

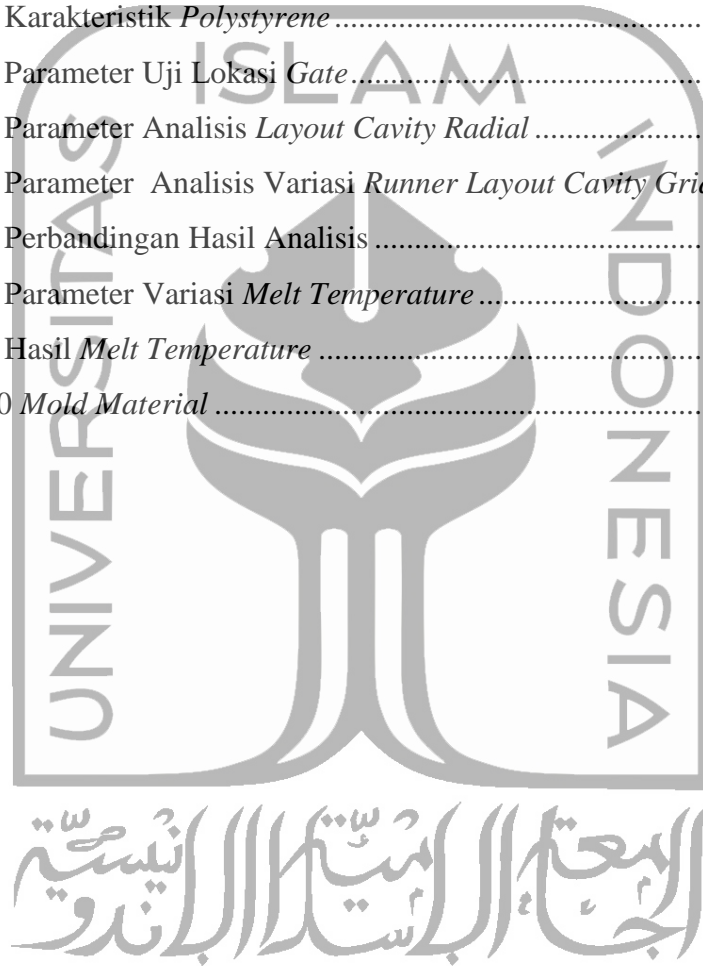
DAFTAR ISI

Halaman Judul	i
Lembar Pengesahan Dosen Pembimbing	ii
Lembar Pengesahan Dosen Penguji	iii
Halaman Persembahan	v
Halaman Motto	vi
Kata Pengantar	vii
Abstrak	ix
Abstract	x
Daftar Isi	xi
Daftar Tabel	xiii
Daftar Gambar	xiv
Daftar Notasi	xvii
Bab 1 Pendahuluan	1
1.1 Latar Belakang	1
1.2 Rumusan Masalah	2
1.3 Batasan Masalah	2
1.4 Tujuan Penelitian atau Perancangan	2
1.5 Manfaat Penelitian atau Perancangan	3
1.6 Sistematika Penulisan	3
Bab 2 Tinjauan Pustaka	4
2.1 Kajian Pustaka	4
2.2 Dasar Teori	5
2.2.1 Injeksi <i>Molding</i>	5
2.2.2 <i>Polystyrene</i>	6
2.2.3 Cacat Produk	6
2.2.4 <i>Runner System</i>	9
2.2.5 Komponen - Komponen <i>Molding Unit</i>	10
2.2.6 Perancangan <i>Molding</i>	12
Bab 3 Metode Penelitian	17
3.1 Alur Penelitian	17

3.2	Studi Literature	19
3.3	Alat dan Bahan.....	20
3.3.1	Alat Perancangan.....	20
3.3.2	Produk Perancangan	20
3.4	Input File CAD	21
3.5	Proses Analisis	21
3.5.1	Penentuan <i>Layout Cavity</i> dan <i>Runner</i>	21
3.5.2	Analisa Aliran Cetak	22
Bab 4	Hasil dan Pembahasan	23
4.1	Identifikasi Produk.....	23
4.1.1	Penentuan Lokasi <i>Gate</i>	24
4.2	Hasil Analisis.....	28
4.2.1	Pengaruh Variasi <i>Layout</i>	28
4.3	Perancangan <i>Moldbase</i> Berdasarkan Produk Plastik.....	40
4.3.1	Langkah Proses Desain.....	40
4.3.2	Desain <i>Mold</i>	51
4.3.3	Hasil Desain <i>Mold</i> yang Optimal	52
4.3.4	Pengaruh Variasi <i>Melt Temperature</i>	53
4.4	Penentuan <i>Mold Material</i>	60
4.5	Perhitungan	61
4.5.1	Perhitungan <i>Clamp Force</i>	61
4.6	Pemilihan Mesin Injeksi	61
Bab 5	Penutup.....	63
5.1	Kesimpulan.....	63
5.2	Saran atau Penelitian Selanjutnya.....	63
Daftar Pustaka	64

DAFTAR TABEL

Tabel 2-1 Komponen <i>Molding Unit</i>	11
Tabel 3-1 spesifikasi Laptop yang digunakan	20
Tabel 3-2 Dimensi standar SNI sikat gigi	20
Tabel 4-1 Data Produk.....	23
Tabel 4-2 Daftar Tuntutan Perancangan.....	23
Tabel 4-3 Karakteristik <i>Polystyrene</i>	23
Table 4-4 Parameter Uji Lokasi <i>Gate</i>	24
Tabel 4-5 Parameter Analisis <i>Layout Cavity Radial</i>	28
Tabel 4-6 Parameter Analisis Variasi <i>Runner Layout Cavity Grid</i>	34
Tabel 4-7 Perbandingan Hasil Analisis	40
Tabel 4-8 Parameter Variasi <i>Melt Temperature</i>	53
Table 4-9 Hasil <i>Melt Temperature</i>	59
Tabel 4-10 <i>Mold Material</i>	60



DAFTAR GAMBAR

Gambar 2-1 <i>Injection Molding</i>	5
Gambar 2-2 <i>SAN Styrene/Acrilonitrile</i>	6
Gambar 2-3 <i>Cacat Warpage</i>	7
Gambar 2-4 <i>Sink Mark</i>	7
Gambar 2-5 <i>Flashing</i>	8
Gambar 2-6 <i>Weld Line</i>	9
Gambar 2-7 <i>Two Plate Cold Runner System</i>	9
Gambar 2-8 <i>Three Plate Cold Runner System</i>	10
Gambar 2-9 <i>Hot Runner System</i>	10
Gambar 2-10 <i>Komponen Molding Unit</i>	11
Gambar 2-11 <i>Perbandingan Sudut</i>	13
Gambar 2-12 <i>Parting Line</i>	13
Gambar 3-1 <i>Produk Gagang Sikat Gigi</i>	21
Gambar 4-1 <i>Lokasi Gate 1 dengan Fill Time</i>	25
Gambar 4-2 <i>Lokasi Gate 1 dengan Cacat Weld Line</i>	25
Gambar 4-3 <i>Lokasi Gate 2 dengan Hasil Fill Time</i>	26
Gambar 4-4 <i>Lokasi Gate 2 dengan Cacat Weld Line</i>	27
Gambar 4-5 <i>Fill Time Star Runner System</i>	29
Gambar 4-6 <i>Injection Pressrure Star Runner Syste</i>	30
Gambar 4-7 <i>Cacat Weld Line Star Runner System</i>	30
Gambar 4-8 <i>Quality Prediction</i>	31
Gambar 4-9 <i>Fill Time Runner System Block</i>	32
Gambar 4-10 <i>Injection Pressure Runner System Block</i>	32
Gambar 4-11 <i>Weld Line Block runner system</i>	33
Gambar 4-12 <i>Cacat Weld Line Runner System Block</i>	33
Gambar 4-13 <i>Fill Time H Sytem Runner</i>	35
Gambar 4-14 <i>Injection Pressure H System Runner</i>	36
Gambar 4-15 <i>Cacat Weld Line H Runner System</i>	36
Gambar 4-16 <i>Quality Prediction H Runner System</i>	37
Gambar 4-17 <i>Fill Time Block Runner System Grid Cavity</i>	38

Gambar 4-18 <i>Injection Pressure Block Runner Sytem Grid Cavity</i>	38
Gambar 4-19 <i>Cacat Weld Line Block Runner System Grid Cavity</i>	39
Gambar 4-20 <i>Quality Prediction Block Runner System Grid Cavity</i>	39
Gambar 4-21 <i>Standar Moldbase Futaba SA series 3055</i>	41
Gambar 4-22 <i>Top Clamp Plate</i>	42
Gambar 4-23 <i>Cavity Plate</i>	42
Gambar 4-24 <i>Core Plate</i>	42
Gambar 4-25 <i>Cavity</i>	43
Gambar 4-26 <i>Core</i>	43
Gambar 4-27 <i>Support Plate</i>	44
Gambar 4-28 <i>Spacer Block</i>	44
Gambar 4-29 <i>System Ejector</i>	45
Gambar 4-30 <i>Bottom Plate</i>	45
Gambar 4-31 <i>Mold base DME</i>	46
Gambar 4-32 <i>Top clamping plate radial</i>	47
Gambar 4-33 <i>Cavity Plate</i>	47
Gambar 4-34 <i>Core Plate</i>	48
Gambar 4-35 <i>Cavity Radial</i>	48
Gambar 4-36 <i>Core Radial</i>	49
Gambar 4-37 <i>Support Plate</i>	49
Gambar 4-38 <i>Spacer Block</i>	50
Gambar 4-39 <i>Ejector Plate System</i>	50
Gambar 4-40 <i>Bottom Clamp Plate</i>	51
Gambar 4-41 <i>Mold Design Grid Layout</i>	51
Gambar 4-42 <i>Mold Design Radial Layout</i>	52
Gambar 4-43 <i>Mold Design Radial Layout</i>	52
Gambar 4-44 <i>Fill Time Melt Temperature 230°C</i>	54
Gambar 4-45 <i>Injection Pressure Melt Temperature 230°C</i>	54
Gambar 4-46 <i>Quality Prediction Melt Temperature 230°C</i>	55
Gambar 4-47 <i>Fill Time Melt Temperature 240°C</i>	56
Gambar 4-48 <i>injection pressure Melt temperature 240°C</i>	56
Gambar 4-49 <i>Quality Prediction Melt Temperature 240°C</i>	57

Gambar 4-50 <i>Fill Time Melt Temperature 250°C</i>	58
Gambar 4-51 <i>Injection Pressure Melt Temperature 250°C</i>	58
Gambar 4-52 <i>Quality Prediction Melt Temperature 250°C</i>	59
Gambar 4-53 <i>Actual Injection Pressure</i>	61
Gambar 4-54 <i>Mesin Injeksi Plastik SUN - 110</i>	62
Gambar 4-55 <i>Data Sheet SUN-110</i>	62



DAFTAR NOTASI

- F_c = *Clamping force* (kN)
 $P(\text{inj})$ = Tekanan injeksi (N)
 A = Luas penampang proyeksi (cm²)

