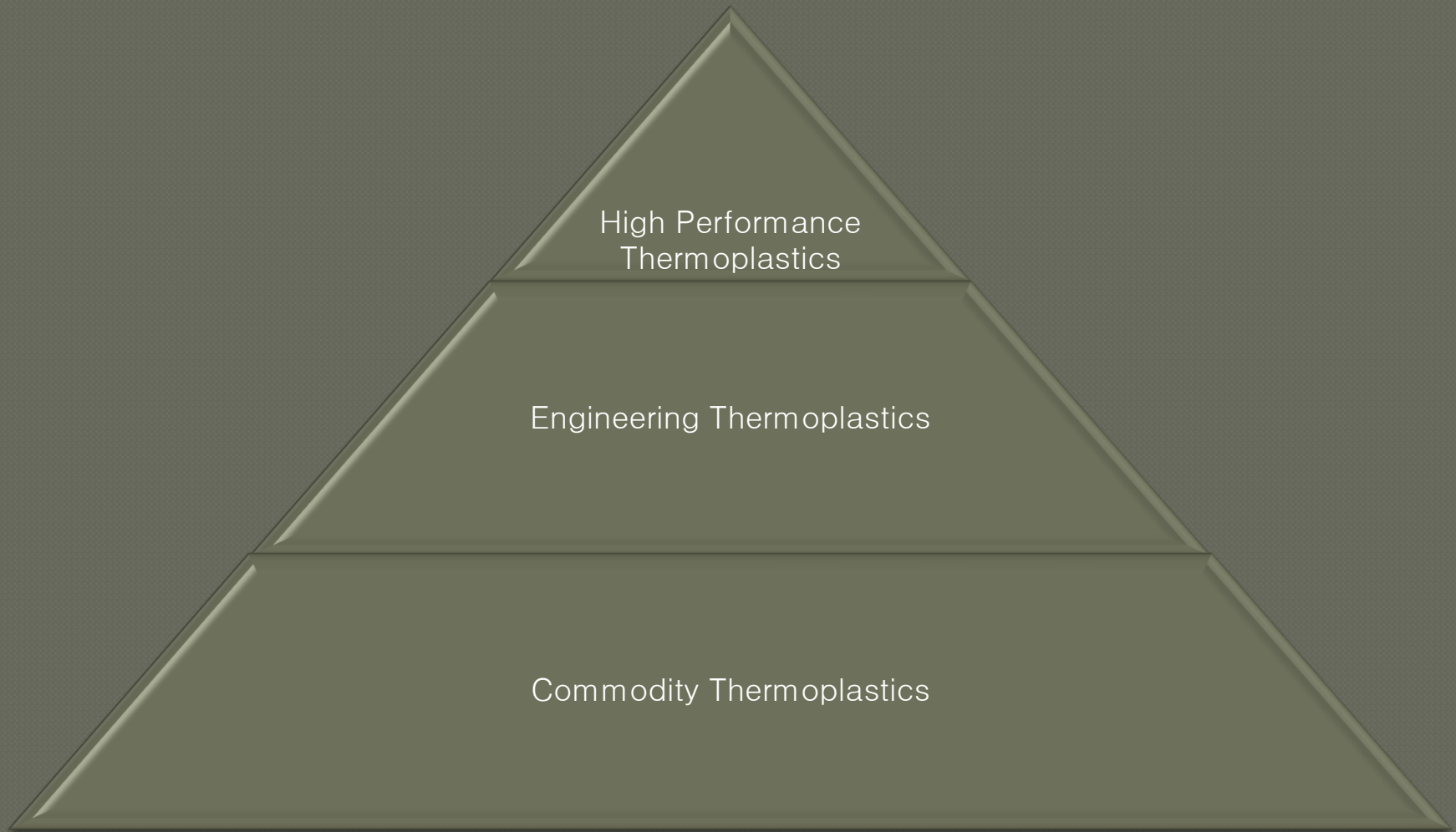


# Blackwell plastics

Thermoplastics for the pipe industry

# Thermoplastics hierarchy



## High performance Thermoplastics

```
graph TD; A[High performance Thermoplastics] --- B[Characteristics]; A --- C[Materials];
```

### Characteristics

- High cost
- High temp. resistance
- High strength & Stiffness
- Good Chemical resistance
- Good electrical properties
- Low COF
- Good toughness

### Materials

- Polyvinylidene Flouride (PVDF)
- Polyphenylene Sulfide (PPS)

## Engineering Thermoplastics

```
graph TD; A[Engineering Thermoplastics] --> B[Characteristics]; A --> C[Materials];
```

### Characteristics

- Moderate cost
- Moderate temp. resistance
- Moderate strength & Stiffness
- Good Chemical resistance
- Good electrical properties
- Low COF
- Difficult to bond

### Materials

- Nylon (PA)
- Acetyl (POM)
- Polyethylene Terephthalate (PET)
- Polybutylene Terephthalate (PBT)
  
- Polycarbonate (PC)  
(Good dimensional stability & optical properties)

# Commodity Thermoplastics

## Amorphous Characteristics

Low cost  
Low temp. resistance  
Low strength  
Good dimensional stability  
transparent

## Amorphous Materials

Polystyrene (PS)  
Acrylonitrile Butadiene styrene (ABS)  
Polyvinyl Chloride (PVC)

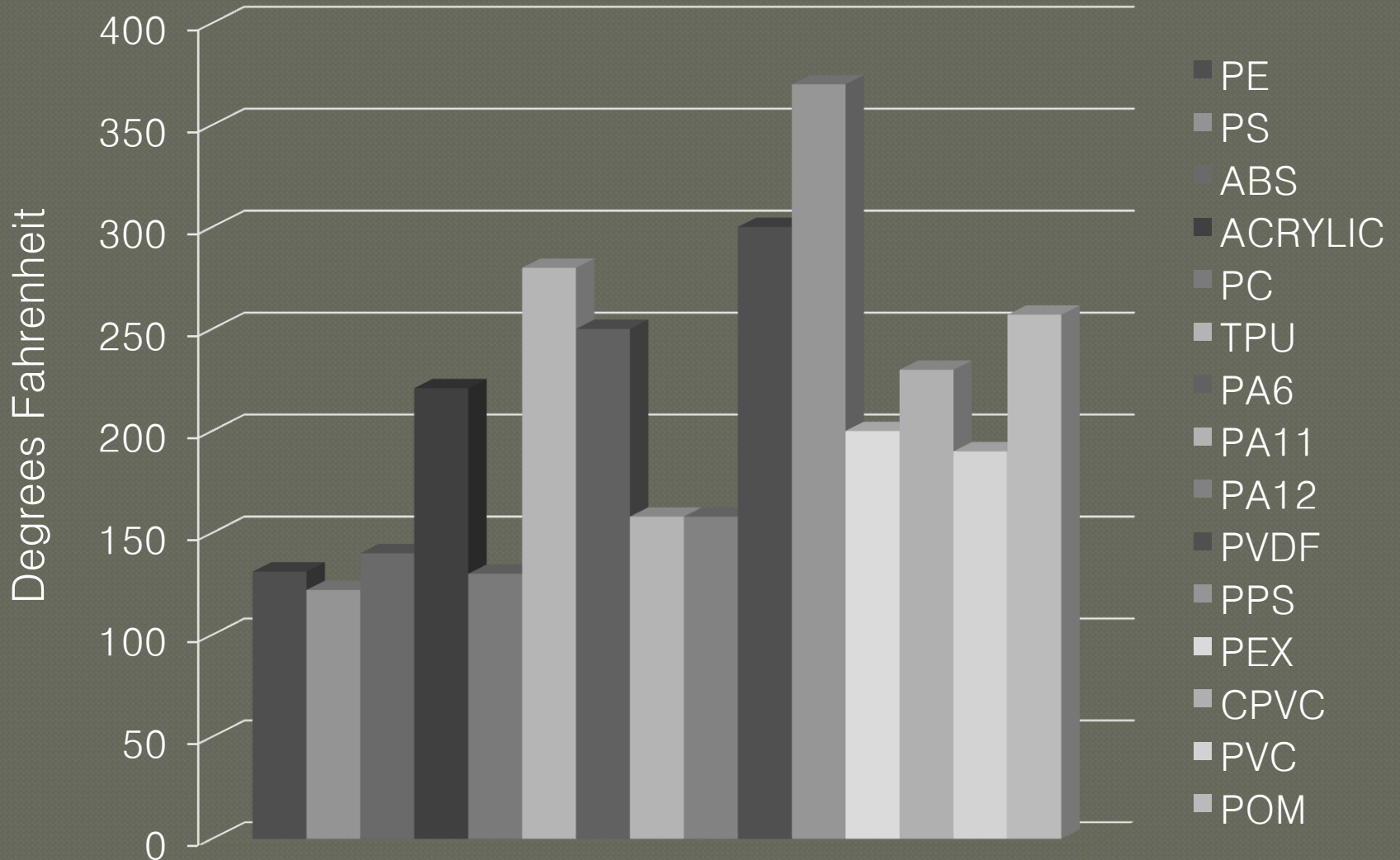
## Semi – Crystalline Characteristics

Low cost  
Low temp. resistance  
Low strength  
Low COF  
Good electrical & toughness properties  
Difficult to bond

## Semi –Crystalline Materials

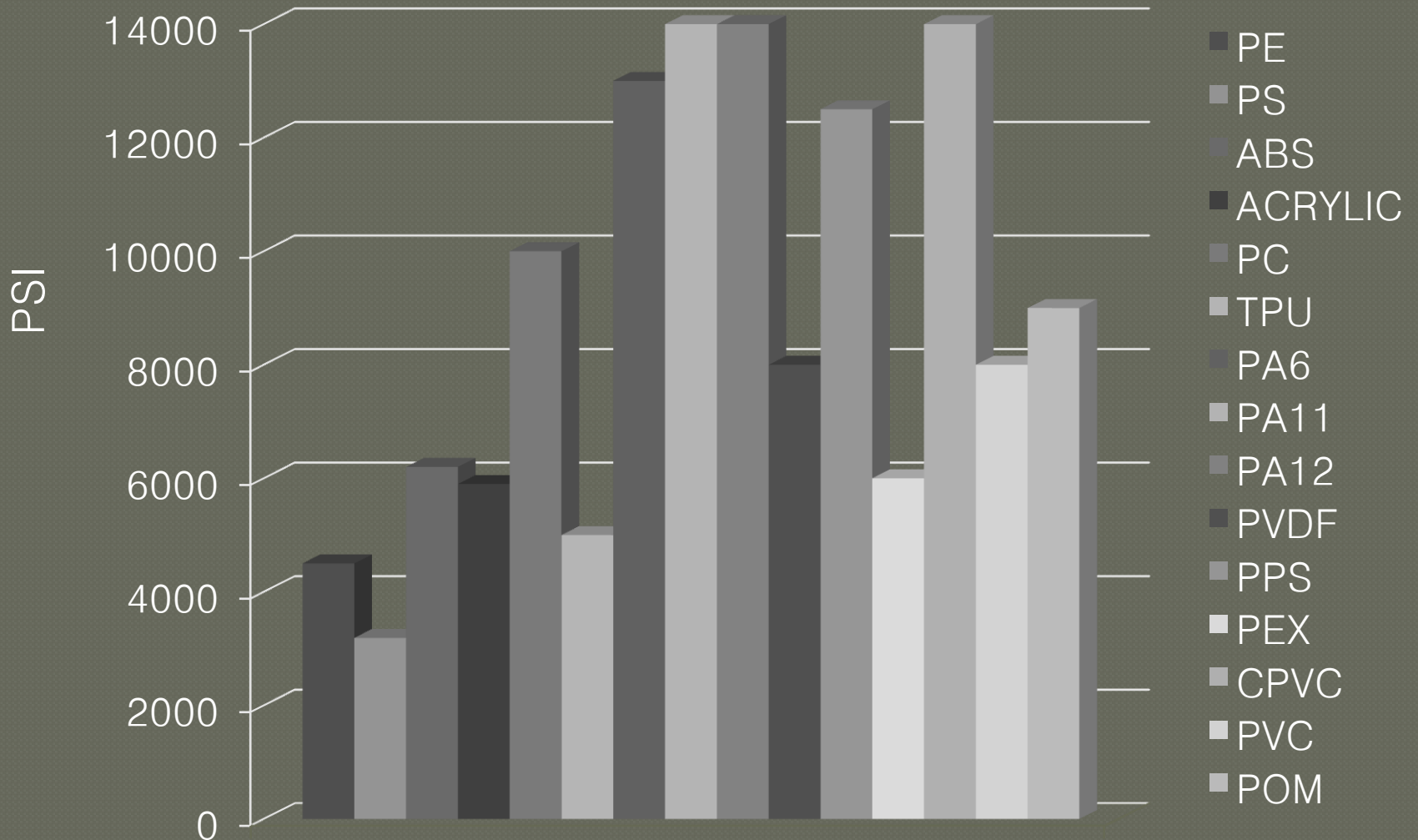
High Density Polyethylene (HDPE)  
Low density Polyethylene (LDPE)  
Polypropylene (PP)

## Constant operating Temperature



# Tensile Strength

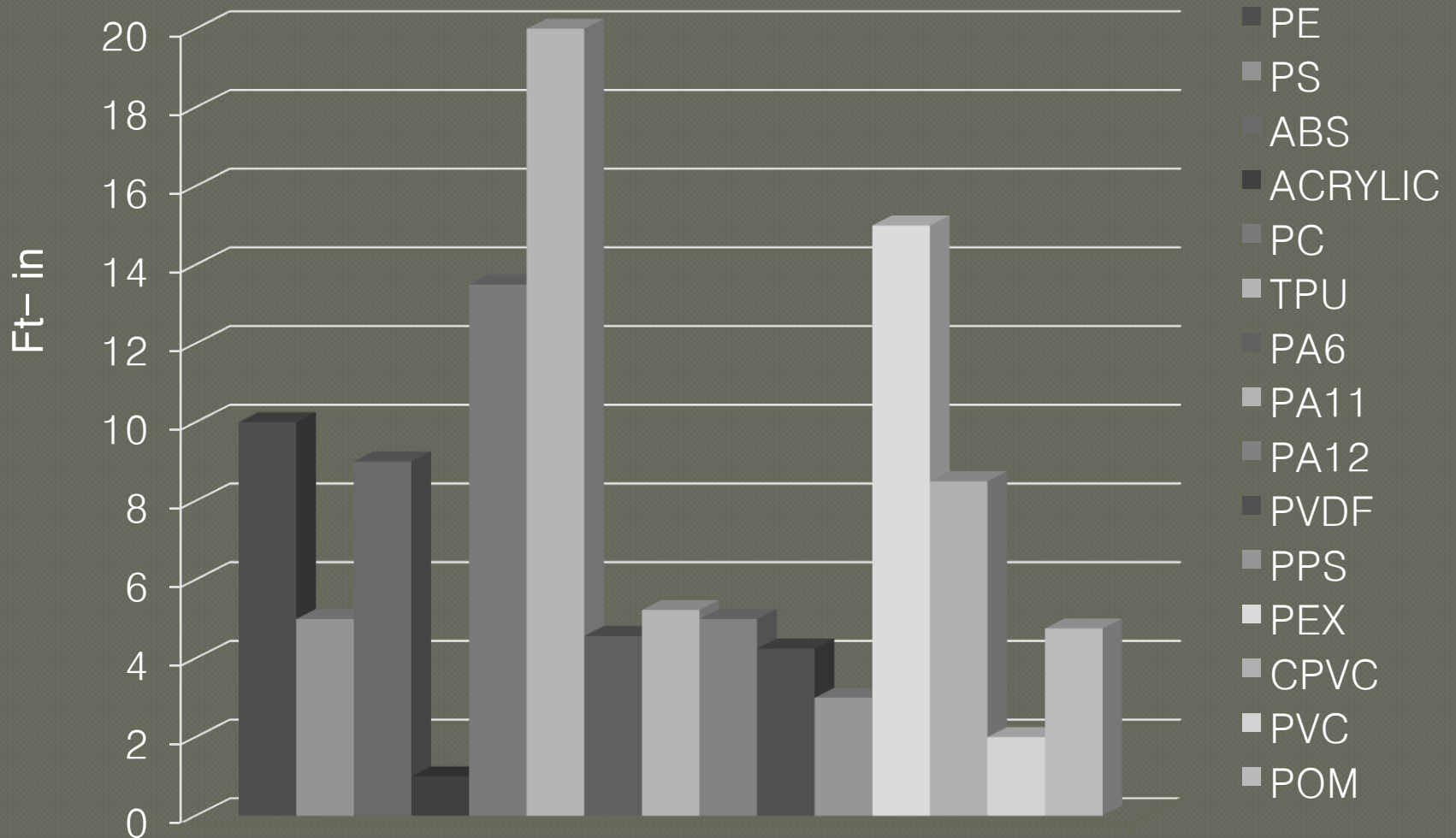
(At break)



# Impact Strength

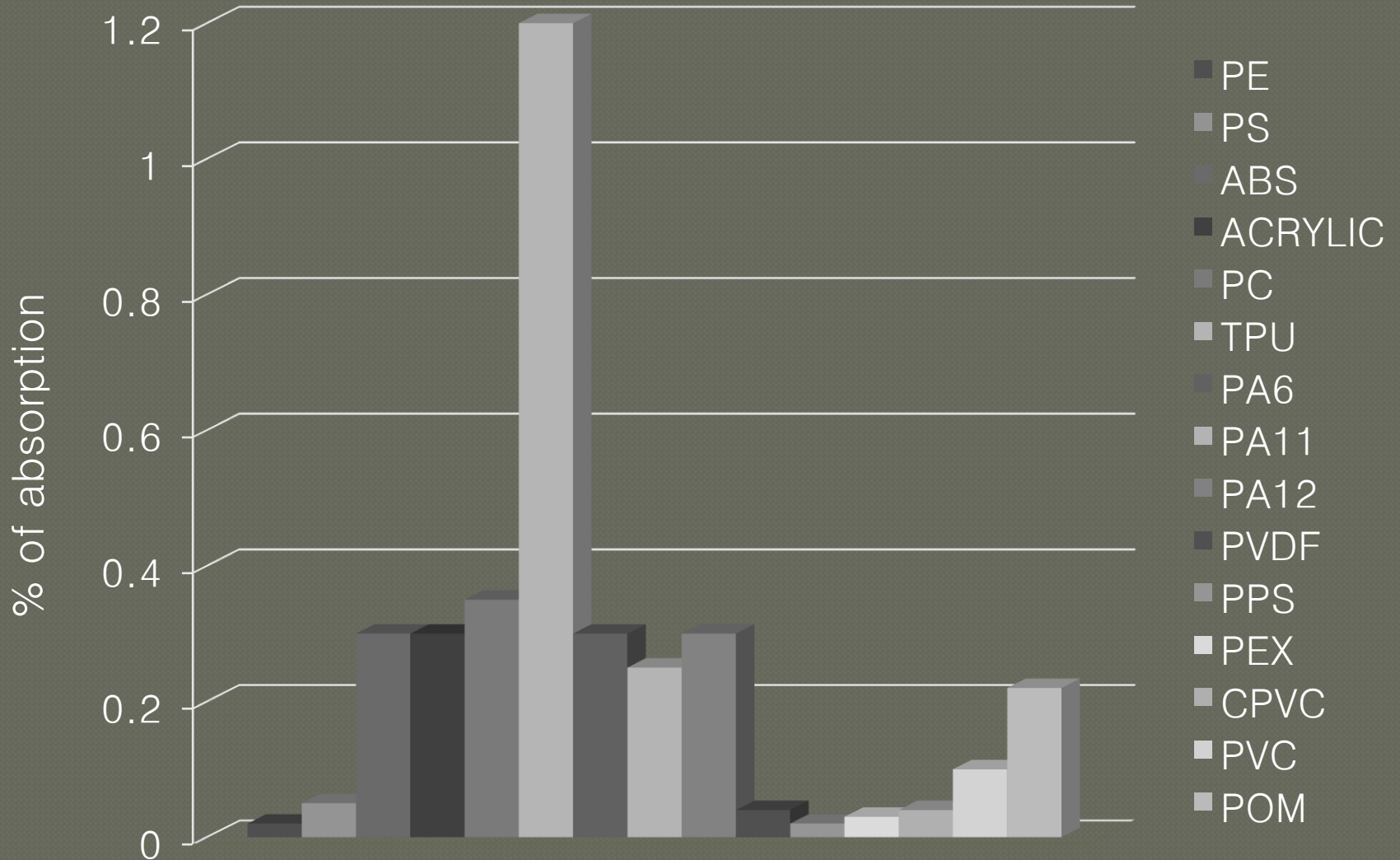
(The Higher the better)

*\*TPU has higher impact than indicated*



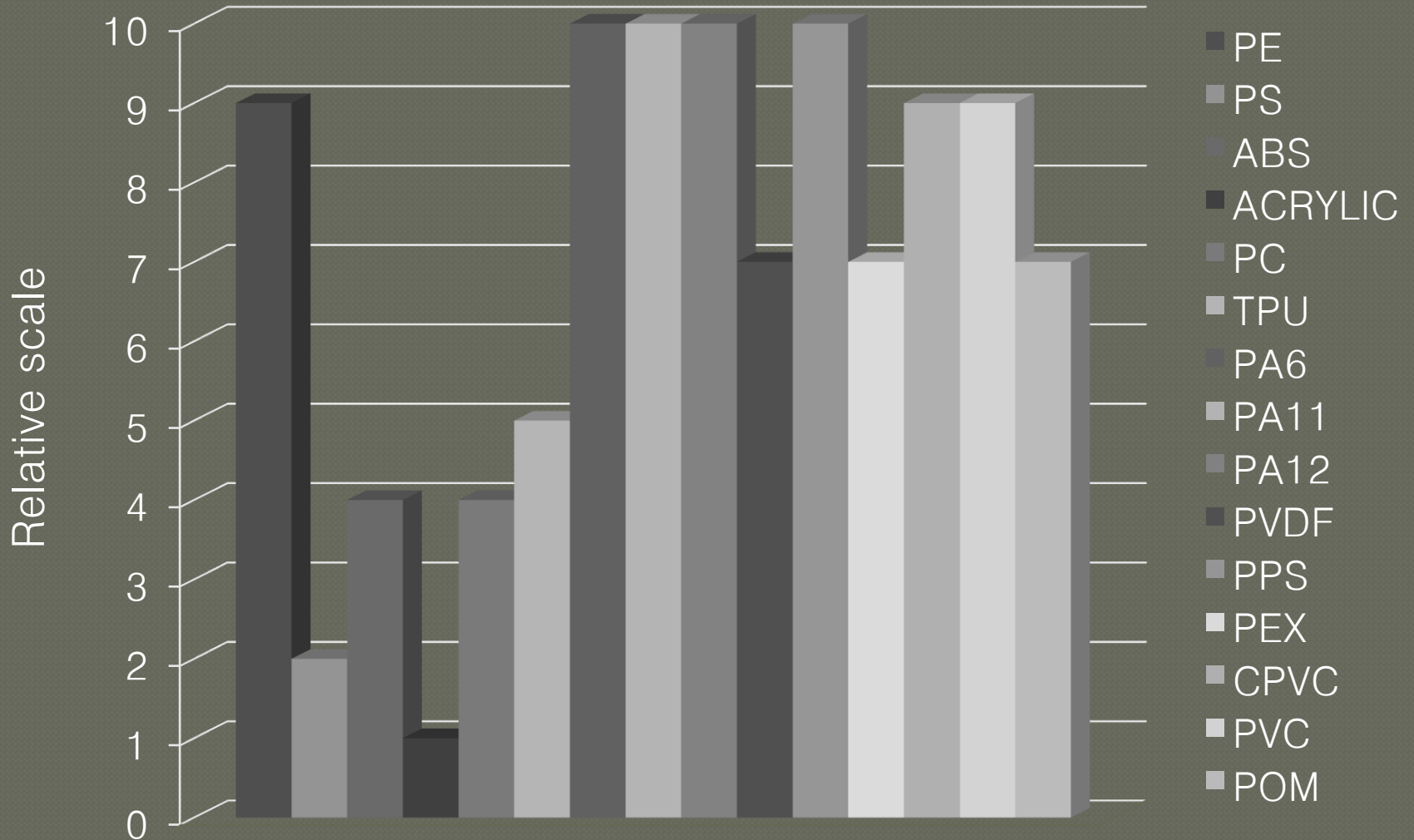


# Moisture Absorption

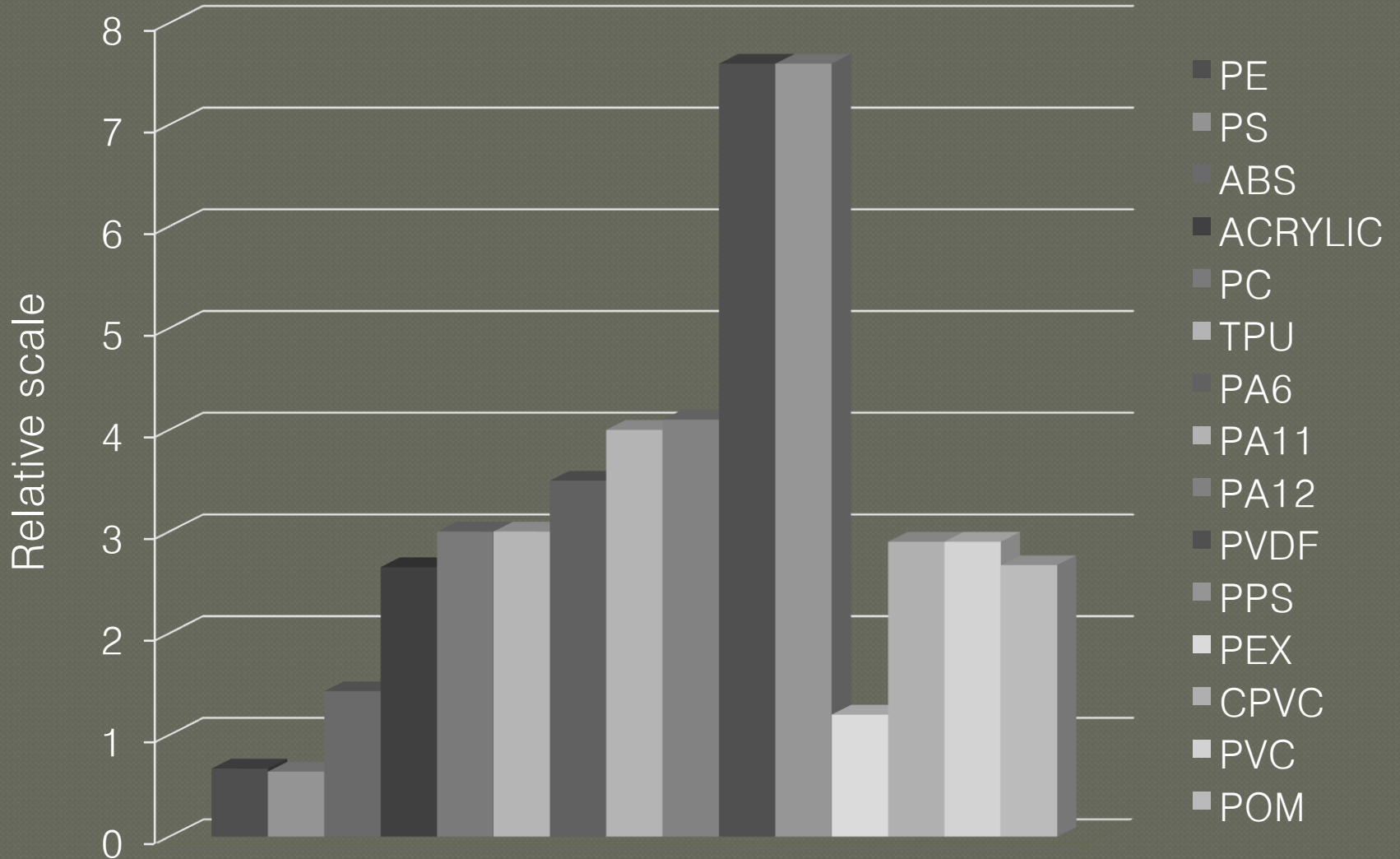


# Chemical Resistance

*(The Higher the better)*



# Cost Comparison



Blackwell plastics offers custom profile and pipe extrusion services, with pipe diameters up to 3". Finished goods may be cut to length or coiled. Please Visit [Blackwellplastics.com](http://Blackwellplastics.com) or contact our office for additional information.

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