1	31.2
4.0	36.0	10.8	7.5	3.3	25.2	4.0	46.8	14.1	9.8	4.3	32.7