



UMSurabaya

ANALISA HASIL WARNA PEMBUATAN CAT
DENGAN MEMANFAATKAN
WAKTU DAN DIMENSI BLADE
PADA MESIN MIXING

TUGAS AKHIR

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2019

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Surabaya, Juni 2019
Yang membuat pernyataan



Fatqurrahman Iswahyudi

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DAFTAR PUSTAKA

- Austin, George T. 1984. Shreve's Chemical Proces Industries: McGrawHill Book Company.
- Bird, T. 1987. Kimia Fisika untuk Universitas. Jakarta : PT. Gramedia.
- Chemark, consulting G. 2013. Kebutuhan Cat di Manca Negara
- Fajar Anugrah. 2009. Pengertian Cat, Komponen Cat, Jenis – Jenis Cat, Kualitas Cat
- Geankoplis, C. J. 1978. *Transport Processes and Unit Operation Third edition*. Boston: Allyn and Bacon, Inc.
- Ganjar, I.G., dan Rohman , A. 2007. Kimia Farmasi Analis. Yogyakarta. Pustaka Belajar. Hal 31 – 33.
- Ismayanti at al. 2015. Karakteristik Cat Sesuai Dengan Kebutuhannya
- Karniadi, Edi. 2015. Jenis – Jenis dan Spesifikasi Cat untuk Rumah. Pembagian jenis – Jenis Cat
- Kurniawan, Bafen. 2013. Pengaruh Penggunaan Binder Akrilik dan Polyester Terhadap Kualitas Cat Tembok Sesuai SNI. Jurusan Kimia. Fakultas Matematika dan Ilmu Pengetahuan Alam. Universitas Negeri Semarang.
- Marzuki, Asnah. 2012. Kimia Analis Farmasi. Makassar : Dua Satu Press
- Sukardjo, 1997, Kimia Fisika, Yogyakarta : PT Ineka Cipta
- Rahayu, Suparni Setyowati (2009) Pencampuran Bahan Padat dan Cair
- Rase. 1977. *Chemical Reactor Design for Process Plant*, Vol. 1st, Principles and Techniques. Jhon Wiley and Sons : New York
- Rohman, Hazirur 2010. Analisa dan Penjelasan Proses Mixing.
- Yahya, S. 2013.Bio-Template Syntesis of Silika Ruthenium Catalyst of Benzylation of Toluene. Journal of Physical Science. Vol 24. No 1. Pp. 29 – 35

Yazid, 2005, Kimia Fisika Untuk Paramedis, Penerbit Andi,
Yogyakarta.

