

## 5.2 FUNGI

### Acetyl xylan esterase

#### Production

Trichoderma reesei 1186

### Cis-aconitic acid decarboxylase

#### Production

Aspergillus terreus 657

### Acid blue 193

#### Decolorization

Cladosporium cladosporioides 1340

### Acid violet

#### Decolorization

Penicillium sp. 1339

### Aconitic hydrase

#### Production

Aspergillus niger 587, 594

### Acylase

#### Production

Aspergillus flavus 541

### Adenine

#### Assay

Neurospora crassa 999

### Adenylate cyclase

#### Production

Aspergillus niger 684

Phycomyces blakesleeanus 978

### Adhesive for vinyl, water based

#### Testing

Aspergillus niger 596, 773

### Aflatoxin

#### Production

Aspergillus flavus 538

Aspergillus oryzae 700, 701,  
702, 703, 755

Aspergillus parasiticus 898

### Aircraft components

#### Testing

Aspergillus niger 596

Gliocladium virens 1297

Myrothecium verrucaria 903

Penicillium ochro-chloron 1044

### Amylase

#### Production

Aspergillus niger 1054,

Aspergillus oryzae 634, 635,  
640, 641, 642, 645

### $\alpha$ -Amylase

#### Production

Aspergillus niger 1248

Acremonium sporosalcatum 1319

Rhizomucor miehei 1307

### Aniline

#### Production

Aspergillus niger 620, 1006

### Antifungal agents on textiles

#### Testing

Aspergillus niger 596, 773

### Antiviral agent, ds RNA

#### Production

Penicillium chrysogenum 725,  
726, 733, 738

### Antiviral agent, LL-S88-a

#### Production

Aspergillus terreus 656

### Apple distillery waste

#### Degradation

Aspergillus niger 596, 773

### L-Asparaginase

#### Production

Aspergillus cervinus 1356

Aspergillus terreus 1357

### Aspergillic acid

#### Production

Aspergillus flavus 557

### Asterric acid

#### Production

Penicillium frequentans 1235

### Astochrome

#### Production

Aspergillus terreus 657

### Asteriquinone

#### Production

Aspergillus terreus 657

### Automotive components

#### Testing

Aspergillus niger 596, 773

Gliocladium virens 1297

### Baking primer

#### Testing

Aspergillus niger 596, 773

**Benomyl ( carbendazim ) resistance**

Aspergillus niger 1269

**Bikaverin**Production

Gibberella fugikuroi 1344

**Biotin**Assay

Neurospora sitophila 899, 1023

**Carlosic acid**Production

Penicillium fellutanum 1227

**Carolic acid**Production

Penicillium fellutanum 1227

**Carolinic acid**Production

Penicillium fellutanum 1227

**Cellobiohydrolase D**Production

Trichoderma reesei 1052

**Cellulase**Production

Aspergillus fumigatus 902  
Aspergillus niger 1207  
Cladosporium sp. 901  
Coriolus versicolor 1076  
Fusarium sp, 1075  
Myrothecium verrucaria 903, 990  
Neurospora crassa 870, 1021  
Paecilomyces sp. 1081  
Penicillium funiculosum 1228  
Pleurotus sajur-caju 1133  
Ptychogaster sp. 1074  
Sclerotium rolfsii 1084  
Trametes hirsuta 1201  
Trichoderma reesei 992, 1052,  
1053, 1186  
Trichoderma viride 1195  
Volvariella diplasia 1126

**Cellulose**Degradation

Myrothecium verrucaria 1194  
Trametes hirsuta 1201  
Trichoderma viride 1221

**Cell-wall lytic enzyme**Production

Trichoderma reesei 992  
Trichoderma viride 1053, 1355  
Trichoderma viride 1355

**Cephalosporin P, N & C**Production

Acremonium chrysogenum 893,  
1069

**Chitin synthetase**Assay

Phycomyces blakesleeanus 978

**Chitinase**Production

Aspergillus flavus 1316  
Aspergillus niger 1317  
Aspergillus oryzae 1212  
Beauveria bassiana 1216  
Penicillium chrysogenum 1315

**Choline**Assay

Neurospora crassa 869

**Chrysogenin**Production

Penicillium chrysogenum 722,  
734, 735  
Penicillium notatum 746

**Citric acid**Production

Aspergillus niger 545, 548, 565,  
569, 571, 572, 586, 587, 588,  
591, 592, 594, 595, 596, 600,  
613, 614, 615, 621, 625, 626,  
627, 652, 667, 679, 680, 682,  
683, 684, 685, 705, 773, 821,  
838, 839, 840, 841, 847, 1055,  
1056

**Citrinin**Production

Penicillium citrinum 766  
Penicillium notatum 1206

**Clavacin ( Patulin )**Production

Aspergillus clavatus 1007

**Cobalt Sensitive**

Neurospora crassa 1284, 1285

**Cobalt resistant**

Neurospora crassa 1286, 1287

**Collagenase**Production

Arthrobotrys conoides 1210

**Copper**Assay

Aspergillus niger 608, 1004

Tolerance ( Resistance )

Penicillium ochro-chloron 1044,  
1219

**Cork**Testing

Aspergillus niger 1025  
Gliocladium virens 1297

**Culture diagnosis**

Daedalea flavida 1087  
Datronia mollis 1142

**Deacetoxycephalosporin C**Production

Acremonium chrysogenum 893,  
1069

**Diastase**Production

Aspergillus oryzae 647

**Electrical and electronic equipment**Testing

Aspergillus niger 1025  
Aureobasidium pullulans 1224  
Gliocladium virens 1297  
Scopularopsis brevicaulis 1218  
Trichoderma viride 1221

**Environment**Testing

Aspergillus niger 1025

**Enzyme (milk clotting)**Production

Rhizomucor miehei 1306

**Eremofortin C**Production

Penicillium roquefortii 712

**Ethanol**Production

Neurospora crassa 870, 1021

**Fatty acids**Production

Penicillium notatum 1206

**Ferritin**Production

Phycomyces blakesleeanus 978

**Fructosyl transferase**Production

Aureobasidium pullulans 1049

**Fumaric acid**Production

Rhizopus oryzae 877

**Fusaric acid**Production

Fusarium monoliforme 1100

**Galactocarlose**Production

Penicillium fellutanum 1227

**Galactofuranosidase ( exo-B-D )**Production

Penicillium fellutanum 1227

 **$\alpha$ -Galactosidase**Production

Aspergillus awamori 1225  
Humicola grisea 1252

 **$\beta$ -Galactosidase**Production

Aspergillus niger 616  
Mucor sp. 1279

**Gibberellic acid**Production

Gibberella fujikuroi 1308, 1309,  
1310  
Fusarium moniliforme 1099  
Fusarium proliferatum 1101,  
1104, 1105

**Gibberellins**Production

Fusarium moniliforme 1099,  
1100

 **$\beta$ -1, 4-Glucan hydrolases**Production

Aspergillus niger 592, 600

 **$\beta$ -1, 3-Glucanase**Production

Trichoderma reesei 992  
Trichoderma viride 1053

 **$\beta$ -1, 6-Glucanase**Production

Penicillium chro-chloron 1044

**Glucoamylase (  $\alpha$ -D-glucosidase )**Production

Aspergillus niger 616, 1248

**Gluconic acid**Production

Aspergillus niger 530, 545, 548,  
595, 625, 626, 627, 704, 847  
Penicillium chrysogenum 724, 731

**Glucono- $\delta$ -lactone**Production

Aspergillus niger 545, 548

**Glucose**Production

Trichoderma reesei 992  
Trichoderma viride 1053

**Glucose oxidase**Production

Aspergillus niger 545, 548  
Penicillium chrysogenum 709  
Phanerochaete chrysosporium  
1197

 **$\alpha$ -Glucosidase**Production

Aspergillus niger 1248  
Penicillium citrinum 1296

 **$\beta$ -Glucosidase**Production

Aspergillus niger 1207, 1270,  
1271, 1272  
Sclerotium rolfsii 1084  
Trichoderma reesei 1052

**Glucuronic acid**Production

Aspergillus niger 613

**3-Hydroxyverrucarin A**Production

Rhizopus oryzae 997

**16-Hydroxyverrucarin A & B**Production

Rhizopus oryzae 997

**Hypoxanthine**Assay

Neurospora crassa 999

**Imipramine**Production

Rhizopus oryzae 997

**Inositol**Assay

Neurospora crassa 867, 868, 1017

**Insulation**Testing

Aspergillus niger 1025

**Invertase**Production

Aspergillus awamori 1225

**Itaconic acid**Production

Aspergillus terreus 656, 657  
Penicillium fellutanum 1227

**Kojic acid**Production

Aspergillus flavus 554

**Kynureninase - type enzymes**Production

Aspergillus niger 620, 1006  
Penicillium roquefortii 712

**Lacquer**Testing

Aspergillus niger 596, 773  
Aureobasidium pullulans 1049,

**Lactate dehydrogenase**Production

Phycomyces blakesleeanus 978

**Lactate dehydrogenase****(NAD - dependant)**Production

Rhizopus oryzae 1009

**Lactic acid**Production

Rhizopus oryzae 1009

**Leather**Testing

Aspergillus niger 596, 773  
Paecilomyces varioti 1217

**Lectin ( chitin binding )**Production

Neurospora crassa 868, 1017

**Leucomycin derivatives**Production

Beauveria bassiana 1300  
Penicillium chrysogenum 733, 738

**Ligin, synthetic**Degradation

Phanerochaete chrysosporium  
1197  
Ganoderma sp. 1354

**Ligonocellulose**  
Degradation  
Pleurotus ostreatus 1200

**Lincomycin sulfoxide**  
Production  
Aspergillus niger 545, 548

**Lipase**  
Production  
Aspergillus flavus 650, 1331  
Aspergillus oryzae var. viridis 1212  
Beauveria bassiana 1216  
Rhizopus oryzae 877, 878, 879

**Lipase ( acidic )**  
Production  
Aspergillus niger 1207, 1270

**Lipids**  
Production  
Pencillium notatum 1206

**Lovastatin**  
Production  
Aspergillus terreus 1326

**Lysergic acid derivatives**  
Production  
Claviceps paspali 1013

**Magnamycin derivatives**  
Production  
Beauveria bassiana 1300  
Pencillium chrysogenum 733, 738

**Magnesium**  
Assay  
Aspergillus niger 608, 1004

**Maltase**  
Production  
Aspergillus niger 616

**Mannocarlose**  
Production  
Pencillium fellutanum 1227

**α-Mannosidase**  
Production  
Pencillium fellutanum 1227

**Methionine**  
Assay  
Neurospora crassa 866, 998,  
1214

**3-Methylresellinic acid**  
Production  
Aspergillus terreus 657

**Methyltetraoic acid**  
Production  
Pencillium fellutanum 1227

**Molasses**  
Decolorization  
Aspergillus niger 1353

**Molybdenum**  
Assay  
Aspergillus niger 608, 1004

**N-N-dimethylethanolamine**  
Production  
Pencillium fellutanum 1227

**Nichel sensitive**  
Neurospora crassa 1284, 1285

**Nichel resistant**  
Neurospora crassa 1288, 1289

**Nicotinic acid**  
Assay  
Neurospora crassa 865, 1000

**Niddamycin derivatives**  
Production  
Beauveria bassiana 1300  
Pencillium chrysogenum 733, 738

**Nuclease**  
Production  
Rhizopus stolonifer 880

**Ornithine decarboxylase**  
Assay  
Phycomyces blakesleeanus 978

**Oxalic acid decarboxylase**  
Production  
Flammulina velutipes 678

**Oxalic acid**  
Production  
Aspergillus niger 1213

**Oxidase (H<sub>2</sub>O<sub>2</sub> dependant )**  
Production  
Phanerochaete chrysosporium  
1197

**Packing materials**  
Testing  
Aspergillus niger 596, 773  
Gliocladium virens 1297

**Paints**  
Testing  
Aspergillus niger 596, 773  
Aureobasidium pullulans 1049,  
1224

**Pantothenic acid**Assay

Neurospora crassa 910

**Paper and paper boards**Testing

Aspergillus niger 596, 773

**paraaminobenzoic acid ( PABA )**Assay

Neurospora crassa 863, 864, 1018

**Paracelsin**Production

Trichoderma reesei 1186

**Paranitrophenol**Testing

Aspergillus niger 1025

Gliocladium virens 1297

**Pectate lyase**Production

Fusarium moniliforme 1276

**Pectic enzymes**Production

Aspergillus foetidus 505, 514,  
1027

**Penicillin**Production

Penicillium chrysogenum 723,  
725, 726, 727, 728, 730, 733,  
736, 738

Penicillium notatum 745, 747, 748

**Peptidophosphogalactomannans**Production

Pencillium fellutanum 1227

**Peroxidase**Production

Coprinus cinereus 1369

**Phosphodiesterase**Production

Aspergillus niger 684

**Phthalate**Degradation

Aspergillus parasiticus 1361

Fusarium subglutinans 1362

Penicillium funiculosum 1363

**6-Phosphogluconate dehydrogenase**Production

Penicillium notatum 745, 748, 749

**Plastic**Degradation

Alternaria tenuis 1220

Aspergillus niger 1025

Aureobasidium pullulans 1049

Gliocladium virens 1297

Paecilomyces varioti 1217

Penicillium ochro-chloron 1219

Trichoderma viridie 1221

Testing

Aspergillus niger 1025

**Polyamine oxidase**Production

Pencillium chrysogenum 733, 738

**Polygalacturonase**Production

Fusarium moniliforme 1276

**Polymers, synthetic**Testing

Aspergillus niger 1025

Aureobasidium pullulans 1049

Gliocladium virens 1297

**Polysaccharide**Production

Aureobasidium mausonii 1226

**Polysaccharide (exo-)**Production

Pencillium fellutanum 1227

**Polysaccharide, sterol-binding**Production

Pencillium roqueforti 712

**PR-toxin**Production

Pencillium roqueforti 712

**Protease**Production

Acremonium chrysogenum 893,  
1069

Aspergillus flavus 535, 536, 537,  
538, 549, 650

Aspergillus oryzae 637, 643, 649,  
1031, 1032,

Aspergillus oryzae var. viridis  
1212

Beauveria bassiana 1216

Pencillium roqueforti 712

**Protease (alkaline)**Production

Beauveria felina 1314  
Conidiobolus coronatus 1301  
Conidiobolus macrosporus 1298  
Penicillium sp. 1313

**Protease (acid)**Production

Rhizopus oligosporus 1215

**Protein**Production

Trichoderma reesei 1052

**Pseudonigeran**Production

Aspergillus niger 620, 1006

**Pullulan**Production

Aureobasidium pullulans 1049

**Pullulan 4-glucanohydrolase**Production

Aspergillus niger 1025

**Pullulan hydrolysing activity**Production

Sclerotium rolfsii 1084

**Pulvinone derivatives**Production

Aspergillus terreus 657

**Purine- $\beta$ -ribonucleosidase**Production

Pencillium ochro-chloron 1044

**Pyridoxine**Assay

Neurospora sitophila 871, 899,  
1023

**Questin**Production

Pencillium frequentans 1235

**Questinol**Production

Pencillium frequentans 1235

**Raffinose**Degradation

Aspergillus awamori 1225  
Humicola grisea 1252

**Ramigenic acid**Production

Pencillium fellutanum 1227

 **$\alpha$ -L Rhamnosidase**Production

Penicillium citrinum 1296

**Riboflavin**Production

Ashbyi gossipii 1193

**Ribonuclease**Production

Aspergillus niger 684  
Rhizopus stolonifer 880

**Saccharifying enzymes**Production

Aspergillus niger 616

**Sandbags**Testing

Myrothecium verrucaria 903

**Sesquiterpene lactone costunolide**Transformation

Aspergillus flavus 554, 557  
Aspergillus niger 589, 620, 1006  
Aspergillus ochraceus 1140  
Aspergillus parasiticus 898  
Pencillium chrysogenum 733, 738  
Rhizopus oryzae 997

**Soy sauce**Production

Aspergillus oryzae 643, 1032  
Aspergillus sojae 1198

**Steroids**Production

Aspergillus niger 589, 595, 612,  
847  
Aspergillus ochraceus 1140  
Rhizopus oryzae 997

**Sulfur**Assay

Aspergillus niger 596, 773

**Sulochrin**Production

Pencillium frequentans 1235

**Tannase**Production

Aspergillus oryzae 643, 1032

**Tannic-gallic acid**Fermentation

Aspergillus niger 620, 1006

**Tempeh**Production

Rhizopus oligosporus 1215

**Textiles**Testing

Aspergillus niger 596, 773  
Gliocladium virens 1297  
Myrothecium verrucaria 903  
Pencillium ochro-chloron 1219  
Trichoderma viride 1221

**Thiamine**Assay

Neurospora crassa 1001

**Transmissions ( aircraft )**Testing

Aspergillus niger 596, 773  
Myrothecium verrucaria 903  
Pencillium ochro-chloron 1044

**Vanillate hydroxylase**Production

Phanerochaete chrysosporium  
1197

**Varnish**Testing

Aspergillus niger 596, 773,  
1025  
Aureobasidium pullulans 1049  
Gliocladium virens 1297

**Verisilic acid**Production

Pencillium fellutanum 1227

**Veratryl alcohol**Synthesis

Phanerochaete chrysosporium  
1197

Degradation

Phanerochaete chrysosporium  
1197

**Wax**Testing

Aspergillus niger 1025  
Gliocladium virens 1297  
Myrothecium verrucaria 903, 990

**Wood preservative chemicals**Assay

Aspergillus niger 1025

**Xylanase**Production

Aspergillus niger 1207  
Neurospora crassa 870  
Pencillium janthinallum 1169  
Sclerotium rolfsii 1084  
Aspergillus niger 1338  
Aspergillus niger 1345  
Trichoderma viride 1346  
Trichoderma harzianum 1347  
Rhizoctonia solani 1348  
Pencillium expansum 1349  
Fusarium oxysporum 1350  
Coprinus cinereus 1369

 **$\beta$ -xylosidase**Production

Aspergillus niger 1207  
Neurospora crassa 870  
Sclerotium rolfsii 1084

**Zinc**Assay

Aspergillus niger 608, 1004

**Zinc sensitive**

Neurospora crassa 1284, 1285

**Zinc resistant**

Neurospora crassa 1290, 1291, 1292