

Código 14: Materiales

```
// Basado en el código teapots.c del Libro Rojo de OpenGL

#include <stdlib.h>
#include <GL/glut.h>

void myinit(void)
{
    GLfloat ambient[] = {0.0, 0.0, 0.0, 1.0};
    GLfloat diffuse[] = {1.0, 1.0, 1.0, 1.0};
    GLfloat position[] = {0.0, 3.0, 3.0, 0.0};

    glLightfv(GL_LIGHT0, GL_AMBIENT, ambient);
    glLightfv(GL_LIGHT0, GL_DIFFUSE, diffuse);
    glLightfv(GL_LIGHT0, GL_POSITION, position);

    glFrontFace(GL_CW);
    glEnable(GL_LIGHTING);
    glEnable(GL_LIGHT0);
    glEnable(GL_NORMALIZE);
    glEnable(GL_DEPTH_TEST);
}

void renderTeapot(GLfloat x, GLfloat y,
    GLfloat ambr, GLfloat ambg, GLfloat ambb,
    GLfloat difr, GLfloat difg, GLfloat difb,
    GLfloat specr, GLfloat specg, GLfloat specb, GLfloat shine)
{
    float mat[4];

    glPushMatrix();
    glTranslatef(x, y, 0.0);
    mat[3] = 1.0;
    mat[0] = ambr; mat[1] = ambg; mat[2] = ambb;
    glMaterialfv(GL_FRONT, GL_AMBIENT, mat);
    mat[0] = difr; mat[1] = difg; mat[2] = difb;
    glMaterialfv(GL_FRONT, GL_DIFFUSE, mat);
    mat[0] = specr; mat[1] = specg; mat[2] = specb;
    glMaterialfv(GL_FRONT, GL_SPECULAR, mat);
    glMaterialf(GL_FRONT, GL_SHININESS, shine * 128.0);
    glutSolidTeapot(2.5);
    glPopMatrix();
}

void display(void)
{
    glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);

    // Cobre
    renderTeapot(5.0, 10.0, 0.329412, 0.223529, 0.027451,
        0.780392, 0.568627, 0.113725, 0.992157, 0.941176, 0.807843,
        0.21794872);

    // Plata
    renderTeapot(10.0, 16.0, 0.19225, 0.19225, 0.19225,
        0.50754, 0.50754, 0.50754, 0.508273, 0.508273, 0.508273, 0.4);

    // Plastico verde
    renderTeapot(10.0, 4.0, 0.0, 0.0, 0.0,
        0.1, 0.35, 0.1, 0.45, 0.55, 0.45, .25);

    // Plastico Rojo
    renderTeapot(15.0, 10.0, 0.0, 0.0, 0.0, 0.5, 0.0, 0.0,
        0.7, 0.6, 0.6, .25);

    glFlush();
}
```

```
void myReshape(int w, int h)
{
    glViewport(0, 0, w, h);
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
    glOrtho(0.0, 20.0, 0.0, 20.0, -10.0, 10.0);
    glMatrixMode(GL_MODELVIEW);
}

int main(int argc, char **argv)
{
    glutInit(&argc, argv);
    glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB | GLUT_DEPTH);
    glutCreateWindow("Materiales");
    glutInitWindowSize(500,500);
    myinit();
    glutReshapeFunc(myReshape);
    glutDisplayFunc(display);
    glutMainLoop();
    return 0;
}
```

